



**Asia-Pacific
Economic Cooperation**

APEC Economic Policy Report 2019

Structural Reform and the Digital Economy

NOTE:

The terms “national”, “nation” used in the text are for purposes of this report and do not imply the “political status” of any APEC member economy.

Prepared or printed by:

Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org

© 2019 APEC Secretariat

ISSN: 0218-9763 APEC#219-EC-01.4

Cover photo: The Future of the New Generation by Ernesto Narciso Jr./APEC Photo Contest 2019

PREFACE

In recent years APEC has stepped up its efforts to help members to address the opportunities and challenges of the digital economy. In 2017 APEC adopted the APEC Internet and Digital Economy Roadmap and the E-commerce Facilitation Framework, and in 2018 a new body (the Digital Economy Steering Group) was formed to coordinate APEC's digital economy work. In 2019, and for the second year in a row, advancing APEC's work in the area digital economy is a major host year priority. This year's APEC Economic Policy Report (AEPR) on Structural Reform and the Digital Economy aims to contribute to APEC's accelerating digital economy work.

The introduction to the 2019 AEPR highlights key concepts, opportunities and challenges, including the need to accurately measure the digital economy. The main section outlines ways to apply core market-enhancing structural reforms to the digital economy, with specific reference to the financial and other sectors. The third section describes holistic policy approaches, including ways to harness structural reforms alongside supporting policies to promote greater inclusion with respect to the digital economy.

Policymakers and regulators struggle to keep up with fast-changing technologies and cross-border trade patterns. APEC is the ideal forum to discuss and develop innovative and effective structural reforms to promote digital economy development in the Asia-Pacific region. In this connection, the EC has very recently endorsed, on a pilot basis, the APEC Collaborative Framework for Online Dispute Resolution of Cross-Border Business to Business Disputes, and will seek collaboration with member economies and other fora on its implementation.

Following last year's success, this year's AEPR is another joint effort of the Economic Committee (EC) and Senior Finance Officials under the Finance Ministers' Process (FMP). Member economies contributed to the 2019 AEPR through the Individual Economy Report questionnaires and by serving on the core team responsible for preparing the report. A number of economies provided pertinent case studies or helpful suggestions to improve the report. We are also utterly grateful for the generous funding provided by Australia and New Zealand for this year's report.

We would like to express our gratitude to Chile for leading the core team, which consisted of members from: Australia, Canada, China, Indonesia, Japan, Mexico, New Zealand, Russia, Chinese Taipei, Thailand, the United States and Viet Nam. We also thank the APEC Secretariat for its valuable advice and assistance and the APEC Policy Support Unit, which had worked tirelessly in writing and managing the overall production of the report. We would like to acknowledge the substantive contributions provided by the Organisation for Economic Co-Operation and Development (OECD), as well as its support in peer-reviewing the report.

We sincerely hope that the information and recommendations in the 2019 AEPR will help APEC members to take advantages of the economic opportunities and tackle the challenges presented by the fast-changing digital economy over the coming years. As digitalization and new technologies transform the global economy, it will be critical to adopt a holistic and collaborative approach. This year's report aims to provide APEC members, fora and external partners with concrete ideas to promote sustainable digital economy development.

Robert Logie
Immediate Past Chair
APEC Economic Committee

James Ding
Chair
APEC Economic Committee

Francisco Moreno
Chair
APEC Finance Ministers' Process

TABLE OF CONTENTS

MAIN REPORT

| | |
|---|-----------|
| EXECUTIVE SUMMARY | VI |
| INTRODUCTION | 1 |
| 1 PART 1: DEFINITIONS, PRIORITIES AND MEASUREMENT OF THE DIGITAL ECONOMY | 2 |
| A. Background on the digital economy and scope of the report..... | 3 |
| Overview and definition of the digital economy | 3 |
| Opportunities in the digital economy | 6 |
| Challenges of the digital economy..... | 13 |
| Maximising opportunities and overcoming challenges: The twin role of measurement and structural reforms | 16 |
| B. Challenges in measuring the digital economy | 18 |
| Definition and measurement | 18 |
| Challenges beyond defining the digital economy | 20 |
| C. Overview of application of structural reforms to the digital economy and priorities for reforms | 24 |
| Core structural reforms | 24 |
| Supplementing core structural reforms | 25 |
| Optimising structural reforms | 25 |
| 2 PART 2: CORE STRUCTURAL REFORMS FOR DIGITAL ECONOMY DEVELOPMENT | 26 |
| A. Competition policy and law | 26 |
| B. Regulatory reform..... | 32 |
| C. Ease of doing business (EoDB) | 44 |
| D. Public sector governance | 46 |
| E. Non-mutually exclusive nature of activities | 51 |
| 3 PART 3: STRUCTURAL REFORMS, THE DIGITAL ECONOMY AND INCLUSION..... | 52 |
| A. Introduction..... | 52 |
| Definition and motivation for efforts to promote inclusion..... | 52 |
| Call for inclusive growth: The empirical evidence..... | 53 |
| The impact of the digital economy on inclusion..... | 55 |
| Enhancing inclusion in the digital economy: the EC's three approaches | 62 |
| B. Harnessing structural reforms to support inclusion | 63 |
| Human capital development | 63 |
| Social protection | 67 |
| Infrastructure..... | 68 |

| | | |
|----------|--|-----------|
| | Fiscal policy | 69 |
| C. | Address structural barriers through reforms and supporting policies | 71 |
| | Promote innovation and boost productivity of some sectors and firms | 71 |
| | Supportive business environment for MSMEs | 75 |
| | Enhancing gender equality..... | 78 |
| D. | Optimising structural reforms – developing holistic policy frameworks..... | 81 |
| | Enhance labour market efficiency..... | 81 |
| | Tackle the rural-urban divide..... | 82 |
| | Improve MSME participation | 82 |
| | Empower women economically..... | 82 |
| 4 | PART 4: SUMMARY OF KEY POINTS FROM INDIVIDUAL ECONOMY REPORTS AND MAJOR APEC INITIATIVES RELATED TO THE DIGITAL ECONOMY | 83 |
| A. | Highlights from Individual Economy Reports..... | 83 |
| | Barriers and challenges | 83 |
| | Policy gaps | 84 |
| | Best practices | 84 |
| | Action plans | 87 |
| | Inclusion..... | 87 |
| | Regional cooperation | 89 |
| B. | Major APEC initiatives on the digital economy | 89 |
| 5 | POLICY RECOMMENDATIONS..... | 94 |

ANNEXES TO MAIN REPORT

Annex A: Measuring the Digital Economy

Annex B: Individual Economy Reports

Annex C: Case Studies

LIST OF FIGURES

| | |
|---|----|
| Figure 1.1. Structure of chapter | 3 |
| Figure 1.2. Internet value chain: A framework for measuring value in the digital economy | 4 |
| Figure 1.3. OECD-WTO conceptual framework for digital trade | 5 |
| Figure 1.4. Internet users (million and percent of population), 1990–2017..... | 6 |
| Figure 1.5. Share of population making digital payments in rural and urban areas (percent), 2017 | 7 |
| Figure 1.6. Summary of selected OECD survey responses on measuring GDP in digitalised economy | 19 |
| Figure 2.1. APEC fixed broadband basket prices (in PPP\$)..... | 27 |
| Figure 2.2. The application and experimentation process for the FinTech Innovative Experimentation Mechanism..... | 40 |
| Figure 3.1: Growth of labour productivity in APEC, 2000-2017 | 54 |
| Figure 3.2. Adjusted labour share in APEC..... | 55 |
| Figure 3.3. Widening gap in multi-factor productivity growth..... | 61 |
| Figure 3.4. Skills needed in the modern economy | 65 |
| Figure 3.5: Labour force participation rate (%), aged 15+ for latest available year | 79 |

LIST OF TABLES

| | |
|--|----|
| Table 2.1. E-signature legal model in APEC economies | 43 |
|--|----|

LIST OF BOXES

| | |
|--|----|
| Box 1.1. Examples of firms with new business models in APEC | 8 |
| Box 2.1. Promoting competition and removing barriers to investment to boost connectivity: Lessons from OECD economies..... | 28 |
| Box 2.2: Increasing access and fostering competition in the Mexican telecommunication sector | 29 |
| Box 2.3. Monitoring changes in competitive dynamics..... | 31 |
| Box 2.4. Regulating Malaysia's home-sharing economy | 32 |
| Box 2.5. E-commerce development in Viet Nam | 34 |
| Box 2.6: Strengthening consumer protection in China through E-Commerce Law | 36 |
| Box 2.7. APEC Cross-Border Privacy Rules (CBPR) System | 37 |

| | |
|--|----|
| Box 2.8. Regulatory reforms in the financial sector of Mexico and the Philippines | 38 |
| Box 2.9. The FinTech Innovative Experimentation Mechanism in Chinese Taipei | 40 |
| Box 2.10. Regulatory sandboxes in the Russian Federation | 41 |
| Box 2.11. Chile’s financial sector reforms | 42 |
| Box 2.12. Russia’s public service portal | 46 |
| Box 2.13: Transformation of Indonesia’s social assistance disbursement..... | 48 |
| Box 2.14. Creating Open Government in Canada..... | 50 |
| Box 3.1. Uneven adoption and diffusion of digital technologies help explain the digital ‘productivity paradox’ | 60 |
| Box 3.2. Three Approaches – Key definitions..... | 63 |
| Box 3.3. Digital learning tools for adult and life-long learning..... | 66 |
| Box 3.4. Forming superclusters for innovation in Canada..... | 72 |
| Box 3.5. Russia’s SME Business Navigator | 76 |

EXECUTIVE SUMMARY

Opportunities and challenges in the digital economy

- APEC economies have different interests and priorities with regard to the digital economy. Due to its complex and multifaceted nature, it is challenging for APEC economies to agree on a single overarching definition of the digital economy. However, the present lack of consensus on a clear and specific definition should not prevent APEC from moving forward with work on the digital economy. Indeed, APEC fora are already devising workplans to address digital economy challenges, and developing strategies to measure various aspects of the digital economy, based on the APEC Internet and Digital Economy Roadmap.
- In terms of opportunities, digital technology and tools are enabling the development of many new business models that disrupt traditional practices. Besides creating entirely new businesses and industries, digital technology and tools have brought benefits to traditional firms and individuals alike. For example, e-commerce has created an additional channel for firms of all sizes to market their products. While data analytics is arguably not a new phenomenon, advances in ICT have lowered the price of broadband subscriptions in many economies, as well as the cost of collecting and using data on a large scale. Firms now have greater connectivity and access to new ways of handling and deriving insights from data, turning it into yet another determinant of a firm's competitiveness.
- Just as the digital economy provides numerous opportunities, it presents significant challenges for policymakers, businesses and individuals. While data drive innovation and provide more opportunities, some fear that the increasing dependence of businesses and economies on data can result in data protection issues with potentially massive damage to the economy and consumer trust. The digital economy has made intellectual property rights (IPR) protection more pertinent, but also more challenging.
- Universal, reliable and affordable access to information and communications technology (ICT) is essential to participate in the digital economy. Although more people can now access the internet and related technologies, there remain variation in access between and within economies. Furthermore, despite transactions being increasingly digitally-enabled, a significant proportion of products especially goods are yet to be digitally delivered. Access to reliable and resilient infrastructure such as roads are equally important to ICT, yet economies have often underinvested in them.
- The digital economy has also led to the creation of new kinds of employment but these jobs require individuals to have the right skills. While some digital economy jobs do not require advanced ICT skills and provide more flexibility, there is a risk that such employment is creating a precarious class of on-demand or independent workers.
- Maximising the opportunities of the digital economy while overcoming its challenges require economies to take critical steps both in terms of measurement and structural reforms.

Measuring the digital economy

- Statistics and indicators play an important role in evidence-based policymaking. Clear measurement frameworks, coupled with regularly updated and comparable data across economies and time can provide policymakers with a good overview of different areas relevant to the digital economy.

However, measurement of various aspects of the digital economy is still a work in progress for many reasons.

- Definition and measurement go hand-in-hand. Definition provides the scope of coverage and allows statisticians to come up with a corresponding measurement framework, but reaching consensus among different stakeholders is not an easy endeavour. Lack of an agreed definition leads to different measurement frameworks, and affects the comparability of statistics between economies and across years.
- Definition aside, there are various challenges related to the technicalities of measurement itself that further complicate the process of establishing a feasible measurement framework. These include the lack of congruence between the System of National Accounts (SNA) framework and emerging features of the digital economy, and correspondingly, inadequacies with existing measures such as gross domestic product (GDP); difficulties in measuring services; barriers related to the sharing of available data; and the varying capacity of economies at different stages of development to collect data.
- Although it is important to accurately measure digital and digitally-facilitated flows,¹ it is equally important to measure digital transformation because it allows policymakers to better understand how digitalisation is changing the economy and society as a whole and devise appropriate policy responses. On this front, gaps and challenges remain despite efforts by economies and various organisations in collecting and analysing indicators to monitor the digital transformation.
- The advent of the digital economy has brought with it new business models that have fundamentally changed the way that business is conducted and the products and services that are being traded. It is important that policies and regulations with implications for the digital economy are monitored.

Core structural reforms in the digital economy

- Broadly understood, structural reforms remove structural barriers to improving access to economic opportunity. Core structural reforms undertaken by the Economic Committee include those pertaining to competition policy and law, regulatory reform, ease of doing business and public sector governance. Each of these reforms can be applied to the digital economy opportunities and challenges.
- Competition policy is one of the most critical of the structural reform areas for the digital economy. For instance, in the telecommunications sector, which represents the backbone infrastructure for delivering digital economy products and services, increased competition could lead to reduced prices and improved regional coverage. Up-to-date competition policies could also facilitate new market entrants and the uptake of new business models, while helping to ensure that digital technologies and tools are not exploited to the detriment of competition.
- While technologies and business models are evolving rapidly, policies have had difficulty keeping up with the pace of change. Complicating the situation is the different rates at which governments from around the world have been responding to the digital economy as well as the distinct approaches they have taken on similar issues. This suggests that APEC economies may wish to redouble their regulatory reform efforts to minimise the burdens on digital participants to the extent

¹ For the purpose of the AEPR, 'digital and digitally-facilitated flows' includes, but are not limited to electronically-delivered goods or services, other types of data flows, and goods sold via e-commerce channels.

possible and increase international regulatory cooperation to ensure greater standardisation and alignment of digital economy policies.

- Efforts to promote ease of doing business are also important for businesses and entrepreneurs to reap the benefits of the digital economy. Despite laudable efforts by economies, more can be done to ensure that the business environment evolves together with the changing economy. Furthermore, although digital technology and tools have facilitated (i.e., digitally-enabled) transactions, a significant share of products are not digitally delivered. In fact, the digital economy has led to a boom in e-commerce and the consequent movement of small parcels across borders. While e-commerce is only one example, this shows that for the digital economy to operate efficiently, it is also important to address issues related to cross-border trade.
- Governments can play an important role in charting the direction of the digital economy by applying digital technology and tools to improve public sector governance in various areas. They can also use them to enhance policy design, experimentation, implementation, monitoring and evaluation. In addition to harnessing technology and tools to improve their own services, governments can act as an agent of change by encouraging their increased use among the private sector and society as a whole. However, even as governments increasingly employ a range of technologies and tools, it is important that policymakers do not underestimate the risks and become over-reliant on them.

Supplementing structural reforms

- While advancements in new technologies and business models have led to more opportunities, industrialised and developing APEC economies have seen a downward trend in welfare to labour over time (in terms of growth in labour productivity and share of labour compensation in GDP). This indicates that inequality is increasing in the region.
- The digital economy can have a range of impacts on inclusion, such as: (1) reduction in job and employment opportunities due to automation; (2) lack of skills for the new digital economy jobs among the population; (3) lack of access to infrastructure such as broadband internet to take advantage of the opportunities in the digital economy; (4) lack of technological diffusion to a larger number of firms; and (5) lack of access to social protection in the new gig/sharing economy jobs.
- Recognising that core structural reforms constitute only one aspect of structural-reform related work and should be complemented with other policies, the Economic Committee produced a document in 2018 proposing three approaches that economies may take to better harness structural reform to tackle complex challenges such as inclusive growth. This can entail: (1) making core structural reforms pro-inclusive; (2) undertaking structural reforms in specific areas to generate positive externalities such as human capital development, infrastructure and social security; and (3) ensuring that core structural reforms are aligned with other types of reforms and supporting policies.
- These approaches are applied in the seven areas that are at the intersection between the digital economy and inclusion, namely, human capital development; social protection; infrastructure; fiscal policy; innovation; micro, small and medium enterprises (MSMEs); and gender.
- In the area of human capital development, for example, economies are encouraged to: (1) apply holistic policy frameworks which align structural reforms with supporting policies such as training and other programmes for unemployed workers; (2) provide avenues for lifelong learning; (3) ensure education systems evolve with the needs of the digital economy; (4) complement classroom-based education with alternatives such as online courses; and (5) allow technical skills to be acquired through work-shadowing and apprenticeship programmes.

- In the area of social protection, economies can consider: (1) complementing traditional social programmes with universal social protection based on need rather than employment conditions and earnings; (2) expanding employment-related programmes to include other non-standard employment forms; and (3) providing a variety of protection to workers in the digital economy.

Optimising structural reforms

- Structural reforms need to be optimised to ensure their continued relevance. Prior to embarking on structural reform efforts, it is critical for economies to establish a baseline and identify their plans moving forward. Economies may wish to conduct a stocktake of those of their policies that are relevant to the digital economy to better understand the current gaps and challenges.
- It is important for economies to recognise that implementing structural reforms is a process and not a one-off activity. Therefore, economies should ensure that policies and regulations are regularly reviewed and updated, particularly in light of the ever-shifting challenges posed by the digital economy.
- When implementing policies, policymakers need to ensure that they are well-coordinated, coherent and complementary to one another. This necessitates that policymakers reach across traditional policy silos as well as across different ministries and levels of government to develop an integrated, whole-of-government approach to policymaking.
- Although policies may be well-intended and targeted, achieving the desired outcome is not a given and could be affected by issues such as delivery mechanisms and resource availability. Communication is key to ensuring that all stakeholders understand how proposed policies and regulations will affect them and that they can access relevant information. Economies would also need to build monitoring and evaluation activities into the policymaking process.

Policy recommendations

- Based on the report's analysis and bearing in mind their differing circumstances and levels of development, APEC economies can consider to:
 - 1. Progress toward agreed definition(s) and clear measurement frameworks for the digital economy.** Definitions delineate the scope of coverage and allow statisticians to develop a corresponding measurement framework. Having baseline measures and data that can be tracked will also allow policymakers to determine if policy objectives have been met or if adjustments should be made.
 - 2. Develop and agree on policy-relevant indicators.** Besides measuring digital flows, it is important to monitor the pace of digital transformation. This will allow policymakers to better understand how digitalisation is changing the economy and to devise appropriate policy responses. It is also important to monitor policies and regulations that have implications on the digital economy.
 - 3. Get core structural reforms right with respect to the digital economy.** Core structural reforms in areas such as competition policy and law; regulatory reform; ease of doing business; and public sector governance can be applied to the digital economy's opportunities and challenges.

- 4. Supplement core structural reforms.** The digital economy can impact inclusion across different areas, including destroying jobs and disrupting entire sectors of the economy. To promote inclusive growth, this report recommends two approaches from the Economic Committee's document on 'Structural Reforms for Inclusive Growth: Three Approaches', namely: (1) make structural reforms pro-inclusive by targeting areas such as education and skills, infrastructure and social security (approach II); and (2) implement supporting policies alongside core structural reforms (approach III).
- 5. Adopt a holistic approach to structural reforms for the digital economy.** When implementing structural reforms and supporting policies, policymakers need to ensure they are well-coordinated, coherent and that they complement one another. For the digital economy to work seamlessly, it is important for economies to approach policy issues and objectives in a holistic rather than in a piecemeal manner. There is thus potential for greater cooperation on digital economy issues between APEC fora and the APEC Business Advisory Council.
- 6. Monitor trends and developments in the digital economy, including policy reforms, and adapt accordingly.** The digital economy is relatively new and in constant flux. Structural reforms and supporting policies that work today may no longer be appropriate in one to two years. Therefore, they should be continuously reviewed along with the trends and developments in the digital economy.
- 7. Leverage and contribute to regional cooperation.** Regional organisations such as APEC and their component fora can play an important role in facilitating discussion and knowledge sharing on best practices and innovative regulatory approaches to the emerging technologies and business models. APEC is also well-placed to serve as a platform for identifying opportunities presented by the digital economy and advance progress on particular initiatives for cross-border collaboration. To avoid duplication and reinventing the wheel, APEC's regional cooperation efforts should refer to relevant digital economy work of international organisations.

INTRODUCTION

The Asia Pacific Economic Cooperation (APEC) forum recognised the importance of the digital economy including e-commerce in linking its member economies as early as two decades ago. In the 1998 Declaration, APEC Leaders commended the APEC Blueprint for Action on Electronic Commerce which sets out principles for the promotion and development of e-commerce in the region. In line with the increasing importance of the digital economy, interest in regional and global cooperation in this area remains strong. In the 2017 Declaration, APEC Leaders indicated that they would work together to realise the potential of the internet and the digital economy, and welcomed the adoption of the APEC Internet and Digital Economy Roadmap (AIDER) and the APEC Cross-Border E-commerce Facilitation Framework. In 2018, under the Chairmanship of Papua New Guinea, APEC Leaders welcomed the establishment of the Digital Economy Steering Group (DESG), a new governance mechanism to monitor and report progress made in the implementation of focus areas identified in AIDER to Senior Officials. Under Chile's Chairmanship this year, the digital society is one of the main priorities of APEC 2019.

The 2019 APEC Economic Policy Report (AEPR) on Structural Reform and the Digital Economy aims to contribute to this work. It includes the following parts:

- **Part 1** provides an overview of the digital economy, including its opportunities and challenges. It also presents a summary of the issues in measuring the digital economy and provides a brief overview of how structural reforms could enable economies to maximise opportunities in this emerging and dynamic area/field while overcoming the challenges of the digital economy.
- **Part 2** presents a more detailed discussion of structural reforms and the digital economy, with a focus on the role of core structural reforms (i.e., competition policy, regulatory reform, public sector governance and ease of doing business).
- **Part 3** presents the role of structural reforms and the importance of holistic policy approaches in ensuring inclusion in the digital economy. It discusses the need to ensure that core structural reforms are pro-inclusive and extend beyond core structural reforms into areas such as human capital development, infrastructure and social protection.
- **Part 4** provides a summary of key points from Individual Economy Report (IER) questionnaires and a stocktake of major APEC initiatives on the digital economy.
- **Annex A** provides a more detailed write-up on the challenges in measuring the digital economy.
- **Annex B** presents the Individual Economy Report (IER) questionnaires completed by APEC economies.
- **Annex C** presents case studies provided by APEC economies.

This 2019 AEPR is the second joint report by the APEC Economic Committee (EC) and the Finance Ministers' Process (FMP) following the 2018 AEPR on Structural Reform and Infrastructure. It represents the continued collaboration between the two fora on similar priorities. This report is aligned with a priority area of the FMP, namely boosting integration in financial markets through the digital economy. Meanwhile, for the EC, this initiative supports APEC's structural reform agenda. Overall, the report aims to contribute to some of the key focus areas of the AIDER, and lays the foundation for APEC's future digital economy work.

PART 1: DEFINITIONS, PRIORITIES AND MEASUREMENT OF THE DIGITAL ECONOMY

The digital and internet economy and new technologies, tools and business models made possible by digitalisation² have disrupted old models and opened up new opportunities for innovation and growth such as:

- The digitisation of books, music, and movies that facilitates the fast spread of content in the form of downloads and streaming.
- Cloud computing, which enables flexible, on-demand access to a range of computing resources.
- The internet of things (IoT),³ which involves sensors and communications links embedded in many devices and objects that greatly facilitate maintenance and repair services.
- Artificial intelligence (AI), which can be deployed to help doctors to detect, track and treat diseases.
- Blockchain, which can be used to enhance transparency, trust and security in the provision of financial services.
- Online marketplaces that provide both micro, small and medium-sized enterprises (MSMEs) and established companies wider reach for their products.
- Social media networks that have revolutionised advertising and marketing.

This digital transformation has had a profound effect on the global economy. In early 2019, Forbes estimated that at least 18 of the world's top 100 largest public companies were high technology or digital economy firms.⁴ It is all the more remarkable that these changes have occurred in the last few decades and show no sign of slowing down.

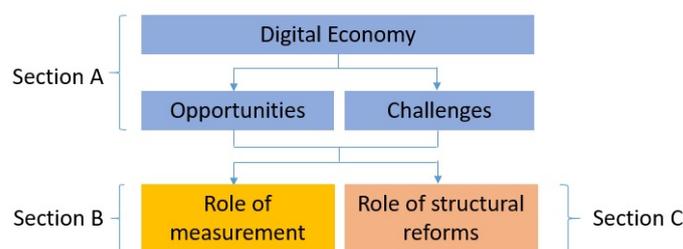
Part 1 of the 2019 APEC Economic Policy Report (AEPR) provides a bird's eye view of the digital economy (see Figure 1.1). Section A has an overview and discusses opportunities and challenges related to the digital economy. Section B discusses measurement of the digital economy, and Section C presents a brief overview of how structural reforms can be applied to the digital economy's challenges. It also describes a holistic approach to implementing structural reforms that seeks to capitalise on the opportunities of the digital economy while addressing and mitigating social and economic challenges. As a regional cooperation forum whose members make up 38 percent of the global population and 60 percent of the global gross domestic product (GDP),⁵ APEC is in a good position to lead on work in these areas, such as through coordinating digital economy policies, sharing best practices and engaging in capacity-building activities.

² According to the Organisation for Economic Co-operation and Development (OECD), digital transformation is a combined effect of digitisation and digitalisation. Digitisation is the 'conversion of analogue data and processes into a machine-readable format'. Examples include tabulating physical copies of data into spreadsheets and converting content like music, books, and games into digital format. Digitalisation refers to the 'use of digital technologies and data as well as interconnection that results in new or changes to existing activities'. These include, but are not limited to, e-commerce via the internet, sharing data and information via web services, and automation of processes (see OECD, *Going Digital: Shaping Policies, Improving Lives* (Paris: OECD, 2019), <https://doi.org/10.1787/978OECD.9264312012-en>). Despite the attempt to differentiate the two terms, they continue to be used interchangeably in the literature. Accordingly, the two terms will be used interchangeably in this report.

³ IoT is the expansion of internet connectivity to devices, hence allowing them to communicate and interact with each other, and also to be remotely monitored and controlled.

⁴ '2019 Global 2000: The World's Largest Public Companies', *Forbes*, accessed 30 May 2019, <https://www.forbes.com/global2000/list/>.

⁵ APEC Policy Support Unit, 'APEC in Charts 2018' (Singapore: APEC, November 2018), <https://www.apec.org/Publications/2018/11/APEC-in-Charts-2018>.

Figure 1.1. Structure of chapter

Source: APEC Policy Support Unit.

A. Background on the digital economy and scope of the report

Overview and definition of the digital economy

Definitions of the digital economy vary widely. Tapscott, credited with coining the term ‘digital economy’, described it broadly as a new economy wherein ‘information in all its forms becomes digital – reduced to bits stored in computers and racing at the speed of light across networks’.⁶ Massive amounts of information previously stored in physical form (e.g., cash, cheques, invoices, photographs, and maps) could now be packaged into byte-sized digital ones and zeroes. While digitisation is already becoming ubiquitous, the current state of the economy is arguably still far from Tapscott’s ideal definition – not everything is digital. Rather, in the current economy, old and new, physical and digital complement one another. As such, it might be more useful to analyse the digital economy as a dynamic sector of the mainstream economy with implications for other sectors of the economy such as manufacturing and financial sector.⁷

To provide a structured accounting framework for the digital economy, Mesenbourg proposed that the digital economy be defined by three principal components, namely: (1) electronic business (e-business) infrastructure; (2) e-business processes; and (3) electronic commerce (e-commerce) transactions.⁸ E-business infrastructure refers to the hardware, software, information and communications technology (ICT) services, and human capital that power and maintain the digital economy, including computers, software (such as operating systems), support services, and human programmers. E-business processes refer to the processes business organisations conduct over computer-mediated networks, such as online procurement, electronic payments, teleconferencing, and management systems. Lastly, e-commerce transactions capture the value of goods and services transacted over computer-mediated networks, such as the purchase of a book or CD over the internet.

A.T. Kearney, on the other hand, applied a value chain perspective, breaking down the internet ecosystem into five main clusters (see Figure 1.2).⁹ The first cluster covers content rights, which include

⁶ Don Tapscott, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence* (New York: McGraw-Hill, 1996), quoted in: International Labour Organization, ‘Preparing the Future of Work We Want: The Digital Economy and Labour Skills and Competences’ (19th American Regional Meeting, Panama, 2–5 October 2018), https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_644863.pdf.

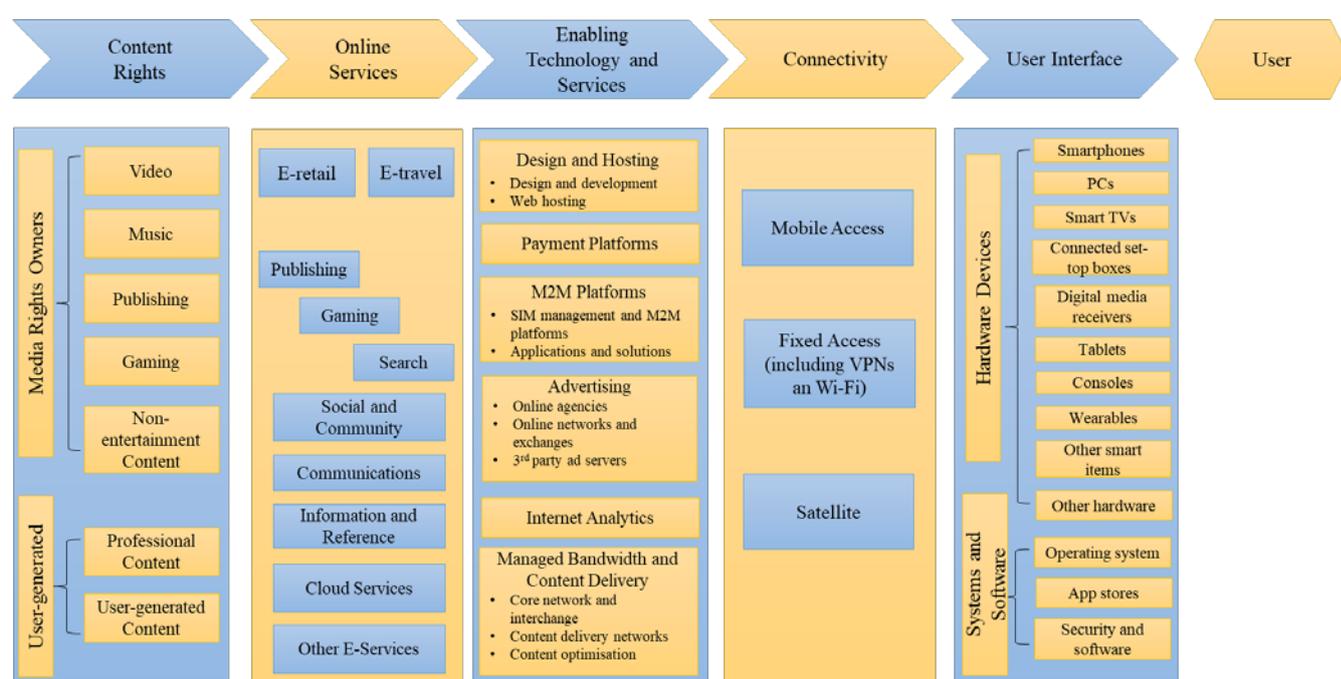
⁷ Daniel Newman, ‘Top 7 Digital Transformation Trends in Financial Services for 2019’, *Forbes*, <https://www.forbes.com/sites/danielnewman/2019/01/16/top-7-digital-transformation-trends-in-financial-services-for-2019/#383eac015310>; Stephen Ezell, ‘Why Manufacturing Digitalization Matters and How Countries Are Supporting It’ (Information Technology and Innovation Foundation, April 2018), <http://www2.itif.org/2018-manufacturing-digitalization.pdf>

⁸ Thomas L. Mesenbourg, ‘Measuring the Digital Economy’ (Suitland, MD: US Bureau of the Census, 2001), <https://www.census.gov/content/dam/Census/library/working-papers/2001/econ/umdigital.pdf>.

⁹ A.T. Kearney, ‘Internet Value Chain Economics: Gaining a Deeper Understanding of the Internet Economy’ (London: A.T. Kearney, May 2010), <https://www.atkearney.com/documents/10192/178350/internet-value-chain-economics.pdf/bd910b2c-bdae-4d6f-8903-f5edad6784eb>.

copyright and media rights to movies, music and books as well as rights associated with content generated by users in digitally-enabled platforms. The next cluster pertains to online services such as e-commerce providers, including e-retail services (e.g., Amazon, MercadoLibre and Rakuten) and e-travel services (e.g., Expedia and Agoda); on-demand content like movies, music, books, and games (e.g., Netflix, Line Music, Storytel and Steam); and search engines (e.g., Google and Baidu). The third cluster includes those providing enabling technology and services like web-hosting and e-retail management (e.g., Alibaba Cloud and Shopify); billing and payment platforms (e.g., Mastercard, Samsung Pay and Yandex.Money); and advertising services. The fourth cluster comprises those providing connectivity infrastructure such as ICT and network providers (e.g., Globe, Telus and Viettel); and services associated with ICT facilities (e.g., satellites and signal towers). The final cluster consists of user interfaces such as the devices (e.g., Asus, Huawei and Samsung) and applications (e.g., App Store and Nintendo eShop) that consumers use to access the internet and associated services.

Figure 1.2. Internet value chain: A framework for measuring value in the digital economy



Source: Adapted from A.T. Kearney, 'Internet Value Chain Economics: Gaining a Deeper Understanding of the Internet Economy' (London: A.T. Kearney, May 2010), <https://www.atkearney.com/documents/10192/178350/internet-value-chain-economics.pdf/bd910b2c-bdae-4d6f-8903-f5edad6784eb>.

Many international organisations such as the International Monetary Fund (IMF), the World Bank, the Organisation for Economic Cooperation and Development (OECD), the World Trade Organization (WTO), the World Economic Forum (WEF) and the G20 have ongoing digital-economy work programmes. The IMF notes that the digital economy could be defined both narrowly and broadly. The former refers to 'online platforms, and activities that owe their existence to such platforms', and the latter covers 'all activities that use digitized data', which arguably could refer to the entire economy.¹⁰ To the World Bank, the digital economy represents a new paradigm of accelerated economic development based on real-time data exchange. It notes the prominent role of online platforms and data in such an economy.¹¹ The Osaka Declaration on Digital Economy, adopted in June 2019 during the

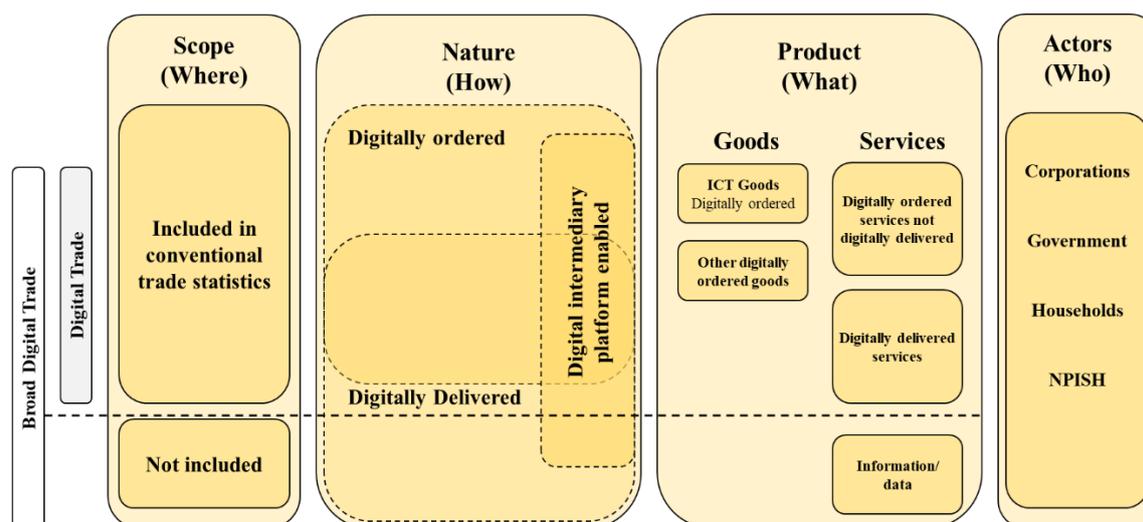
¹⁰ Marshall Reinsdorf and Gabriel Quirós, 'Measuring the Digital Economy' (Washington, DC: IMF, 28 February 2018), <https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/04/03/022818-measuring-the-digital-economy>.

¹¹ World Bank, 'Digital Economy Concept, Trends and Visions: Towards a Future-Proof Strategy' (discussion paper presented at *Developing the Digital Economy in Russia*, Moscow, Russia, 20 December 2016), <http://pubdocs.worldbank.org/en/513361482271099284/Digital-Economy-Russia-Discussion-paper-2016-12-20-eng.pdf>.

G20 Osaka Summit, affirmed the importance of promoting domestic and international policy discussions for harnessing the full potential of data and the digital economy to foster innovation. This will allow economies to keep pace with the fast-growing digital economy and maximise the benefits of digitalisation and emerging technologies.

The digital economy can also be seen through the lens of ‘digital trade’. In March 2019, the OECD and WTO convened a joint working group on international trade in goods and services statistics to formalise a conceptual framework for digital trade (see Figure 1.3). It defines digital trade as ‘all trade that is digitally ordered and/or digitally delivered’ and depicts the different elements of digital trade by demonstrating the nature of the transaction (‘how’), the product (‘what’) and the parties (‘who’) (e.g., producers and users).¹² More importantly, it lists data and information as a key and distinct product traded in the digital economy. It also categorises three main non-exclusive modes of transaction in the digital economy – digitally ordered, digitally delivered, and digital intermediary platform enabled. Digitally ordered transactions cover the sale or purchase of goods and services conducted over computer networks. For example, purchases of books via the publishers’ website would be categorised as digitally ordered transactions. Digitally delivered transactions would include services and data flows delivered digitally as downloads for consumers, such as to e-books, music and software. Finally, digital intermediated transactions are those facilitated by intermediaries which include online e-commerce platforms (but without the platforms taking economic ownership of the goods or services being sold).

Figure 1.3. OECD-WTO conceptual framework for digital trade



NPISH=non-profit institutions serving households

Source: OECD and WTO, ‘OECD-WTO Handbook on Measuring Digital Trade’, (SDD/CSSP/WPTGS(2019)4, Paris: OECD, 2019),

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPTGS\(2019\)4&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPTGS(2019)4&docLanguage=En).

Despite substantial progress, we are in the early stages of conceptualising the digital economy. First, the digital economy is relatively new and in constant flux. Second, as technology and online tools/platforms play a greater role in our daily lives and the economy as a whole, it becomes more difficult to distinguish between the digital and non-digital economy. For example, if an individual purchases a T-shirt from a physical shop after watching an advertisement on YouTube, how should this transaction be categorised? What if someone sees an item at an online shop but then decides to purchase it from the same company at a shopping centre down the road? One group of people will contend that it should be part of the non-digital economy since it is neither digitally ordered nor digitally delivered,

¹² OECD and World Trade Organization (WTO), ‘OECD-WTO Handbook on Measuring Digital Trade’ (SDD/CSSP/WPTGS(2019)4, Paris: OECD, 2019),

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPTGS\(2019\)4&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPTGS(2019)4&docLanguage=En).

while another group will argue that it should be part of the digital economy since digital content (i.e., the advertisement and the items listed in the online shop) played a role in the purchase.

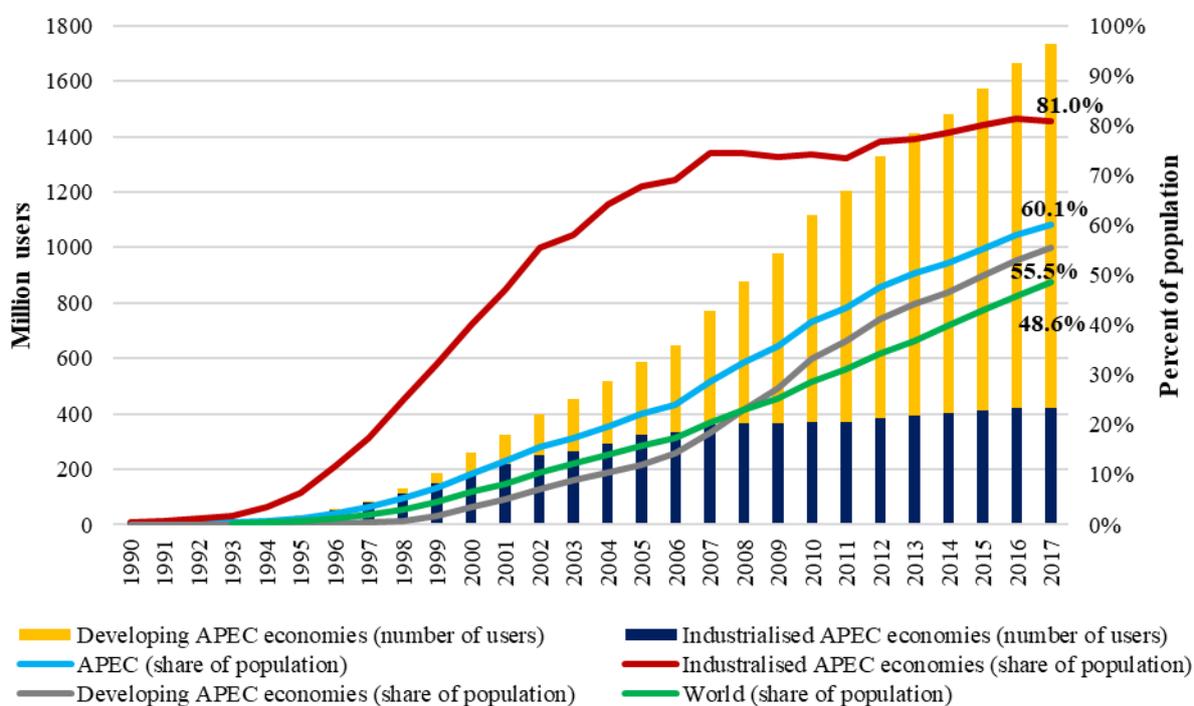
In addition to disagreements on the precise definition and scope of the digital economy, there are technical issues that make it difficult to accurately measure the digital economy under most definitions and scopes, including the narrow ones. These technical issues (to be discussed in more detail in section B) include the extent to which the current production frontier is capturing various facets of the digital economy (e.g., valuation of data and ‘free’ services), the types of statistics collected and the level of aggregation at which statistics are available.

As APEC economies have different interests and priorities with regard to the digital economy and due to its complex and multifaceted nature, it is challenging for APEC economies to agree on a single overarching definition of the digital economy. That said, APEC fora are already devising workplans to address digital economy challenges and developing strategies to measure various aspects of the digital economy, based on the AIDER. The report aims to contribute to APEC’s efforts in that direction.

Opportunities in the digital economy

The present lack of consensus on a clear/specific definition should not prevent APEC from moving forward with work on the digital economy, which is now an important part of the broader economy of the Asia-Pacific region. As seen in Figure 1.4, access to the internet, the gateway to the digital economy, is growing, with the number of internet users in APEC having increased significantly between 1990 and 2017 (from approximately 2.2 million to 1.7 billion). In 2017, 60.1 percent of APEC’s population had internet access, compared to 0.1 percent in 1990. In contrast, the share of world’s population having internet access in 2017 is relatively lower (48.6 percent).

Figure 1.4. Internet users (million and percent of population), 1990–2017

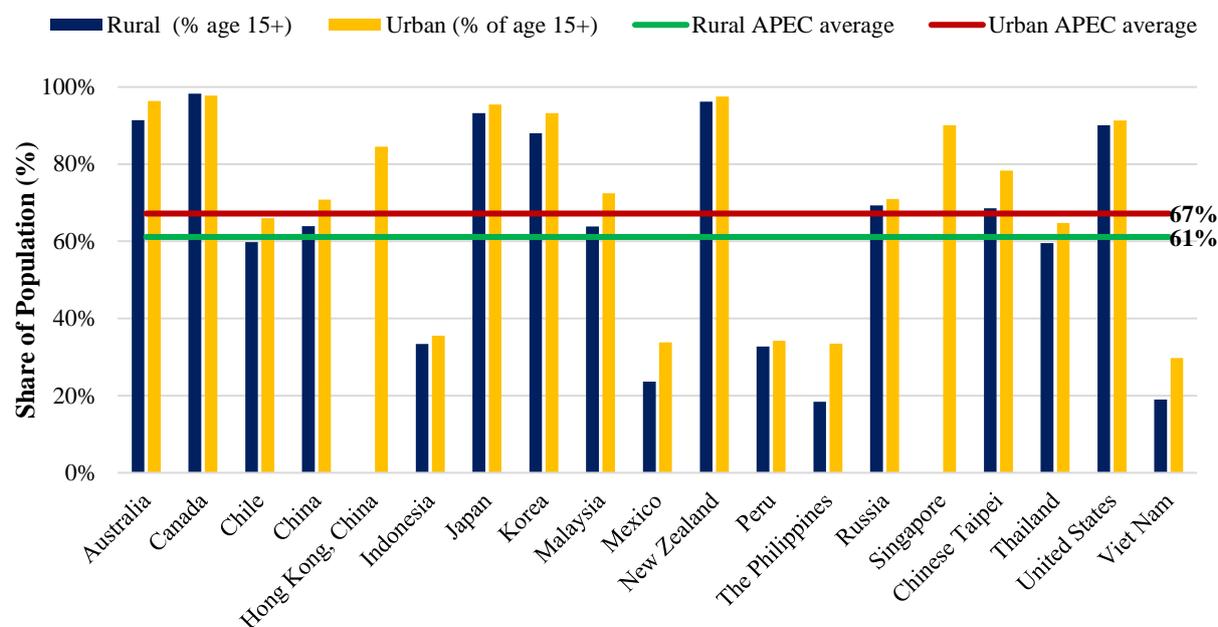


Note: Data are based on surveys generally carried out by statistical offices or estimated based on imputations models which take into account variables such as the number of fixed and mobile-broadband subscriptions and gross national income (GNI) per capita.

Source: International Telecommunication Union; World Bank, World Development Indicators; APEC Policy Support Unit calculations

In 2017, an average of 67 percent of the urban and 61 percent of the rural population in APEC had the capacity to make or receive digital payments, a key enabler of e-commerce and the internationalisation of MSMEs (Figure 1.5). Growing internet penetration and the increasing adoption of digital payment services are just two examples of the growing impact of the digital revolution in the APEC region.

Figure 1.5. Share of population making digital payments in rural and urban areas (percent), 2017



Note: Data for Brunei Darussalam and Papua New Guinea were unavailable. There was no rural data for Singapore and Hong Kong, China since official sources have reported no rural population.

Source: APEC Policy Support Unit, 'APEC in Charts 2018' (Singapore: APEC, 2018).

1. New business models

Digital technologies and tools enable the development of many new business models that disrupt traditional practices. In this section we will describe three models. The **first** model is based on the substitution of existing products or services, enabled by digitalisation. Until recently, books, magazines and maps were only available in physical form. However, the ability to digitally deliver them means that publishers technically do not have to print physical copies anymore, hence saving on costs related to printing and storage among others. In return, they are able to sell written/digital products to readers at a fraction of the cost of physical copies, hence potentially increasing demand. In fact, some products such as maps are no longer circulated in the form of booklets, whether physical or digital. Consumers now use applications such as Google Maps and Waze which are updated regularly (and in some cases, in real time) to find directions.

The same can be said for movies, music and software. While they were previously stored in physical media such as cassettes, CDs and DVDs, firms can now digitally deliver them, rendering many physical storage devices obsolete. Indeed, new firms such as AnimeLab, Netflix, Line Music and Spotify offer subscribers access to licensed content without the need to purchase ownership rights. Google is investing heavily in Stadia (see Box 1.1.), a video game platform that uses cloud computing technology

and is still in development.¹³ Harnessing these new models, customers can access specific songs or games without buying them. In the case of software, customers can receive regular updates and remote maintenance services as necessary.

A **second** model involves digital services that by-pass traditional channels and reduce costs for end-users. For example, although funds transfer used to be within the purview of traditional financial institutions, many financial technology (commonly shortened to fintech) firms have emerged to offer such services at a fraction of the cost due to their lower overhead expenses. This includes firms that provide crowd-funding services and offer borrowers an alternative to bank financing such as Kickstarter and RocketHub. Likewise, one can now purchase insurance and airline tickets directly instead of going through insurance agents and travel agencies. FWD and DirectAsia are examples of direct insurance providers, while many airlines now allow travellers to buy customised tickets directly from platforms such as Expedia or Traveloka.

Firms that leverage new technologies such as cloud computing represent a **third** new digitally-enabled business model. Instead of buying and maintaining their own servers, which may be costly, businesses can subscribe to cloud services provided by firms such as Alibaba Cloud, Google Cloud, Amazon Web Services and Microsoft Azure. In addition to reducing fixed costs, this model gives firms the flexibility of adjusting their subscription based on their needs. They can also benefit from features that provide protection against hackers and cyberattacks, and enterprise solutions offered by major cloud services providers, including database management, data analytics, web hosting and various human resources applications. While some of these services would have been prohibitive for MSMEs previously, they have become available for a reasonable cost under this model. Box 1.1. provides more detailed examples of firms employing these new business models.

Box 1.1. Examples of firms with new business models in APEC

AnimeLab (Australia and New Zealand)

Business model: Goods and service substitution

AnimeLab is a video on demand service launched in 2014 in Australia and New Zealand. Like Netflix and Spotify, AnimeLab provides its clients access to a wide range of media content via streaming. Instead of requiring clients to purchase ownership rights to personal copies of video products (in the form of CDs, DVDs and digital files), AnimeLab allows its clients to stream video media at their own convenience, provided that they have access to the internet. While AnimeLab does not have some services already offered by their competitors such as offline viewing, it distinguishes itself by partnering with Japanese production companies to offer simultaneous broadcasts (simulcasts) of premieres, and exclusive content. Furthermore, AnimeLab provides differentiated subscriptions to diversify its revenue streams: free users can have access to video products, albeit with lower picture and audio quality as well as commercial advertisements, while premium users can access high-definition streams with no advertisements. As of 2018, AnimeLab has reached 1 million subscribers, and is looking to expand overseas.

TNG Wallet (Hong Kong, China)

Business model: Bypassing traditional platforms

In traditional money transfers, clients would typically need to go to a registered remittance agent, fill in a lot of paperwork, and pay substantial fees to process the transfer. While remittances are ideally deposited to bank accounts, access to banking is limited for some communities in developing economies. As such, transferred money would need to be collected at registered brokers, who often charge costly service fees for the transfer. TNG Wallet, launched in 2015, is a Fintech startup in Hong Kong, China. It aims to streamline the remittance process by leveraging technology to cut down

¹³ Mark Knapp, Gerald Lynch and Vic Hood, 'Stadia: Everything You Need to Know about Google's Game-Streaming Service', *TechRadar*, 28 June 2019, <https://www.techradar.com/news/stadia-everything-you-need-to-know-about-googles-game-streaming-service>.

on the number of intermediaries involved in money transfers. Its global remittance service covers over a thousand banks and financial institutions in Hong Kong, China and 16 other economies including Indonesia, the Philippines and Viet Nam. Users can buy 16 different foreign currencies at real-time, competitive rates on the app and the transaction time for a remittance can take as short as 15 minutes. Users are also able to pick up the cash at a chosen outlet in the economies covered by the service. Besides global remittance services, TNG wallet provides other financial services such as electronic payments, global cash withdrawal and settlement as well as wealth management.

Google Stadia (United States)

Business model: Digitally-enabled businesses

First tested in October 2018, Google Stadia is a cloud gaming service scheduled for launch in November 2019. As computational power improved, so had the ability of game developers to create more visually appealing and realistic games; and more powerful machines had been needed to run those games. Thus, for the past 30 years, entertainment companies such as Sony, Nintendo and Microsoft had developed ever more powerful gaming consoles (PS1 to PS4, Gamecube to Switch, Xbox to Xbox One). Consumers first purchase these gaming consoles, and then purchase the games (often stored in a proprietary disk or digital format) to enjoy the product. Google is challenging this model with Stadia. Unlike traditional streaming services, Stadia does not provide a subscription to video games; rather, Stadia provides a subscription to a cloud computing service, which allows subscribers to harness the computational power of a cloud computer and use it as a cloud gaming console. Subscribers to the service still need to purchase individual games to support the game developers. Nonetheless, this model makes the video game market more accessible to consumers as the fixed cost of a gaming console is substantially reduced, allowing them to purchase more games. While Stadia is still in development, it is likely to revolutionise the gaming industry.

Sources:

- AnimeLab, 'Watch Anime Online', accessed 5 July 2019, <https://www.animelab.com/home>.
- Callum May, 'What on Earth is a Simulcast?', blog, AnimeLab, 4 August 2015, <https://www.animelab.com/blog/what-on-earth-is-a-simulcast/>.
- MyAnimeList (@myanimelist), 'In Celebration of @AnimeLab's Recent Achievement of 1 Million Subscribers, a Lucky Fan Won a Lifetime Subscription to the Australian Anime Streaming Service #MadFest... Https://T.Co/C3rP9PEgYy', Twitter, 14 September 2018, <https://twitter.com/i/web/status/1040771593968840705>.
- TNG Wallet, 'Global Money Transfer', accessed 13 September 2019, <https://www.tngwallet.hk/en/global-transfer>.
- Kevin Webb, 'Google's New Gaming Platform, Stadia, Launches in November', *Business Insider US*, 6 June 2019, <https://www.businessinsider.sg/google-stadia-games-and-features-announced-2019-3/?r=US&IR=T>.
- Timothy Derdenger, 'Technological Tying and the Intensity of Price Competition: An Empirical Analysis of the Video Game Industry', *Quantitative Marketing and Economics* 12, no. 2 (June 2014): 127–65, <https://doi.org/10.1007/s11129-014-9143-9>.

2. *Wider opportunities at lower costs*

Besides creating entirely new businesses and industries, digital technologies and tools have brought benefits to traditional firms and individuals. This section describes some of these opportunities. E-commerce, for example, has created an additional channel for firms of all sizes to market their products. A study by the eBay Public Policy Lab found that almost all of eBay's registered online sellers in selected APEC economies are able to export globally, compared to a relatively small percentage of MSMEs using offline channels.¹⁴ Another study noted that firms are able to reach an average of 30

¹⁴ eBay Public Policy Lab, 'Small Online Business Growth Report: Towards an Inclusive Global Economy' (eBay, January 2016), https://www.ebaymainstreet.com/sites/default/files/ebay_global-report_2016-4_0.pdf.

different economies using e-commerce platforms, and that MSMEs using e-commerce can sustain exports for a longer period of time.¹⁵

Sharing/gig economy platforms have created new opportunities for businesses and individuals. For example, food delivery platforms like GrabFood and Deliveroo allow restaurants and food stalls to take advantage of an additional channel (i.e., demand for delivered food) without substantial investment in delivery services. The rise of the sharing/gig economy has also led to the creation of jobs that are more flexible, catering to individuals who have to balance a job with other responsibilities. Importantly, there are sharing/gig economy platforms that allow individuals to find jobs at minimal search costs, much like job search platforms/portals examples being FastJobs and Upwork.

Additionally, digital technologies and tools offer lower fixed costs and near zero marginal costs for new business entrants. For instance, a number of open-source programs can provide firms with digital services at a lower capital cost. Often, all that is required is a personal computer and an internet connection to benefit from the digital economy's business opportunities. LibreOffice, for one, provides a suite of office applications for free compared to subscription rates of up to USD100 per annum for standard suites. Gmail and Yahoo! Mail provide free communication platforms to reach a global audience. Skype and Viber enable teleconferencing calls. Facebook, Twitter, Baidu, and Vk.com offer free virtual publicity pages for one's venture, while Carousell, MercadoLibre, and Wix.com enable digital entrepreneurs to create their own listings and websites for their business ventures. In addition, cloud computing allows companies and individuals with limited resources to use online services to store and process data. For example, IBM launched an integrated quantum computing system for commercial use. Subscribers to the service are able to harness the computational power of quantum computers, allowing data to be processed much faster than average computers. Such services can significantly lower the barriers to entry for firms wishing to employ data analytics to help them improve their businesses.¹⁶

Furthermore, digital technologies and tools have facilitated the completion of routine tasks. For instance, real-time inventory tracking provides businesses with a more complete picture of current supplies and stocks. E-invoicing tools allow firms to issue invoices more quickly than hand-written ones. Some of these tools can also be directly linked to government portals for taxation and other purposes. Regulatory technology (regtech) tools enable firms (particularly those in the financial industry) to ensure adherence to government regulations through means such as automatically submitting regular business activity reports or flagging potential issues as soon as pre-programmed safeguards and rules are violated.

Finally, government agencies are increasingly leveraging digital technologies and tools to improve public service provision. For example, e-government portals can facilitate applications for licences and other documents; tax filing; and procurement activities. Additionally, digital technologies and tools can be employed to deliver key services such as education and health. Governments can further utilise supervisory technology (suptech) tools to improve their oversight. Other potential uses include implementing electronic/digital identification (eID) to provide more targeted support to specific groups, undertaking stakeholder consultations and enhancing the dissemination of information.

¹⁵ Hanne Melin Olbe, 'Bridging Distance for Development: Regulatory Cooperation Applied to Consumer Rights, Parcel Delivery and Sales Tax' (Geneva: International Centre for Trade and Sustainable Development, 2017), <http://e15initiative.org/publications/bridging-distance-for-development-regulatory-cooperation-applied-to-consumer-rights-parcel-delivery-and-sales-tax/>.

¹⁶ 'IBM Unveils World's First Integrated Quantum Computing System for Commercial Use', IBM News Room, 4 June 2019, <https://newsroom.ibm.com/2019-01-08-IBM-Unveils-Worlds-First-Integrated-Quantum-Computing-System-for-Commercial-Use>.

3. Data, businesses and society

Data is critical to the digital economy, with some analysts even referring to data as the ‘oil’ or ‘fuel’ of this new economy.¹⁷ Data analytics is arguably not a new phenomenon.¹⁸ However, advances in ICT have lowered the price of broadband subscriptions in many economies, as well as the cost of collecting and using data on a large scale. Other technologies and tools that are gaining widespread adoption include cloud services, IoT and AI. Firms now have greater connectivity and access to new ways of handling and deriving insights from data, turning this into yet another determinant of a firm’s competitiveness. While a full exploration of the topic is beyond the scope of this paper, examples of how data analytics is transforming business and society are provided in this section.

First, data analytics allows businesses to target services based on the needs and preferences of customers. Take the example of Spotify, a music streaming platform. The company can improve customer satisfaction by creating customised content such as playlists through analysis of an individual’s preferences including frequently played albums, artists and musical genres. Satisfied customers are likely to renew their subscription to Spotify and recommend it to their friends, increasing the overall value of this platform. Other businesses and services such as social media networks, e-mail providers, and businesses operating in multi-sided markets (e.g., e-commerce platforms) can similarly use data analytics to improve products and services. Cisco estimates that between 2017 and 2022 the number of networked devices will increase by about 10.5 billion, with the number of networked devices per capita increasing from 2.4 to 3.6 over the same period.¹⁹ With more people and devices connected to the internet, the importance of data for businesses will increase dramatically since the value of data increases exponentially with its volume.

Second, data analytics can improve the functioning of global value chains. Various types of data may have to be exchanged internally (e.g., between research and development (R&D) centres, production facilities and headquarters) as well as externally (with parties such as suppliers, logistics providers and customers) for different reasons. For example, relevant data allow business headquarters to plan and coordinate production across facilities. Technical and production data enable the provision of remote technical assistance and guidance by teams in different locations. Live monitoring of machinery allows firms to schedule predictive maintenance and minimise downtime.

Third, the application of data analytics can improve productivity in various sectors of the economy, including retail, agriculture and construction. For example, new technologies, combined with more intensive data use, can improve sustainable productivity in agriculture; enhance trade in agricultural products through improved traceability and trade facilitation; and enable the design and implementation of better policies for agriculture.²⁰ In the construction industry, real-time updates on site surveying, incident monitoring and inventory can reduce construction time by improving efficiency and site workflow, as well as worker safety.

¹⁷ Laurence Morvan, ‘Data: The Fuel of the Digital Economy and SME Growth’ (Accenture, 2016), https://www.accenture.com/_acnmedia/pdf-29/accenture-data-the-fuel-of-the-digital-economy-and-sme-growth.pdf; ‘Data Is Giving Rise to a New Economy’, *The Economist*, 6 May 2017, <https://www.economist.com/briefing/2017/05/06/data-is-giving-rise-to-a-new-economy>.

¹⁸ Business intelligence, historical trend analysis and patterns have long been an integral part of many firms before the current development, which has been variously termed data-driven growth, the fourth industrial revolution, Industry 4.0.

¹⁹ Cisco, ‘Cisco Visual Networking Index: Forecast and Trends, 2017–2022’ (Cisco, 2019), <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-741490.pdf>.

²⁰ Simone Giesler, ‘Digitisation in Agriculture – From Precision Farming to Farming 4.0’, *Bioeconomy BW*, 9 April 2018, <https://www.bioeconomie-bw.de/en/articles/dossiers/digitisation-in-agriculture-from-precision-farming-to-farming-40/>; OECD, ‘Digital Opportunities for Better Agricultural Policies’, 2019, <https://www.oecd.org/fr/innovation/digital-opportunities-for-better-agricultural-policies-571a0812-en.htm>; Marie-Agnes Jouanjean, ‘Digital Opportunities for Trade in the Agriculture and Food Sectors’, 2019, https://www.oecd-ilibrary.org/agriculture-and-food/digital-opportunities-for-trade-in-the-agriculture-and-food-sectors_91c40e07-en.

Despite gaps in measuring the digital economy, research has increasingly found a positive relationship between the intensity of data use and economic growth. For example, McKinsey Global Institute finds that global flows of data raised world GDP by at least 10 percent (valued at USD 7.8 trillion in 2014) and that the contribution of data flows is only second to that of goods (USD 2.3 trillion vs. USD 2.7 trillion).²¹ In fact, the combined indirect and direct contribution of data flows to world GDP may be higher if one considers the effect of cross-border data flows on other types of flows including goods.²²

Fourth, data analytics and IoT are impacting everyday life by making household items more interactive. The introduction of IoT has brought numerous benefits.²³ For instance, smart fridges are able to inform their owners when certain products have run out. Smart lighting systems can increase energy efficiency by adjusting brightness levels when people are in the vicinity.

Technologies such as IoT have made it possible for individuals to know more about themselves. For instance, smart watches contain components such as a built-in pedometer, a GPS tracker, and/or a heartbeat monitor. Linked to computers and mobile phones via the internet, such wearables provide real-time updates on an individual's health and habits, among others. Certainly, such devices can also be used to monitor individuals who need round-the-clock care and supervision such as patients and the elderly, in real time where necessary.

Finally, data analytics can be harnessed to improve infrastructure and the provision of public services. In transportation, real-time updates from vehicles on the road provide information for digital map platforms to estimate traffic density. Wayfinding applications then provide the latest traffic information to advise drivers of potential bottlenecks and suggest alternate routes. Smart traffic lights, installed with programs that dynamically respond to the traffic situation, can communicate with other traffic lights to alter light timings and facilitate traffic flow. In public transit, transport providers can harness mobile applications to create dynamic bus routes and schedules that are more responsive to commuter demand. While these examples are in 'sector silos' and do not involve synergies with other areas, some governments are already looking at more holistic applications of technologies to improve delivery of public services by creating and/or piloting 'smart cities' projects based on the IoT.²⁴ As an illustration, Singapore is developing a smart town where several technologies will be co-deployed for the benefit of residents. Pedestrian and vehicle traffic data collected by motion sensors along common areas will be used by the government to strategically build community networking spaces and amenities where pedestrian traffic is high. The same sensors can also be used as input for smart lighting to automatically adjust luminosity based on human traffic. Sensors will also be deployed to analyse the performance of key estate services such as lighting pumps and waste collection for predictive maintenance.²⁵ However, it should be acknowledged that even as these initiatives progress, there are legitimate concerns (e.g., those related to privacy and the potential commodification of public space) that need to be resolved in parallel.

²¹ James Manyika et al., 'Digital Globalization: The New Era of Global Flows' (McKinsey Global Institute, March 2016), <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows>.

²² For example, cross-border e-commerce now accounts for 12 percent of the global goods trade. Data flows allow service exports to be delivered digitally. An environment that supports global digital transactions and communication in turn supports increased foreign direct investment (FDI). People flows have also benefited from digital platforms such as Booking.com and Airbnb.

²³ Luigi Atzori, Antonio Iera and Giacomo Morabito, 'The Internet of Things: A Survey', *Computer Networks* 54, no. 15 (October 2010): 2787–805, <https://doi.org/10.1016/j.comnet.2010.05.010>.

²⁴ A. Zanella et al., 'Internet of Things for Smart Cities', *IEEE Internet of Things Journal* 1, no. 1 (February 2014): 22–32, <https://doi.org/10.1109/JIOT.2014.2306328>.

²⁵ Irene Tham, 'Smart Designs in Punggol Northshore Residences', *The Straits Times*, 22 April 2019, <https://www.straitstimes.com/singapore/smart-designs-in-punggol-northshore-residences>.

Challenges of the digital economy

Just as the digital economy provides numerous opportunities, it presents significant challenges for policymakers, businesses and individuals. It is worthwhile to point out that while for some issues the solutions may be clear and enjoy broad support from stakeholders, there is disagreement on other issues and potential solutions may involve trade-offs that affect the interests of different parties. In many cases there will be a need to take differing views into consideration, and to conduct broad consultation of stakeholders on the digital economy's regulations and policy initiatives that involve businesses, local communities and others.

1. Data privacy and security

While data drives innovation and provides more opportunities, some fear that the increasing dependence of businesses and the economy on data can result in data protection issues with potentially massive damage to the economy and consumer trust.²⁶ The Center for Strategic and International Studies (CSIS) and McAfee estimate that close to USD600 billion is lost to cybercrime annually, an increase from about USD445 billion in 2014.²⁷

Governments are under pressure to improve data privacy and protection and advance other public policy objectives such as improving cybersecurity infrastructure, and ensuring that citizens benefit from the digital economy. Many have put in place or are in the process of enacting new regulations pertaining to data collection, storage, processing and transfer.

While privacy is a legitimate public policy objective, it is important to avoid placing undue burdens on businesses and governments. For example, although firms using the data of European Union residents are already subject to the European Union's strict general data protection regulation (GDPR) requirements, other economies may put in place their own data protection regimes without considering the possibility of duplication with the GDPR and other privacy regimes. Several literature have attempted to determine the costs of data-related regulations including data localization and fragmented regulations. For instance, Bauer et al. analysed proposed or enacted data localisation rules in seven economies and found that they lowered GDP by between 0.1 and 1.7 percent.²⁸

Therefore, it is critical that economies find the right balance in approaching data-related issues (i.e., with relatively minimal impact on firms' access and use of data while supporting legitimate public policy objectives). For instance, economies may wish to take a tiered approach to data-related regulations, where lighter-touch regulations in some sectors are complemented with effective

²⁶ 'Cathay Pacific Flags Data Breach Affecting up to 9.4m Passengers', *Channel NewsAsia*, updated 25 October 2018, <https://www.channelnewsasia.com/news/asia/cathay-pacific-passenger-data-breach-security-10861036>; Eduard Kovacs, 'Millions of Toyota Customers in Japan Hit by Data Breach', *Security Week*, 29 March 2019, <https://www.securityweek.com/millions-toyota-customers-japan-hit-data-breach>; 'Malaysian Data Breach Sees 46 Million Phone Numbers Leaked', *BBC*, 31 October 2017, <https://www.bbc.com/news/technology-41816953>; Kate O'Flaherty, 'Breaking Down Five 2018 Breaches – And What They Mean for Security in 2019', *Forbes*, 19 December 2018, <https://www.forbes.com/sites/kateoflahertyuk/2018/12/19/breaking-down-five-2018-breaches-and-what-they-mean-for-security-in-2019/#45e0bbdb41c4>; Gabriel J.X. Dance, Michael LaForgia and Nicholas Confessore, 'As Facebook Raised a Privacy Wall, It Carved an Opening for Tech Giants', *The New York Times*, 18 December 2018, sec. Technology, <https://www.nytimes.com/2018/12/18/technology/facebook-privacy.html>; 'Facebook Says Companies Got Access to Data Only after User Permission', *The Straits Times*, 19 December 2018, <https://www.straitstimes.com/world/united-states/facebook-says-companies-got-access-to-data-only-after-user-permission>; 'Facebook Used People's Data To Favour Certain Partners and Punish Rivals, Documents Show', *The Straits Times*, 6 December 2018, <https://www.straitstimes.com/world/europe/british-lawmakers-release-internal-facebook-documents>.

²⁷ James Lewis, 'Economic Impact of Cybercrime – No Slowing Down Report' (Center for Strategic and International Studies and McAfee, 2018), https://www.mcafee.com/enterprise/en-us/assets/reports/restricted/rp-economic-impact-cybercrime.pdf?utm_source=Press&utm_campaign=bb9303ae70-EMAIL_CAMPAIGN_2018_02_21&utm_medium=email.

²⁸ Matthias Bauer, Hosuk Lee-Makiyama, Erik van der Marel and Bert Verschelde, 'The Costs of Data Localization: Friendly Fire on Economic Recovery' (Brussels: ECIPE, 2014), https://ecipe.org/wp-content/uploads/2014/12/OCC32014__1.pdf

enforcement. As an illustration, Korea's Personal Information Protection Act enacted on 30 September 2011 is considered among one of the world's strictest privacy regimes (despite the fact that it does not include localisation requirements except for certain types of data such as financial and medical data) because its enforcement mechanisms include civil, administrative and criminal sanctions.²⁹ Member economies could also consider participating in APEC-driven initiatives such as the APEC Cross-Border Privacy Rules (CBPR) and Privacy Recognition for Processors (PRP) systems. To enhance interoperability, economies could refer to the APEC Privacy Framework (updated in 2015) to provide a set of principles and implementation guidelines on effective privacy protection to businesses and government entities.

2. *Protection of intellectual property rights, and data/content sharing*

The digital economy has made the protection of intellectual property rights (IPR) more pertinent and more challenging at the same time. As distribution channels have become available to almost everyone with internet access, it has become easier to commit fraud and illegally distribute copies of copyrighted material across the internet. At the same time, it has become harder for regulators to assess which transactions or channels are legal and which involve intellectual property theft.

Notwithstanding the need for better protection of intellectual property rights, it remains important for firms to share and collaborate more as it may lead to quicker breakthroughs and avoid duplication of efforts. Examples of such initiatives include the Human Brain project,³⁰ Open Source Drug Discovery³¹ and Future Earth.³² Data sharing also has value beyond scientific research and related applications. However, such practices may not be widespread for various reasons including anticompetitive behaviour and the lack of interoperability of data formats and standards. The OECD finds that while digitisation and technology are playing a bigger role in the economy, most of the improvements in productivity are captured by so-called 'frontier firms', defined as those firms whose labour productivity is in the top 5 percent in each sector.³³ In other words, the productivity growth of frontier firms is higher than that of other businesses in the same sector. It would therefore be important for policymakers to maintain intellectual property systems that promote innovation, while enabling MSMEs and new entrants to compete.

Unlike other mass communications media where the direction of information is generally unidirectional, internet and digital technologies allow individuals to be both content creators and consumers. Indeed, the internet has contributed to the success of many artists, musicians and social influencers, among others. However, it has also facilitated the spread of disinformation and content that encourages acts of terrorism. A discussion of possible policy responses to the political and domestic security concerns raised by social media and other aspects of the digital economy is beyond the scope of this paper.

3. *Digital divide across multiple dimensions*

Universal, reliable and affordable access to ICT is essential to participation in the digital economy. While more people can now access the internet and related technologies including mobile phones (as seen in Figure 1.4 and Figure 1.5), it is also true that the internet remains out of reach for 48.8 percent of the world's population and 39.9 percent of APEC's population.³⁴ Furthermore, despite transactions

²⁹ Korea Internet & Security Agency, 'Data Protection Laws of Korea' (presentation, 2016), https://unctad.org/meetings/en/Presentation/dtl_eweek2016_HyunJoonKwon_en.pdf.

³⁰ Home page, Human Brain Project, accessed 12 June 2019, <https://www.humanbrainproject.eu/en/>.

³¹ Home page, Open Source Drug Discovery, accessed 12 June 2019, <http://www.osdd.net/>.

³² Home page, Future Earth, accessed 12 June 2019, <http://www.futureearth.org/home>.

³³ Dan Andrews, Chiara Criscuolo and Peter Gal, 'The Best vs the Rest: The Global Productivity Slowdown Hides an Increasing Performance Gap across Firms', blog, VoxEU.Org, 27 March 2017, <https://voxeu.org/article/productivity-slowdown-s-dirty-secret-growing-performance-gap>.

³⁴ Rati Skhirtladze et al., *Measuring the Information Society Report 2018* (Geneva: ITU, 2018), <https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>.

being increasingly digitally enabled, a significant proportion of products are yet to be digitally delivered. In fact, one of the key successes of the digital economy is the significant increase in the number of small parcels and packages being shipped across borders. This means that even as access to ICT is crucial, access to reliable and resilient infrastructure such as roads and energy is equally important. Roads, along with ports and airports serve as gateways for trade and mobility, while energy infrastructure is crucial to production. Despite the importance of infrastructure in improving connectivity - both in the digital and brick-and-mortar worlds - economies have often underinvested in them. The 2018 APEC Economic Policy Report on Structural Reform and Infrastructure notes that members face significant infrastructure financing gaps. One study indicates that APEC economies will collectively need to spend USD 2 trillion per year from 2020-2025, rising to almost USD 2.5 trillion per year on infrastructure in the 2030-2035 period. The region's overall regional infrastructure needs are expected to increase by almost 92 per cent between 2010 and 2035.³⁵ Economies that are unable to meet this massive infrastructure financing challenge could fall behind their peers in economic growth potential.

The digital divide is not only observed between economies, but also within economies. People living in cities generally have better access to infrastructure than their rural counterparts. The same can be said for population centres in more developed islands vis-à-vis those in less developed islands in archipelagic economies such as Indonesia and the Philippines. Low levels of population density and economic activity make it uneconomic to build some kinds of infrastructure. Individual sectors also vary in terms of their digitalisation. For example, the McKinsey Global Institute has found that the United States has captured only about 18 percent of its digital potential despite being one of the world's most highly digitised economies.³⁶ The agriculture and hunting, mining, construction, and entertainment and recreation sectors have relatively low digitisation rates compared to sectors like ICT, media and professional services. Moreover, the gap in adoption and utilisation between sectors and firms on the frontier vis-à-vis the rest of the economy appears to have widened over time. The lack of access to data, as well as resource limitations and aversion to new technologies, may have contributed to the widening gap. Specifically on the latter, firms with less risk aversion to new technologies are more likely to benefit compared to their peers. Average profit margins in the more digitised sectors grew two to three times faster compared to less digitised sectors.³⁷

Arguably, net neutrality is also an issue related to the digital divide. It is essentially based on the principle that internet service providers should treat all internet communications equally and not discriminate or charge differently based on user, content, website, platform, application, type of equipment, or method of communication. While proponents of net neutrality have indicated that it promotes competition and innovation by facilitating information exchange and maintaining standardisation of data transmission, opponents have argued that it ultimately harms competition by reducing the incentive for telecommunications carriers to invest and improve on existing infrastructure.

4. *Jobs created, jobs lost*

The advent of the digital economy has led to the creation of new kinds of employment. These occupations include data scientists, app developers, ethical hackers, augmented reality (AR) filter creators and drone specialists which were largely unheard of until recently. In fact, the World Economic

³⁵ APEC, *APEC Economic Policy Report 2018: Structural Reform and Infrastructure* (Singapore: APEC, 2018), <https://www.apec.org/-/media/APEC/Publications/2018/11/2018-APEC-Economic-Policy-Report/AEPR-2018.pdf>.

³⁶ James Manyika et al., 'Digital America: A Tale of the Haves and Have-Mores', December 2015, https://www.mckinsey.com/~/media/McKinsey/Industries/High%20Tech/Our%20Insights/Digital%20America%20A%20tal%20of%20the%20haves%20and%20have%20mores/MGI%20Digital%20America_Executive%20Summary_December%202015.ashx.

³⁷ Manyika et al.

Forum (WEF) predicts that 65 percent of children currently enrolled in primary school would eventually be working in jobs that currently do not exist.³⁸

As different and new sets of skills are required for these jobs, it is critical for policymakers to ensure that individuals are equipped with the right skills while they push towards creating more digital economy jobs. In this regard, there may be a need to review current education curricula to ensure they remain relevant in the rapidly changing economy. A shortage of digital economy skills may limit growth for businesses and the career possibilities of workers.³⁹ While it is difficult to make future predictions, policymakers should seek to ensure the provision of skills are relevant to emerging sectors and job categories. This avoids a potential skills mismatch down the road. Continuing skills shortages and mismatches will likely have negative consequences for the economic growth potential of an economy, given the pace of technological and business innovation.⁴⁰

Although ensuring that new entrants to the workforce have the necessary skills is one challenge, another is ensuring employed workers remain relevant as technology evolves. As an example, the OECD has found that within its member economies, approximately 14 percent of jobs were highly automatable and another 32 percent would be radically transformed by technological progress on average.⁴¹ This suggests the need to develop lifelong learning programmes to help individuals to reskill. For those who have lost their jobs to factors such as automation, besides motivating individuals to re-skill, policies would need to identify measures to better match these individuals to available jobs.

Some digital economy jobs with examples being ride-sharing drivers and food deliverers provide more flexibility than office jobs and often do not require advanced ICT skills. However, there is a risk that such employment has created a precarious class of on-demand workers or independent workers that do not make social security contributions and cannot access benefits as they are not regarded as employees.⁴² In some economies, benefits such as health depend on formal employment.

Maximising opportunities and overcoming challenges: The twin role of measurement and structural reforms

Apart from discussing the opportunities and challenges presented by the digital economy, it is important to maximise opportunities while overcoming the challenges.

Statistics and indicators play an important role for evidence-based policymaking. Clear measurement frameworks, coupled with regularly updated and comparable data across economies and time can provide policymakers with a good overview of different areas relevant to the digital economy. Without baseline measures and data that can be tracked, it is difficult to determine if policy objectives have been met or if adjustments should be made. However, measurement of various aspects of the digital economy is still a work in progress for a variety of reasons. Section B summarises the motivations for measuring digital flows, the digital transformation, and the monitoring of regulations affecting the digital economy. It also reviews some issues affecting the measurement of the digital economy.

Broadly understood, structural reforms remove structural barriers so as to improve access to economic opportunity. If implemented properly, structural reforms may boost economic efficiency and set the economy on a relatively higher growth path. A holistic approach to implementing structural reforms

³⁸ World Economic Forum, *The Future of Jobs Report 2016: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution* (Geneva: World Economic Forum, January 2016), <http://reports.weforum.org/future-of-jobs-2016/>.

³⁹ Paul J. DiMaggio and Eszter Hargittai, 'From the "Digital Divide" to "Digital Inequality": Studying Internet Use as Penetration Increases' (Woodrow Wilson School of Public and International Affairs, Center for Arts and Cultural Policy Studies, 2001).

⁴⁰ Jan A.G.M. van Dijk and Alexander J.A.M. van Deursen, *Digital Skills: Unlocking the Information Society* (New York: Palgrave Macmillan, 2014).

⁴¹ OECD, *OECD Employment Outlook 2019* (Paris: OECD, 2019), <https://www.oecd.org/employment/outlook/>.

⁴² Valerio De Stefano, 'The Rise of the "Just-in-Time Workforce": On-Demand Work, Crowd Work and Labour Protection in the "Gig-Economy"', *SSRN Electronic Journal* (2015), <https://doi.org/10.2139/ssrn.2682602>.

has the potential to allow economies to seize opportunities while addressing the challenges of the digital economy. Section C provides a brief overview of the application of four of the Economic Committee's (EC's) core structural reforms - competition policy and law; regulatory reform; public sector governance; and ease of doing business (EoDB) – to the digital economy's challenges. Recognising that the EC's core structural reforms constitute only one aspect of APEC's broad structural reform-related work, the role of supplementary structural reforms and, where relevant, supporting policies to ensure that the benefits of the digital economy are more inclusive have also been reviewed.

B. Challenges in measuring the digital economy

In order to plan and make more informed decisions, policymakers need a clear, well-elaborated measurement framework supported by reliable statistics that are regularly updated with data comparable across sectors and economies. Achieving this goal will entail consistency in data collection and analysis, cooperation between statistical agencies, and agreement on common standards and practices at the regional and global levels, among others. Efforts to measure the digital economy must overcome fundamental disagreements on the definition and scope of the digital economy, and serious technical challenges. Even if achieving comparability is not feasible in the short term, economies can help to overcome these measurement challenge by providing details about what statistics they are measuring and how they have been derived.

The absence of consensus on a definition of the digital economy presents serious challenges for efforts to measure it, as it raises a number of important questions: (1) should the digital economy be defined narrowly as those activities facilitated by online platforms, such as online purchasing and online movie streaming? (2) or should it instead be defined broadly as all the sectors that have incorporated data and the Internet into their production processes? (3) the term digital sector has been mentioned frequently, but what is it exactly and is it equivalent to the digital economy? (4) what is its relation with the ICT sector? (5) what is its relation to e-commerce, which is arguably only one aspect of the digital economy?

Definitions aside, there are a range of challenges that pertain more to the technicalities of the measurement itself. Some of these relate to existing issues that include limitations to the current national accounts framework and challenges in measuring services, while others relate to newer issues such as measuring certain digital-related activities. Although it is important to accurately measure digital and digitally-facilitated flows, monitoring the digital transformation is equally important as it allows policymakers to better understand how digitalisation is changing the economy and the society as a whole and to devise appropriate policy responses. In this regard, gaps and challenges remain, despite there having existed for some time efforts by economies and various organisations to collect and analyse indicators to monitor the digital transformation.^{43,44}

Last but not least, the advent of the digital economy has brought with it new business models that have fundamentally changed the way that business is conducted and the products and services that are traded. In this environment, it is important to be able to monitor policies and regulations with implications for the digital economy. The next section provides a summary of some of these challenges. Annex A discusses them in greater details and indicates some of the ongoing work by a number of organisations to measure different aspects of the digital economy.

Definition and measurement

Definition and measurement go hand-in-hand. Definition provides the scope of coverage and allows statisticians to come up with a corresponding measurement framework. A review of ongoing work by various organisations on the digital economy shows them clearly defining what they are measuring and acknowledging the limitations of the approaches taken before proceeding to collect and analyse the relevant data. For instance, the United States Bureau of Economic Analysis (BEA) published a study in 2018 to estimate the size and contributions of digital activities currently embedded in the existing national accounts, paving the way for the construction of a new digital economy satellite account. In the study, the bureau first developed a conceptual definition of the digital economy, including three

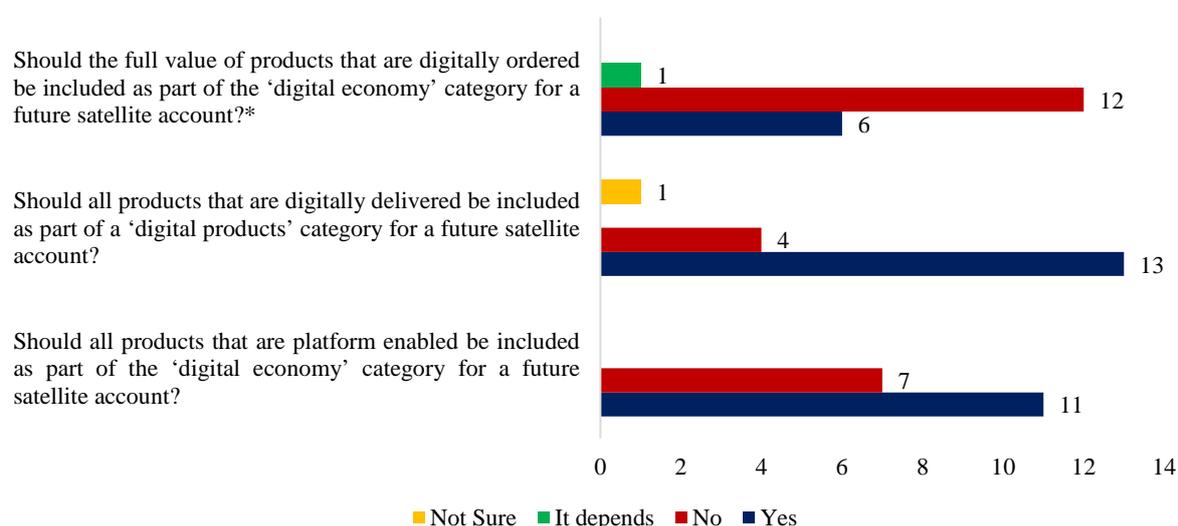
⁴³ For the purposes of the AEPR, “digital and digitally-facilitated flows” includes, but are not limited to electronically delivered goods or services, other types of data flows, and goods sold via e-commerce channels.

⁴⁴ For example, the International Telecommunication Union’s (ITU) percentage of individuals using the internet (details at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>) and the World Bank’s percentage of individuals having mobile money accounts (details at <https://globalindex.worldbank.org/>).

parts: (1) the digital-enabling infrastructure, which enables the existence and operation of a computer network; (2) the digital transactions using that system; and (3) the content created and accessed by digital economy users. Using this definition, the bureau then identified the detailed goods and services that should be included in the sphere of the digital economy using its supply-use framework, and then provided its preliminary estimate of the size of the digital economy.⁴⁵

However, reaching consensus among different stakeholders is not an easy endeavour. As an illustration of the varying opinions, the OECD Informal Group on Measuring GDP in Digitalised Economy conducted a survey on economies' practices and thoughts on the definition and classification of digital economic activities and the statistical challenges of creating a new satellite account.⁴⁶ The survey received 19 responses from task force members. Differing views on the nature and economic value of the digital economy led to mixed answers for the questions regarding the definition of digital economy (see Figure 1.6).

Figure 1.6. Summary of selected OECD survey responses on measuring GDP in digitalised economy



Note: *One member checked both yes and no

Source: Jennifer Ribarsky, 'Summary of Responses of the Advisory Group: Survey on Digital Economy Typology' (STD/CSSP/WPNA(2017)1, Paris: OECD, 22 September 2017),

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSSP/WPNA\(2017\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSSP/WPNA(2017)1&docLanguage=En).

The lack of an agreed definition leads to divergence in the measurement frameworks, and affects the comparability of statistics between economies and across years. Based on a broad definition of the digital economy, the China Academy of Information and Communications Technology (CAICT) estimates the size of China's digital economy to be RMB 31.3 trillion (around USD 4.5 trillion) in 2018.

⁴⁵ Kevin Barefoot et al., 'Defining and Measuring the Digital Economy' (Suitland, MD: Bureau of Economic Analysis, 15 March 2018), <https://www.bea.gov/system/files/papers/WP2018-4.pdf>.

⁴⁶ A satellite account is an account that is developed to measure the size of economic sectors that are not defined as industries in national accounts. One example is the tourism sector, which is a combination of industries such as transportation, accommodation, food and beverage services, recreation and entertainment, and travel agencies. Indeed, tourism is the first activity to use worldwide satellite account standards to measure its impact on economies (see UN World Tourism Organization, 'Basic Concepts of the Tourism Satellite Account (TSA)', accessed 23 August 2019, <http://statistics.unwto.org/sites/all/files/docpdf/concepts.pdf>).

This accounted for 34.8 percent of China's GDP, up from 32.9 percent in 2017.⁴⁷ Using a narrower definition, the US BEA estimates the size of the digital economy in the US to be USD 1.35 trillion in 2017, making up 6.9 percent of its nominal GDP.⁴⁸ Due to the use of very different methodologies, it would be premature to conclude that China's digital economy is more than three times the size of the US digital economy. For frameworks to be comparable, it is important to look at what industries and products are included as well as the measurement methodology.

Recognising that there is currently no clear and agreed definition of the digital economy and coming up with one may take some time, an approach taken by several economies and organisations is to limit the scope to certain technology-intensive sectors (e.g. ICT), e-commerce, or digital trade. Using narrower terms and sectors as proxies to measure the digital economy is, however, less than ideal for several reasons, including the same lack of an agreed definition as the digital economy itself and whether well-defined sectors are a good proxy for the digital economy.

Challenges beyond defining the digital economy

There are various challenges related to the technicalities of measurement itself which further complicate the process of establishing a feasible measurement framework. These challenges include: limitations of the current national accounts framework; suitability of existing measures such as GDP; and barriers on data sharing between organisations for various reasons including data privacy and security.

1. *Measuring digital and digitally-facilitated flows*

(In)congruency of the System of National Accounts (SNA) and limitations of GDP

The current framework used by economies was developed in the 1950s to 1960s and assigned clearly defined roles to all economic actors (i.e. producers, distributors or consumers). It relies on customs and tax data, as well as high response rates to mandatory statistical surveys. The advent of the digital economy has affected some of these fundamental assumptions and methods. **Firstly**, the digital transformation has changed the way economic actors interact and transact with one another. For example, the entry of ride sharing providers such as Uber has disrupted the established relationship between taxi service providers and their customers, hence affecting statistical agencies' ability to accurately measure the contribution of the transport service sector to the economy through tax data and surveys of the taxi industry. Measurement challenges are aggravated by the fact that many consumers-turned-service providers are operating beyond the current production frontier, are not registered businesses and/or do not report all taxes. Furthermore, digital intermediary platforms may be located in another economy, hence out of reach of the relevant statistical agencies.

Secondly, profit shifting, whereby firms move value generated in one jurisdiction to a lower-tax one, has been facilitated by digitalisation (e.g., the intangible nature of digital assets and improvements in ICT services). This is particularly the case for certain form of transactions, where the common approach of using legal ownership to assign values may lead to distortions and asymmetries in national accounts. As a result, economic indicators based on those accounts may be inaccurate as well.

Due to the limitations of the current SNA framework, standard measures such as GDP either do not capture or misallocate important aspects of the digital economy. For example, a report by Credit Suisse

⁴⁷ Sohu News, '数字经济, 7本白皮书, 10大亮点 | CAICT 核心成果分享' [Digital Economy, 7 White Books, 10 Highlights | Core Findings Shared by CAICT], 6 May 2019, www.sohu.com/a/312039707_735021.

⁴⁸ US Bureau of Economic Analysis, 'Measuring the Digital Economy: An Update Incorporating Data from the 2018 Comprehensive Update of the Industry Economic Accounts' (Suitland, MD: Bureau of Economic Analysis, April 2019), https://www.bea.gov/system/files/2019-04/digital-economy-report-update-april-2019_1.pdf.

indicates that there are at least three categories of products and services not included in the GDP.⁴⁹ **Firstly**, despite replacing the traditional high street stores, the services and products provided by digital intermediaries such as online booking websites based either locally or overseas, have not been fully included.

Secondly, the digital economy has expanded the production boundary in ways that are not captured by traditional GDP measures. The rise of the sharing/gig economy has enabled individuals to borrow or lend a variety of assets from bicycles to houses. Individuals could also provide labour and services to others such as cleaning and repairs and earn income on a part-time or on-call basis. In addition, the reduced price paid by consumers has increased customer surplus and is yet to be reflected in the price indices used to calculate GDP.

Thirdly, ‘free’ digital products produced by households including blogs, videos, and open source software and computer services are not recorded within price indices and are therefore not reflected in GDP. Moreover, ‘free’ digital products/services offered by platforms and funded either by advertising (which may not be attributed to the correct economy) or through the collection of user data is another category underrepresented within GDP measurements.⁵⁰

Constraints in measuring services

The international community has long been plagued by statistical problems associated with services. For example, variations in compilation methods and different thresholds used by surveys have caused the estimated value of services trade data to vary significantly between economies.⁵¹ While digital technologies have allowed services to be traded freely, easily and on a broader scale, they have aggravated the measurement issue, for several reasons.

Firstly, traditional services such as education services that need to be conducted in person in the past, can now be provided digitally in many cases and sometimes for free. **Secondly**, the digital economy has led to further blurring of geographical boundaries, even beyond the fragmentation of production by global value chains. Unlike traditional trade, digital services may consist only of the transfer of data. The constant data flows between different activities (e.g., R&D, sales and advertising) with various actors across numerous locations make it challenging to trace such flows and attribute the value of a particular service to a specific geographical location.⁵² This makes it more difficult for statisticians to record the services and include them within their accounts.

Thirdly, as pointed out by a 2018 IMF report on measuring the digital economy, digitally delivered services can be under-reported in SNA accounts that do not capture transactions on platforms, especially on the import side. Inconsistencies and discrepancies are sometimes found in the services statistics of two trading partners due to differing statistical and data collection methods.

Fourthly, there are increasing vagueness and difficulty in distinguishing the value of products and the accompanying services.⁵³ For instance, the cost of regular system and software updates that keep mobile phones useful may have been included by producers when pricing the product instead of as a separate line item. **Finally**, little progress has been made across the globe on measuring services (e.g., door to door cleaning and repairing services) or free digital services (e.g., online knowledge sharing, medical

⁴⁹ Credit Suisse Research Institute, ‘The Future of GDP’ (Zurich: Credit Suisse, May 2018, <https://www.credit-suisse.com/media/assets/private-banking/docs/mx/the-future-of-gdp-en.pdf>).

⁵⁰ Reinsdorf and Quirós, ‘Measuring the Digital Economy’.

⁵¹ Eurostat, ‘International Trade in Services Statistics – Background’, 28 March 2019, https://ec.europa.eu/eurostat/statistics-explained/index.php/International_Trade_in_Services_statistics_-_background#Asymmetries_in_international_trade_in_services_statistics.

⁵² Credit Suisse Research Institute, ‘The Future of GDP’.

⁵³ Tuan Tran, ‘Approach to Measuring the Digital Economy – Global Affairs Canada’ (presented to the *APEC Workshop on the Digital Economy: Measurement, Regulation and Inclusion*, Santiago, Chile, 6 March 2019), http://mddb.apec.org/Documents/2019/EC/WKSP2/19_ec_wksp2_006.pdf.

consultation, and open source software and computer services) produced by households. In this regard, there may be a need to update household and labour force surveys and improve data collection from tax systems.

Impediments to data sharing and development gaps between economies

One of the ironies of the digital age is that data and statistics that could provide policymakers a better overview of the digital economy are available but not shared. According to a Domo report, more than 2.5 quintillion bytes of data were created every single day in 2018. By 2020, the report estimates that each individual will generate 1.7MB of data every second.⁵⁴ Theoretically, every order and transaction made online is recorded somewhere and it is possible to analyse such data for statistical purposes. This is particularly relevant for digital platforms whose main business is to collect, analyze and create value from these data. However, in practice, data collected and stored by different entities are fragmented and not shared. While individuals and private companies, especially digital platforms have significant amount of data, they are usually reluctant to share it with governments, arguing that it is proprietary and that sharing it would affect their competitiveness and breach their privacy commitments. To further complicate matters, multinational companies (MNCs) often hold data in various jurisdictions whose differing data privacy laws and regulations would impact their data policies. This limits the ability of statistical agencies to accurately measure the size of certain digital economic activities.

A universal measurement framework for the digital economy also needs to take into consideration the development gaps between economies, in order to ensure the feasibility of data collection and comparability of statistics across economies. Developing economies may possess inadequate resources or may require capacity building to bring their statistical collection up to international standards and to ensure comparability and coordination with other economies.⁵⁵ Lack of sustainable funding, inadequate public ICT infrastructure and poor digital literacy among statistical staff are some of the barriers to a comprehensive and accurate statistical system for the digital economy. Some economies are struggling to maintain their existing SNA database, let alone put extra effort into creating a new one. According to the UN Statistics Division, in some economies, entire statistics programmes are supported by only two or three people.⁵⁶

2. Measuring digital transformation

Measuring the size of digital economy is important. Equally important is measuring digital transformation because it allows us to better understand how digitalisation is changing the economy and society as a whole and to adjust policies as required. For instance, with regards to internet access, organisations such as the International Telecommunication Union (ITU) have developed indicators such as the percentage of individuals using the internet, fixed broadband subscriptions per 100 inhabitants, the proportion of households with a computer and the percentage of households with internet connections. The OECD conducts surveys under various programmes including the Programme for International Student Assessment (PISA), the Teaching and Learning International Survey (TALIS) and the Programme for the International Assessment of Adult Competencies (PIAAC) to provide international comparable data on a variety of indicators, many of which describe the relationship between digital technology and education and skills.⁵⁷

While they are useful and informative, existing indicators are not without gaps and challenges. Firstly, these indicators usually do not cover all economies. In some cases, the data may be patchy (available

⁵⁴ Domo, 'Data Never Sleeps 6.0', 2018, <https://www.domo.com/solution/data-never-sleeps-6>.

⁵⁵ World Bank, 'Building Statistical Capacity to Monitor Development Progress' (Washington, DC: World Bank, 2006), <http://documents.worldbank.org/curated/en/795451468314360987/Building-statistical-capacity-to-monitor-development-progress>.

⁵⁶ Lisa Cornish, 'At UN World Data Forum, a Focus on Data Capacity, Devex, 22 October 2018, <https://www.devex.com/news/sponsored/at-un-world-data-forum-a-focus-on-data-capacity-93717>.

⁵⁷ OECD, 'Computers, Education & Skills', Education GPS, accessed 19 September 2019, <https://gpseducation.oecd.org>.

only for certain years) and the timeliness of the data (how recently it is produced) could also be a concern. Moreover, indicators provided by economies may be derived from varying data sources as well as through the use of different collection methodologies and approaches (e.g., household surveys versus business surveys), which means that data may not be comparable.

Second, some existing indicators need to be fine-tuned to ensure their continued relevance in the digital era. For example, indicators on access which includes the percentage of individuals using the internet, would be more informative if supplemented with additional information on how individuals use the internet (e.g., online education, online sales/purchases, cloud storage, content creation, social network, etc.), information which may not be collected by all economies. Similarly, indicators on skills, abilities and competencies to thrive in the digital economy should go beyond measures such as enrolment in tertiary education to include information on whether individuals have the specific technical and cognitive skills. This is particularly so considering that getting a post-secondary degree no longer guarantees one a job.

In terms of job creation, new business models introduced by platforms focusing on the gig economy (i.e., ride sharing and food delivery services) have led to a significant increase in the number of independent contractors (as opposed to employees). Yet, current definitions and indicators still group these jobs collectively as ‘alternate work arrangements’, implicitly treating them as a homogeneous and insignificant category. Furthermore, it should be noted that existing indicators do not always provide breakdowns by criteria such as regional (e.g., rural (including remote) and urban), industry (e.g., manufacturing and services), gender and age groups.

Lastly, even as the existing indicators can be improved upon, it should be acknowledged that there are aspects of the digital economy that cannot be captured by existing indicators and therefore, have to be complemented by new indicators.

3. Measuring how laws and regulations affect various aspects of the digital economy

The advent of the digital economy has brought with it new business models. In turn, they have changed how businesses, including trade, are conducted and what products are being traded. To ensure that economies are able to reap the benefits of the digital economy while addressing its challenges, it is important that policies and regulations and their corresponding implications be analysed. In general, policies and regulations with implications for the digital economy can be categorised into two main groups. The first group comprises existing or older measures that arguably were not robust enough to tackle the new challenges posed by the digital economy, and have since become problematic. The second group is made up of newer measures enacted in response to the ongoing transformation for various reasons, including legitimate public policy objectives such as ensuring better data privacy, protection and security; aiding law-enforcement agencies and addressing other domestic security concerns. To perform the needed analyses, economies and organisations would have to have comprehensive policy databases that are updated and reviewed at regular intervals.

C. Overview of application of structural reforms to the digital economy and priorities for reforms

A holistic and up-to-date approach to structural reform will be critical to the efforts of APEC economies to maximise the benefits and economic opportunities brought about by the digital economy while overcoming the challenges and potential harms. To ensure alignment with the work of the Economic Committee (EC), this report will discuss structural reforms in three broad themes, namely: core structural reforms, supplementing core structural reforms, and optimising structural reforms.

Core structural reforms

In order to fulfil its mandate to promote structural reform activities within APEC, the Economic Committee (EC) pursues work in core structural reforms such as competition policy and law, regulatory reform, ease of doing business (EoDB) and public sector governance. Each of these reforms can be applied to digital economy opportunities and challenges.

In many respects, **competition policy** is one of the most critical structural reforms for the digital economy. For example, competition policies have tremendous impact on prices and coverage in the telecommunications sector, which is the backbone infrastructure for delivering digital economy products and services. Moreover, up-to-date competition policies can facilitate new market entrants and the uptake of new business models, while helping to ensure that digital technologies and tools are not exploited to the detriment of competition. There are currently differing views on the applicability of traditional competition policy approaches in the digital economy. On one hand, some literature have noted that traditional approaches grounded in consumer welfare remain broad enough to be applied in the context of the digital economy.⁵⁸ On the other hand, some have called for new approaches which take into account considerations such as consumer privacy, the use and control of data and the lock-in effect of digital platforms, to better capture the features of modern competition in the digital economy.⁵⁹

One major challenge faced by both regulators and private sector firms is that technologies and business models are evolving rapidly, and policies have had difficulty keeping up with the pace of change. Indeed, there is often a significant gap between technology and policy, with potentially negative implications for businesses and the economy. Complicating the situation are the different rates at which governments around the world have been responding to the digital economy as well as the varied approaches to similar issues. Consequently, participants find it difficult to adhere to the different regulations enacted. This suggests that as APEC economies redouble their **regulatory reform** efforts, they should seek to (1) minimize the burdens on digital participants to the extent possible; and (2) increase international regulatory cooperation (IRC) to ensure greater standardisation and alignment of digital economy policies.

For businesses and entrepreneurs, reaping these benefits, however, depends also on efforts to promote **ease of doing business (EoDB)**. In some economies such regulations are in their infancy, particularly with respect to the digital economy. Furthermore, although digital technology and tools have facilitated transactions (i.e., digitally enabled them), a significant share of products are not digitally delivered. The digital economy has led to a boom in e-commerce and the consequent trade in small parcels across

⁵⁸ For example, see Jacques Crémer, Yves Alexandre de Montjoye and Heike Schweitzer, 'Competition Policy for the Digital Era' (Luxembourg: Publications Office of the European Union 2019), <https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf>.

⁵⁹ For example, see United Nations Conference on Trade and Development (UNCTAD), 'Competition Issues in the Digital Economy', https://unctad.org/meetings/en/SessionalDocuments/ciclpd54_en.pdf; Lina M. Khan, 'Amazon's Antitrust Paradox', *The Yale Law Journal* 126, no. 3 (January 2017), <https://www.yalelawjournal.org/note/amazons-antitrust-paradox>

borders. E-commerce is only one example of how developments in the digital realm can affect the non-digital realm. While it is important to update regulations for the digital age, it will also be important to address issues related to cross-border trade for the digital economy to operate efficiently.

Last but not least, governments can play an important role in charting the direction of the digital economy by applying digital technology and tools to improve **public sector governance** in areas such as tax filing, licence applications, and making documents and information easily accessible to the public. They can also use them to enhance policy design, experimentation, implementation, monitoring and evaluation. By acting as a trailblazer, governments can encourage the use of such technologies and tools by the private sector and society as a whole.

Supplementing core structural reforms

While advancements in new technologies and business models have led to more opportunities, the distribution of the benefits of the digital economy has been unequal. An example is in the labour share of GDP, which is often considered an indicator of the distribution of income and inclusiveness of economic growth as the majority of people in a society are workers and not capital owners. Both industrialised and developing APEC economies exhibited a downward trend between 1995 and 2014.⁶⁰ This indicates that income inequality is increasing in the region. The digital economy can exacerbate inequality and exclusion through different channels such as: a reduction in jobs and employment opportunities; lack of skills; and limited access to infrastructure, technology, and social protection.

Recognising that Economic Committee's (EC's) core structural reforms constitute only one aspect of structural reform-related work, the committee produced a document in 2018 proposing three approaches that economies may take to better harness structural reform to tackle complex challenges an example being inclusive growth. The document notes the importance of adopting a holistic approach that supplements core structural reform reforms with supporting policies. This can entail: (1) **making core structural reforms pro-inclusive** and/or **undertaking structural reforms in specific areas** generating positive externalities such as **human capital development, infrastructure and social security**; and (2) **ensuring that core structural reforms are aligned with other types of reforms and supporting policies** to maximise the impact with respect to policy objectives such as inclusive growth. These approaches can be applied to the digital economy's challenges as well.

Optimising structural reforms

Structural reforms are important to maximise the benefits and economic opportunities brought about by the digital economy while overcoming their challenges and avoiding harms. However, structural reforms need to be optimised to ensure their continued relevance. When implementing policies, policymakers need to ensure they are well-coordinated, coherent and complementary to one another. This would entail getting the basics right by focusing on core structural reforms, and complementing them with supplementary structural reforms and supporting policies. Lack of coordination can also lead to missed opportunities regarding possible synergies with other structural reforms and supporting policies that would increase the likelihood of achieving policy objectives. This requires policymakers to reach across traditional policy silos and across different levels of government to improve collaboration and develop a whole-of-government approach to digital economy policy.

Part 2 of this report focuses on the role of core structural reforms (i.e. competition policy, regulatory reform, public sector governance and ease of doing business), while Part 3 presents the importance of supplementing core structural reforms and of holistic policy approaches to ensure inclusion in the digital economy.

⁶⁰ APEC Policy Support Unit, 'APEC Regional Trends Analysis: Declining Labour Share and the Challenge of Inclusion' (Singapore: APEC, November 2017), <https://www.apec.org/Publications/2017/11/APEC-Regional-Trends-Analysis-2017>.

PART 2: CORE STRUCTURAL REFORMS FOR DIGITAL ECONOMY DEVELOPMENT

Policymakers need to review existing policies and build on them to maximise the benefits and economic opportunities brought about by the digital economy while overcoming the challenges to people, firms and the environment. Structural reforms constitute an important area where more attention is needed.

There are many definitions of structural reform. The European Commission defines structural reforms as those that tackle ‘obstacles to the fundamental drivers of growth by liberalizing labour, product and service markets, thereby encouraging job creation and investment as well as improving productivity. They are designed to boost an economy’s competitiveness, growth potential and adjustment capacity.’⁶¹ The IMF’s definition is similar, indicating that ‘structural reforms are measures that aim to raise productivity by improving the technical efficiency of markets and institutional structures, or by reducing impediments to the efficient allocation of resources’.⁶² Recognising differences in the levels of development of its member economies, APEC defines structural reform as a ‘policy change related to institutional frameworks, regulation and government policy [designed], so that barriers to market-based incentives, competition, regional economic integration and improved economic performance are minimized.’⁶³ In broad terms, structural reform involves removing structural barriers so that individuals can better access economic opportunities.

If properly implemented, structural reforms can boost economic efficiency and set the economy on a higher growth path. In the case of APEC, a study conducted in 2011 showed that structural reforms in several backbone services sectors including transport, energy and telecommunications could generate additional real income of USD 175 billion a year (in 2004 dollars) after a 10-year adjustment period. Productivity improvements associated with these reforms, between 2 and 14 percent, could ensure sustainable economic growth. In addition, potential gains from structural reforms could be almost twice those achieved through further liberalisation of the goods trade.⁶⁴

The Economic Committee (EC) has a mandate from APEC Structural Reform Ministers to promote structural reform activities under the Renewed APEC Agenda for Structural Reform (RAASR).⁶⁵ The EC defines core structural reforms as its main work areas under the RAASR.⁶⁶ This part of the report will evaluate the application of four of the EC’s core structural reforms (competition policy and law; regulatory reform; public sector governance; and ease of doing business) to the digital economy’s opportunities and challenges.

A. Competition policy and law

Competition policy refers to laws, cases, policies, rules and regulations of government that protect and preserve the competitive process in markets with the goal of promoting economic efficiency and

⁶¹ ‘Structural Reforms for Economic Growth’, European Commission, accessed 12 June 2019, https://ec.europa.eu/info/business-economy-euro/growth-and-investment/structural-reforms/structural-reforms-economic-growth_en.

⁶² ‘IMF Survey: IMF Refines Analysis and Advice on Structural Reforms’, IMF, accessed 12 June 2019, <https://www.imf.org/en/News/Articles/2015/09/28/04/53/sopol110915a>.

⁶³ APEC, *2011 APEC Economic Policy Report* (Singapore: APEC, 2011), <http://publications.apec.org/Publications/2011/05/2011-APEC-Economic-Policy-Report>.

⁶⁴ APEC, ‘The Impacts and Benefits of Structural Reforms in Transport Energy and Telecommunications Sectors’ (Singapore: APEC, January 2011), <http://publications.apec.org/Publications/2011/01/The-Impacts-and-Benefits-of-Structural-Reforms-in-Transport-Energy-and-Telecommunications-Sectors>.

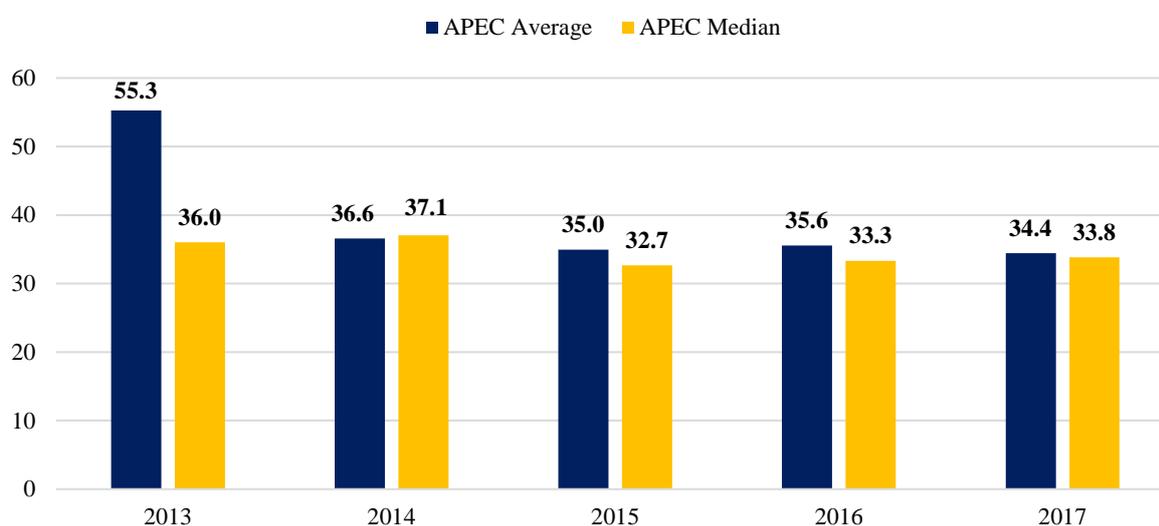
⁶⁵ APEC, ‘Attachment A – The Renewed APEC Agenda for Structural Reform (2016–2020)’, 2015, https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Structural-Reform/2015_structural/Attachment-A.

⁶⁶ APEC, ‘Economic Committee Chair’s Report 2018’ (2018/CSOM/015, Singapore: APEC, 2018), http://mddb.apec.org/Documents/2018/SOM/CSOM/18_csom_015.pdf.

maximising consumer welfare. It also entails advocacy of pro-competitive principles when the government formulates other laws, policies, rules or regulations.

Competition policy is one of the most critical structural reforms for the digital economy. **First**, increased competition can lead to reduced prices and improved regional coverage in the telecommunications sector, which is the infrastructure for delivering digital economy products and services. While the price of internet and broadband access has decreased over time, affordable access is still a challenge in many APEC economies. For example, although significant progress has been made within the APEC region with average fixed broadband prices falling from PPP\$ 55.3 in 2013 to PPP\$ 34.4 in 2017 (see Figure 2.1.), there continues to be wide variations among member economies. In 2017, the average fixed broadband cost in APEC ranged from a low of PPP\$ 6.75 to a high of PPP\$ 62.88. As a proportion of gross national income per capita, the percentage for APEC economies ranged between 0.45 and 7.94 percent, with eight economies measuring above 2 percent, the new affordability threshold set by the Broadband Commission.⁶⁷ In response to these gaps, policy makers can enhance market openness and level the playing field between incumbents and new entrants. This will in turn promote investment and hence competition in the telecommunications sector, with potential positive effects on price and access.

Figure 2.1. APEC fixed broadband basket prices (in PPP\$)



Note: Data for Chinese Taipei was not available; the relatively higher average fixed broadband price in 2013 is a result of an outlier (Papua New Guinea with a fixed broadband price of PPP\$ 441.5 before falling to PPP\$ 54.6 in the following year). Despite this being the case, its exclusion still indicates a similar trend of falling average fixed broadband prices between 2013 and 2017.

Source: International Telecommunication Union (ITU), 'ICT Price Baskets', accessed 12 June 2019, <https://www.itu.int/net4/ITU-D/ipb/#ipbtimeseries-tab>.

⁶⁷ International Telecommunication Union (ITU), 'More and More Governments Now Benchmark Broadband Status in Their National Plans, Says New Global Report', 11 September 2018, <https://www.itu.int/en/mediacentre/Pages/2018-PR25.aspx>.

Box 2.1. Promoting competition and removing barriers to investment to boost connectivity: Lessons from OECD economies

In the past, communication networks across the OECD were typically stand-alone endeavours, with separate firms and business models operating on independent fixed, wireless and broadcasting networks. These services have increasingly converged on IP-based networks or the internet. This means that market players are able to offer combinations of telephony, broadband internet access, wireless services and television. As a result, telecommunication infrastructure often experiences competition issues. There is a need for policy makers to ensure sufficient competition. Some means by which they can do this are outlined below:

1. Policymakers should exercise **caution with potential mergers** that would reduce the number of mobile network operators (MNOs) in a given market considering the results from available studies highlighting the price and non-price effects of such mergers. Experience has shown that economies with a larger number of MNOs, for example those going from three to four operators, are likely to offer more competitive and innovative services, although local conditions vary. Further, proposed remedies should be assessed in terms of whether they effectively ensure competition. Some economies have opted for behavioural remedies such as obtaining commitments from merging parties, while others have facilitated the presence of mobile virtual network operators. Still others have applied structural remedies (e.g., divestment) when other options have been deemed as not effective enough to promote competition. Policy makers should also promote sufficient competition in international mobile roaming.
2. **Infrastructure sharing** is another way to promote competition in telecommunication markets, particularly where markets are characterised by a dominant player. Such policies typically relate to access to passive infrastructure deployed by other actors, whether for operators deploying fibre to gain access to the infrastructure of public utilities, or for new entrants seeking access to passive infrastructure owned by other operators (e.g., dark fibre, ducts and masts). Infrastructure-sharing provisions could reduce costs for network and service providers while enabling the development of new and innovative services for end users. The benefits of infrastructure sharing, however, should be balanced against the potential costs of reduced incentives to invest in the development and maintenance of infrastructure.
3. **Co-investment arrangements**, whereby two or more operators co-invest in network deployment could, in some circumstances, spur coverage and increase competition. Such arrangements have emerged in economies like the Netherlands, Portugal, Spain and Switzerland as a means of sharing risk and overcoming financing constraints. However, the impacts of such arrangements and the ideal conditions for network access for third parties depend on local market conditions and factors such as the number of operators and the areas of co-investment, and the overall effect is unclear at this stage.
4. It is important to ensure the **development of, access to and use of Internet Exchange Points (IXPs)**, to better enable the local exchange of traffic, unburden interregional links and stimulate investment in local networks. Second, it is important to ensure the efficient allocation of spectrums, a scarce natural resource that is increasingly important with the large amounts of data being transmitted over wireless networks. Third, as Perset notes, with the pool of existing unassigned IP addresses close to exhaustion, the relatively slow uptake of the new generation of IP addresses (IPv6) could limit the connection of more devices and machines, although some internet service providers have developed short-term solutions for IPv4 reuse. Other administrative barriers to investment can include licensing requirements and overly complex rights of way permissions to install towers or masts.

Adapted in full or part from:

- OECD, *Going Digital: Shaping Policies, Improving Lives* (Paris: OECD, 2019), <https://doi.org/10.1787/978OECD.9264312012-en>.
- Karine Perset, 'Internet Addressing: Measuring Deployment of IPv6' (Paris: OECD, March 2010), <https://www.oecd.org/internet/ieconomy/44953210.pdf>.

Second, enhanced competition can bring benefits to other sectors (besides telecommunications) that are important for the digital economy. As the section on opportunities and challenges in the digital economy has shown, both the public sector and private sector firms, including MSMEs, can now access a wide range of online services including cloud computing, software-as-a-service (SaaS) and data analytics that can enhance productivity and improve product offerings at a fraction of the cost of developing them in-house. However, some existing policies, particularly those related to data storage, processing and transfer may reduce the access of firms to these services. Alternative services may cost more, making firms in those economies less competitive vis-à-vis their global counterparts.

Box 2.2: Increasing access and fostering competition in the Mexican telecommunication sector

Pre-reform: In 2012, the Mexican telecommunications sector was characterised by a high degree of concentration and high average prices for telecommunication services. A single company controlled 80 percent of the landline phone market in Mexico and 70 percent of the wireless market, while over three quarters of households lacked access to the internet. A review of the sector carried out by the OECD recommended 31 actions to improve competition in the telecommunication market, ensure the consistent and transparent application of telecommunication regulation, improve the legal and regulatory framework and stimulate competition more broadly throughout the economy.

Response: The recommendations were implemented in a wide-ranging reform of the legal and regulatory framework in 2013, fully covering 29 of the 31 listed with partial implementation for just three recommendations. Five years later, the OECD was invited to review the implementation of the recommendations and the effects of the reform of the Mexican telecommunication sector and to put forward a set of further recommendations to maintain the momentum.

Impact: A subsequent OECD Telecommunication and Broadcasting Review in 2017 found that increased competition as a result of the reform helped to drive down prices for telecommunication services in Mexico. The OECD high-usage basket, for example, had the sharpest drop in prices, from USD 101 (PPP) to USD 24.93 (PPP), representing a decline of over three quarters of the original price. Almost 50 million mobile broadband subscriptions had been added since the reform, most of them with higher quality offerings than before. This decline in prices and increase in the quality of telecommunication services especially benefitted lower income households and disenfranchised communities and individuals throughout Mexico. Foreign entry into the marketplace has spurred investment in infrastructure and the *Red Compartida* – a shared wholesale wireless network – will likely further this trend.

Challenges: However, additional efforts will be needed to further increase fixed and mobile access to the internet, an essential precondition for engaging with the digital economy. At the same time, the economy should undertake further efforts in the broadcasting sector, a sector where concentration increased and prices have risen 5 percent over the past few years.

The OECD Telecommunication and Broadcasting Review of Mexico 2017 encourages Mexico to go even further, given an expected further increase of convergence of broadcasting and telecommunication services. Specific recommendations relate to competition, market conditions and economy-wide policies, all underpinned by the necessity to strengthen current legal and institutional frameworks. The OECD believes that the adoption of these recommendations would further expand access to telecommunication and broadcasting services for Mexicans, including for those in communities with lower levels and quality of internet access.

Adapted in full or part from:

- OECD, 'Making the Digital Transformation Work in LAC' (OECD Science, Technology and Innovation Directorate, forthcoming 2019).
- OECD, 'OECD Telecommunications and Broadcasting Review of Mexico 2017' (Paris: OECD, 2017), <https://doi.org/10.1787/9789264278011-en>.

Third, appropriate competition policies can facilitate new market entrants and the uptake of new business models. However, new entrants may find it difficult to compete against incumbent digital economy firms. As an illustration, network effects (i.e., whereby an increase in the number of participants improves the value of a good or service) and other features of the digital economy have led to an increasing number of firms operating in multi-sided markets. Often, the ownership of a primary platform allows firms to collect large volumes of data from users. The data can then be used to improve that firm's services, cross-sell other services and increase its overall profitability. In some cases it may be difficult for new entrants to challenge incumbent platforms.⁶⁸ At the core of these debates are issues such as data sharing, interoperability, portability and ownership. For example, a study by UNCTAD indicates that the sweet spot for data access resides primarily with core platform owners and secondarily with higher-level platforms. Although smaller firms would be able to access their own data and analyse them, access to insights from larger pools of data would have to come at a cost or be entirely at the discretion of the platform owners.⁶⁹ Finding the optimum solution to these issues is not easy. On one hand, providing greater access to data allows for greater competition and innovation in the market.⁷⁰ On the other hand, requiring access to an incumbent's data may diminish the incentive of a platform to invest in data collection, potentially undermining the incentive to innovate.⁷¹

Fourth, the role of technology such as AI on competition is also widely discussed. For example, while AI could lead to benefits such as speeding up R&D activities and lowering prices through automation,⁷² it could also enable first-degree price discrimination (i.e., adjustments of price in real time based on consumers' perceived need for products and willingness to pay⁷³).

Fifth, there remain different views on the applicability of traditional competition policy approaches in the digital economy. On one hand, there are views that the core principles of traditional competition policy are sufficient and flexible enough to be adapted and adjusted to the new characteristics of the digital economy.⁷⁴ On the other hand, others opined that more fundamental adjustments need to be made, such as including different criteria (e.g. the control of data, network effects, switching costs) when assessing market power. In fact, economies are still in the midst of exploring the best approaches to this issue. A case in point is the merger of Grab and Uber, which were reviewed and treated differently in Southeast Asian economies. The Competition and Consumer Commission of Singapore imposed a fine of SGD 13 million on both Grab and Uber for harming competition, while in Indonesia and Malaysia no penalty was imposed.⁷⁵

⁶⁸ David Autor et al., 'Concentrating on the Fall of the Labor Share' (Cambridge, MA: National Bureau of Economic Research, January 2017), <https://www.nber.org/papers/w23108.pdf>.

⁶⁹ UNCTAD, 'The New Digital Economy and Development' (Geneva: UNCTAD, October 2017), https://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d08_en.pdf.

⁷⁰ Daniel Castro and Michael Steinberg, 'Blocked: Why Some Companies Restrict Data Access To Reduce Competition and How Open APIs Can Help', *SSRN Electronic Journal*, 2017, <https://doi.org/10.2139/ssrn.3108763>.

⁷¹ Bernard (Barry) A. Nigro, Jr., "'Big Data" and Competition for the Market' (New York: US Department of Justice), <https://www.justice.gov/opa/speech/file/1017701/download>

⁷² S. Chitturu et al., 'Artificial Intelligence and Southeast Asia's Future' (McKinsey Global Institute, September 2017), <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Artificial%20Intelligence/AI%20and%20SE%20ASIA%20future/Artificial-intelligence-and-Southeast-Asias-future.ashx>.

⁷³ Benjamin Reed Shiller, 'First Degree Price Discrimination Using Big Data' (Brandeis University, Department of Economics and International Business School, January 2014), <https://ideas.repec.org/p/brd/wpaper/58.html>.

⁷⁴ Crémer, de Montjoye and Schweitzer, 'Competition Policy for the Digital Era'.

⁷⁵ UNCTAD, 'Competition Issues in the Digital Economy' (TD/B/C.I/CLP/54, 1 May 2019), https://unctad.org/meetings/en/SessionalDocuments/ciclpd54_en.pdf

Box 2.3. Monitoring changes in competitive dynamics

In the case of competition policy, it is often important to measure **industry concentration** to better understand the level of the competition present in an economy or sector. While an imperfect measure, industry concentration can serve as a proxy to better understand the degree of competition in a given sector or market, as well as changes in the structure of industries. The level of industry concentration may be affected by the mergers and acquisitions that are carried out. Over 2003-2015, the number of global mergers and acquisitions doubled, with a strong increase in cross-border mergers and acquisitions of firms in digital-intensive sectors. The number of cross-border acquisitions of digital-intensive firms grew by more than 40 percent over 2007-2015, compared to 20 percent growth in acquisitions of less digital-intensive firms. These developments may not necessarily be a source of concern, as they may be inherent to the nature of digital transformation, but they should be further examined and considered by policy makers.

Ensuring a competitive environment for both domestic and cross-border transactions is essential. In the cross-border context, **regulatory restrictions on products can be assessed for being excessive or insufficient** compared to restrictions on domestically supplied products. Such an assessment may consider whether an economy's standards are followed by products sold across borders and ensure that illegal products are not made available. Competition in the cross border context includes single firms seeking to sell products across a border and limits on rivalry by a dominant firm or cartels.

Adapted in full or part from:

- OECD, *Going Digital: Shaping Policies, Improving Lives* (Paris: OECD, 2019), <https://doi.org/10.1787/978OECD.9264312012-en>.

In response to these challenges, economies have begun to review and adjust their competition policies and/or introduce policy measures to enhance competition. For example, they have lowered the barriers for new entrants by facilitating the entry of technology firms into heavily regulated sectors and/or those that are typically dominated by brick and mortar firms such as the financial sector. For instance, in 2018, Korea granted preliminary regulatory approval to two online only banks to provide loans to consumers.⁷⁶ Similarly, Australia has issued deposit taking licenses to digital banks.⁷⁷ At the same time, some economies have also put in place measures to ensure that incumbent firms cannot disadvantage new entrants. As an illustration, the Philippines passed a law to allow consumers to take their mobile numbers with them when they switch telecommunication service providers (portability).⁷⁸ Australia has launched the Consumer Data Right (CDR) to allow consumers better control of their banking data. This initiative allows consumers to safely and conveniently move their banking data to other service providers. CDR is expected to be carried out in stages with information including but not limited to mortgage and deposit accounts made available by 2020.⁷⁹ Likewise, Singapore is currently in discussions to introduce a data portability requirement within its Personal Data Protection Act (PDPA). It hopes that this will allow consumers to move information seamlessly across service providers.⁸⁰ To

⁷⁶ 'South Korea to Debut Open Banking in December', Regulation Asia, 17 April 2019, <https://www.regulationasia.com/south-korea-to-debut-open-banking-in-december/>.

⁷⁷ Cherie Marriott, 'How Australia's Virtual Banks Compete with the Giants', FinanceAsia, 25 April 2019, <https://www.financeasia.com/article/how-australias-virtual-banks-compete-with-the-giants/450697>.

⁷⁸ Philippines, 'Republic Act No. 11202 Requiring Mobile Service Providers to Provide Nationwide Mobile Number Portability to Subscribers', *Official Gazette of the Republic of the Philippines*, accessed 21 June 2019, <https://www.officialgazette.gov.ph/2019/02/08/republic-act-no-11202/>.

⁷⁹ Australian Competition and Consumer Commission, 'Consumer Data Right (CDR)', 30 May 2018, <https://www.accc.gov.au/focus-areas/consumer-data-right-cdr-0>.

⁸⁰ Kevin Kwang, 'Singapore Plans Data Portability Requirement as Part of PDPA Update', *Channel NewsAsia*, 25 February 2019, <https://www.channelnewsasia.com/news/singapore/singapore-personal-data-protection-act-portability-rights-move-11287772>.

reap the benefits and overcome the challenges of the home sharing economy including its implications for traditional hotels, Malaysia conducted a study on short term accommodations in 2018 and is currently in the midst of drafting a regulatory framework to better regulate it (see Box 2.4).

Box 2.4. Regulating Malaysia's home-sharing economy

Pre-reform: Homestays⁸¹ have been popular in Malaysia, particularly since the Ministry of Tourism and Culture launched its homestay initiative in 1995. The rise of digital platforms such as Airbnb has contributed to further growth as they provide homeowners with access to a larger market. Indeed, with a 137 percent year-on-year growth in 2017 and a total of 1.5 million bookings, Malaysia is the Asian market with the highest growth rate for Airbnb. While digital platforms have transformed the hospitality industry, traditional players have voiced their displeasure at the advantages these new players often enjoy. Moreover, these unregistered and unrecorded activities have raised questions of safety, with potential negative implications for the growth of the industry. Clear definitions, and regulations on safety and other matters will be needed as the industry continues to grow.

Response: In response, Malaysia conducted a study to provide policy recommendations for short-term accommodation in 2018. The study recommends that the definition of short-term accommodation be enhanced since current laws do not fully capture the nature of the new service. It further adds that a better definition would allow governments to better differentiate between new and traditional service providers. Noting that the home-sharing economy could be added as a new category in the hospitality industry, the study provides a basis for a regulatory framework that addresses issues such as public nuisance, safety, security, change of land use, taxation, registration and licensing. Using recommendations indicated in the study as inputs, Malaysia is currently drafting a regulatory framework for the home sharing economy.

Challenges: Malaysia has noted the following three challenges when implementing reforms to respond to the digital economy: (1) finding the balance between ensuring a level playing field for both existing and new players and creating an enabling environment for the home sharing economy to grow, while at the same time protecting consumer rights; (2) developing effective taxation solutions for online platforms and cloud providers with no or minimal physical presence in the economy; and (3) creating a hybrid regulatory framework which involves multiple government agencies and requires them to work closely with one another.

Source: Adapted from Malaysia's case study submission.

B. Regulatory reform

APEC's work on regulatory reform aims to ensure governments are equipped with institutions and processes that will enable them to put in place effective laws and regulations to maximise the benefits of the digital economy while assessing and managing its risks. In the area of good regulatory practices (GRPs), useful tools include better domestic coordination of rule-making activity, regulatory impact assessment (RIA) and public consultation mechanisms.

A major challenge for regulators is that technologies and business models are evolving faster than policies. There is often a significant gap between technology and policy, with potentially negative implications for businesses and the economy as a whole. The OECD has identified a range of government policies from the analogue era that are ill-adapted to today's digital world.⁸² These include vertical regulations which constrain market entry for digital actors in a range of sectors, such as transport, accommodation and pharmaceuticals; regulations that require a physical presence or

⁸¹ Refers to a form of lodging whereby visitors are hosted in the residence of a local.

⁸² OECD, 'Maintaining Competitive Conditions in the Era of Digitalisation' (Paris: OECD, 2018), 4, <http://www.oecd.org/g20/Maintaining-competitive-conditions-in-era-of-digitalisation-OECD.pdf>.

significant minimum scale; regulations with high regulatory burden in sectors such as banking; and regulations previously intended to address market failures due to information asymmetries.

Firms, especially MSMEs, often face barriers in exporting and in participating in global value chains (GVCs). E-commerce has been touted as a viable alternative channel to internationalisation for such firms. There are indeed many success stories of entrepreneurs who have grown their business both domestically and internationally using e-commerce as a channel. However, it is also true that these success stories are a mere drop in the bucket considering that MSMEs number in the millions and make up the highest share of firms in many economies including in APEC member economies. While many factors can contribute to firms' success in using e-commerce as a channel including the capacity of the firms themselves, a favourable regulatory environment is critical (see Box 2.5). For instance, DeStefano et al. find that regulations pertaining to ease of doing business, ICT and employment protection have significant effects on the uptake of ICT hardware.⁸³

Seamless e-commerce experience requires logistics and payment systems to link buyers, sellers and other actors with a minimum amount of friction. Challenges in any component of the ecosystem will impact e-commerce and hence the market opportunities for firms. A well-functioning payment service requires correspondent banking relationships or agreements between banks as well as payment service providers. While regulations on anti-money laundering and measures to protect against terrorist financing and hackers are important, they may affect discussions pertaining to the establishments of such relationships or agreements. For instance, Mexico, in response to attacks on its electronic interbank payment system (SPEI), tightened the requirements for transfers, making it mandatory for participants to follow protocols in the event of a security breach.⁸⁴ Compliance with such protocols and regulations can be onerous, particularly for MSMEs with limited resources. As a result, they may be forced to offer fewer payment options, limiting their market reach.

⁸³ Timothy DeStefano, Koen De Backer and Laurent Moussiegt, 'Determinants of Digital Technology Use by Companies' (Paris: OECD, 2017), <https://doi.org/10.1787/a9b53784-en>.

⁸⁴ BNamericas, 'Mexico Central Bank Tightens Rules on Electronic Transfers', 27 July 2018, <https://www.bnamericas.com/en/news/mexico-central-bank-tightens-rules-on-electronic-transfers>.

Box 2.5. E-commerce development in Viet Nam

Pre-reform: Viet Nam recognised that e-commerce brings many benefits to firms including MSMEs. For example, e-commerce provides an additional sales channel and promotes the adoption of new business models.

Response: Since 2005, Viet Nam has undertaken structural reform to promote e-commerce development. The following are a few of those reforms:

1. Legitimising e-commerce

Viet Nam passed three main pieces of legislation which lay the legal foundation for e-commerce development, namely the Commercial Law, the Civil Code Law on Information Technology and the Electronic Transaction Law. Collectively, these regulations recognise the value of data messages within civil and commercial transactions, ensure transactions are secure as well as regulate the use and development of information technology and security for e-commerce.

2. Creating an open environment for e-commerce

To create an environment that facilitates e-commerce, Viet Nam reduced the number of licensing regulations through Decree No. 97/2008/ND-CP. The decree also introduced a new regulatory approach, where the government now views the internet as a complementary and modern channel for socio-economic activities instead of being a distinct area that requires special management. Additionally, the introduction of the Telecommunications Law in 2009 led to an improvement in the regulatory approach to the domain name '.vn'.

3. Entering into FTA agreements with clause on e-commerce

Viet Nam has also increasingly participated in trade agreements containing commitments on e-commerce. For instance, Viet Nam has participated in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) which contains an e-commerce chapter with commitments in areas such as consumer protection. Others include the ASEAN Agreement on e-commerce to facilitate cross-border e-commerce transactions in the ASEAN region.

Impact: The reforms have contributed to Viet Nam becoming one of the fastest growing e-commerce markets, with market size increasing from USD 2.2 billion in 2013 to USD 6.2 billion in 2017. These regulations have also led to an increase in competition, as large foreign e-commerce players such as Amazon and Alibaba enter the market, domestic e-commerce players are forced to boost their competitiveness. Consequently, the share of internet users engaging in online shopping has increased from 57 percent in 2013 to 67 percent in 2017.

Lessons learned: Viet Nam indicated that the above reforms have to be complemented with other reforms (e.g., in the telecommunications sector) to achieve its intended objective. It noted that the development of e-commerce is also partly the result of the increase in internet speed and users, which in turn, is due to reforms in telecommunications sector that have led to Viet Nam having 65 licensed internet service providers by the end of 2017.

Source: Adapted from Viet Nam's case study submission.

On the customers' side, the lack of certain documentation may prevent people from opening bank accounts, one of the common criteria needed to make online purchases. For instance, in 2017, the Global Findex Database identified 1.7 billion adults to be unbanked with approximately one fifth of adults citing the lack of documentation and distrust of the financial system as reasons for not having a bank account.⁸⁵

APEC economies are working to reduce some of the payment-related frictions. For example, Brunei Darussalam has developed a digital payment roadmap to balance regulation and innovation, adopt open digital payments and increase public awareness and education.⁸⁶ The roadmap aims to bolster collaboration among market players (including existing financial institutions and prospective payment service providers) and promote market interoperability among others. Indonesia's state owned banks and a telecommunication firm are expected to merge the different payment services into one platform. Under the new platform, users will no longer be required to have a bank account as payments can be made through QR (bar) codes.⁸⁷ In Malaysia, the financial industry has established the Real-time Retail Payments Platform (RPP), a shared payment infrastructure, to enable seamless, interoperable payments between banks and non-banks. A key element under the RPP is an interoperable QR scheme whereby merchants only need to display common QR code to receive payments from customers using any RPP participating bank or non-bank.⁸⁸

Specifically on electronic money or wallet, economies have identified the need for greater regulation to protect consumers, among others, while ensuring that the regulations do not impede the growth of firms providing these services. For instance, Singapore passed the Payment Services Act, which contains consumer protection measures such as requiring major payment institutions to safeguard customer money held in these mobile wallets. The measures aim to minimise the potential risks posed by the payment service providers to consumers.⁸⁹ Indonesia's central bank has introduced regulations where it updated the set of rules for electronic money such as allowing electronic money only to be used for payment instruments for goods and services from the issuer of these e-money among others.⁹⁰ In China, the central bank has imposed a regulation limiting daily mobile transactions conducted via static QR codes to RMB 500 (USD 79) per customer to protect their financial security and prevent scams. Beyond the threshold, dynamic QR codes (which are considered much safer) have to be used for payments.⁹¹

It is important to identify that over-, mis- and under-regulation can impede customer participation in activities such as e-commerce. The OECD has identified several consumer protection issues related to the rise of the digital economy, including: transparency and disclosure; discrimination and choice; privacy and security; interoperability; and accountability.⁹² Among the five areas, accountability featured strongly within e-commerce with the World Economic Forum indicating that trust tends to be more important online than offline given the lack of face-to-face contact. Furthermore, the same report noted that consumers are less likely to participate in online transactions if they were not covered by the

⁸⁵ Asli Demirgüç-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution* (Washington, DC: World Bank, 2018),

<https://openknowledge.worldbank.org/bitstream/handle/10986/29510/9781464812590.pdf>.

⁸⁶ Autoriti Monetari Brunei Darussalam, 'Digital Payment Roadmap for Brunei Darussalam 2019–2025', media release, 21 December 2018, <https://www.ambd.gov.bn/Lists/News/Displayitem.aspx?ID=389>.

⁸⁷ Teresa Umali, 'Indonesian State Companies to Merge Mobile Payment Services', OpenGov Asia, 23 February 2019, <https://www.opengovasia.com/indonesian-state-companies-to-merge-mobile-payment-services/>.

⁸⁸ PayNet, 'Real-time Retail Payments Platform (RPP)', <https://paynet.my/fi-rpp.html>.

⁸⁹ 'Parliament: MAS to Regulate More Types of Payment Services such as Mobile Wallets under New Act', *The Straits Times*, 14 January 2019, <https://www.straitstimes.com/politics/parliament-mas-to-regulate-more-types-of-payment-services-such-as-mobile-wallets-under-new>

⁹⁰ Oka Anantajaya and Mochtar Karuwin Komar, 'Bank Indonesia Issues New E-Money Regulation', In-house Community, 20 June 2018, <https://www.inhousecommunity.com/article/bank-indonesia-issues-new-e-money-regulation/>.

⁹¹ ECNS, 'Limit on QR code payments to take effect from April', Ecns.cn, 16 March 2018, <https://www.ecns.cn/cns-wire/2018/03-16/296003.shtml>.

⁹² OECD, 'Challenges to Consumer Policy in the Digital Age' (Paris: OECD, 2019), <http://www.oecd.org/sti/consumer/challenges-to-consumer-policy-in-the-digital-age.pdf>.

same level of protection or did not have access to the same types of remedies.⁹³ In 2017, a survey conducted by the Centre of International Governance Innovation and IPSOS found close to half of respondents indicating that lack of trust was a key reason they did not shop online.⁹⁴ Despite the need for strong consumer protection, UNCTAD found that only 52 percent of economies around the world had some form of consumer protection legislation while within APEC, five out of 19 economies did not have them in place.⁹⁵ In response to these trends, economies have implemented or strengthened laws and regulations whose aims include strengthening consumer protection in the digital economy (see Box 2.6 for China's case study). Regional organisations are also working on strengthening consumer protection, an example being ASEAN through the creation of the ASEAN Strategic Action Plan on Consumer Protection 2025 that aims to modernise consumer protection legislation within member economies.⁹⁶ Similarly, APEC has taken steps toward strengthening consumer protection through means such as Online Dispute Resolution (ODR). It is currently developing the APEC Collaborative Framework for Online Dispute Resolution which aims to help businesses resolve cross border disputes.⁹⁷

Box 2.6: Strengthening consumer protection in China through E-Commerce Law

Introduction: E-commerce is an integral part of China's digital transformation. In 2018, annual e-commerce transaction volume reached RMB31.63 trillion, with online retail sales registering a year-on-year increase of 23.9 percent. Among the benefits of e-commerce to China are boosting consumption, increasing employment, helping combat poverty and developing the world's largest online retail, digital payment and logistics market.

Pre-reform: Despite these benefits, the e-commerce market is impeded by various issues, including:

- asymmetry of technology and information between parties.
- abuse of dominance by some platforms.
- varied product quality.
- privacy and security of consumer data.

These issues have negatively impacted consumer rights and interest, and reduced market competition.

Response: In August 2018, China passed the E-Commerce Law to cover various aspects of e-commerce such as registration of legal entities, responsibility of platform, prohibition of false advertising, protection of intellectual property rights (IPR) and taxation.

The legislation, which came into force in January 2019, includes the following key measures:

- clarifies the legal entities that have to be registered.
- prohibits fictitious transactions, false advertising, fabrication and deletion of reviews.
- prevents abuse of market power.
- clarifies the responsibilities of platform operators and provides legal guidance for dispute handling.

⁹³ World Economic Forum, 'The Global Governance of Online Consumer Protection and E-commerce: Building Trust' (Geneva: World Economic Forum, 2019), http://www3.weforum.org/docs/WEF_consumer_protection.pdf.

⁹⁴ The survey was conducted in 24 economies, involving 24,225 internet users. See: Centre for International Governance Innovation and Ipsos, '2017 CIGI-Ipsos Global Survey on Internet Security and Trust', accessed 15 September 2019, <https://www.cigionline.org/internet-survey-2017>.

⁹⁵ The study does not cover Hong Kong, China; and Chinese Taipei. UNCTAD, 'Summary of Adoption of E-Commerce Legislation Worldwide', accessed 19 September 2019, https://unctad.org/en/Pages/DTL/STI_and ICTs/ICT4D-Legislation/eCom-Global-Legislation.aspx.

⁹⁶ Association of Southeast Asian Nations (ASEAN), 'Handbook on ASEAN Consumer Protection Laws and Regulation' (Jakarta: ASEAN Secretariat, June 2018), <https://asean.org/wp-content/uploads/2018/05/Handbook-on-ASEAN-Consumer-Protection-Laws-and-Regulation.pdf>.

⁹⁷ APEC, 'APEC Collaborative Framework for Online Dispute Resolution' (APEC 2019 First Economic Committee Meeting, Santiago, Chile, 2019), http://mddb.apec.org/Documents/2019/EC/EC1/19_ec1_012.pdf.

- requires contracts to be enforced.

Impact: Although it has only been recently implemented, China indicated that the law has played a positive role in regulating e-commerce activities. For example, it has led to the withdrawal of unqualified and non-eligible entities. Additionally, some large purchasers have registered themselves as platforms and are now engaged in legal business activities. E-commerce platforms such as Taobao and Jingdong have also become more proactive in regulating activities conducted on their platforms which includes timely release of guidelines and promotion of credit management.

The law has also been effective in improving contract enforcement, particularly in cases where platforms cancel orders after consumers have made payment. The inspection of 21 e-commerce platforms by the Beijing Consumer Association has led to the identification of 4 non-compliant platforms, with efforts to rectify them so as to safeguard consumer rights and interests. A sample survey of consumers indicated that practices such as bundled sales and deletion of bad reviews have been reduced.

Lessons Learned: The introduction of the E-Commerce Law has improved the regulation within the industry, clarified the responsibilities of the different parties and led to better alignment of processes. Despite the progress made, however, challenges remain. These include improving coordination between laws (e.g., between E-Commerce Law and Anti-Monopoly Laws) and enhancing regulations in specific areas (e.g., implement credit evaluation).

Source: Adapted from China's case study submission

Although data allow firms to better understand the profile of their customers and improve their product offerings, concerns over data privacy and security have dampened participation. Firms and the general public have become concerned about the security of their data following revelations of questionable data practices by some businesses, including sharing of personal data with third parties without consent from the users themselves, and assuring users that their data was well-protected when it was not.⁹⁸ In response, economies are taking steps to improve data privacy and security. For instance, Japan passed a Personal Information Protection Act in 2017 to regulate the transfer of personal information.⁹⁹ Similarly, Thailand passed a Personal Data Protection Act in 2019 which consolidates data protection laws in the economy.¹⁰⁰ At the regional level, economies are also cooperating with one another to explore middle-ground approaches to data-related issues (i.e., with relatively minimal impact on firms' access and use of data and at the same time, supportive of legitimate public policy objectives which encompasses areas such as data privacy and security). Within APEC, the Cross-Border Privacy Rules (CBPR) system is one such mechanism (see Box 2.7).

Box 2.7. APEC Cross-Border Privacy Rules (CBPR) System

The CBPR system is a voluntary, accountability-based certification mechanism which allows certified companies to transfer personal data (inter- and intra- company) among participating APEC economies. It aims to protect consumer privacy as well as facilitate trade and economic integration in the region by ensuring the free flow of data. Currently, there are eight participating economies: Australia; Canada; Japan; Korea; Mexico; Singapore; Chinese Taipei and the United States.

⁹⁸ Dance, LaForgia and Confessore, 'As Facebook Raised a Privacy Wall'; The Straits Times, 'Facebook Says Companies Got Access to Data Only after User Permission'; The Straits Times, 'Facebook Used People's Data To Favour Certain Partners and Punish Rivals'.

⁹⁹ Personal Information Protection Commission, Japan, 'Amended Act on the Protection of Personal Information (Tentative Translation)' (December 2016), https://www.ppc.go.jp/files/pdf/Act_on_the_Protection_of_Personal_Information.pdf.

¹⁰⁰ 'Get Ready: The First Thailand Personal Data Protection Act Has Been Passed', Baker McKenzie, 1 March 2019, <https://www.bakermckenzie.com/en/insight/publications/2019/03/the-first-thailand-personal-data>.

The CBPR applies to the controllers of personal information and is composed of four phases: self-assessment; compliance review; recognition/acceptance; and dispute resolution and enforcement. It is complemented by the Privacy Recognition for Processes (PRP) system, designed to help controllers to identify qualified and accountable data processors, and the APEC Cross-border Privacy Enforcement Arrangement (CPEA), a multilateral arrangement that is the first mechanism in the APEC region for privacy enforcement authorities to voluntarily share information and provide assistance on cross-border data privacy enforcement.

The CBPR has made major progress since its creation and is getting more widely recognised with more APEC economies expected to join the CBPR system. There is also ongoing work to promote interoperability between the APEC and EU certification models. In addition, Canada; Mexico; and the United States have agreed to recognise the CBPR system as a data transfer mechanism in the updated trade agreement between the three parties, the USMCA Agreement.

However, challenges remain. In the United States, the biggest barrier to the growth of the CBPR system remains the high cost of the certification, as the process requires a review from an independent third party certifier (accountability agent). Possible solutions are being explored including an increase in accountability agents and possible domestic reforms to offer enforcement mitigations for certifying entities.

Source: Adapted from the United States' case study submission.

In addition to measures to enhance trust and facilitate payments, economies have tackled issues like accommodating regulations to other new technologies and business models. Specifically in the financial sector, the FinTech Law enacted by Mexico and changes to the regulation and supervision framework for the insurance industry in the Philippines are two such examples (see Box 2.8).

Box 2.8. Regulatory reforms in the financial sector of Mexico and the Philippines

The FinTech Law in Mexico

Pre-reform: Mexico's National Report on Financial Inclusion 2016 notes that only 39 percent of its population had access to formal financial services. Developments in the area of fintech provide opportunities to increase this share. To promote Mexico as an attractive destination for fintech companies, the economy undertook a series of reforms including those embodied in the 2016 National Financial Inclusion Policy.

Response: The reforms have had some success – Mexico had 238 fintech star-up companies at the time the FinTech Law was proposed, and Mexico opined that the Law would allow it to further develop the sector and achieve various objectives such as the introduction of new products and services and greater access to credit for wider segments of its population.

Impact: There is currently no reliable quantitative data on the direct economic impacts of this legal reform as the law has only been enacted for less than two years.

Cloud technology in financial reporting for the insurance industry in the Philippines

Pre-reform: Prior to digitalisation, the regulation and supervision of the Philippines' insurance industry was highly dependent on manual submission and encoding of data. The significant amount of time needed to do so often led to backlogs in the review and examination process, among others. Digital technologies and tools such as cloud computing have enabled the Philippines' Insurance Commission (IC) to improve on this process.

Response: The IC now allows submission of the statutory financial reporting requirements through the cloud. More specifically, life and non-life insurance companies can now submit their quarterly reports (e.g., Financial Reporting Framework, Risk-based Capital (RBC2) and Reserve Valuation Reports) through their cloud accounts connected to the IC. Furthermore, the IC is currently developing the Financial Examination Database System (IC-FEDS), which will allow it to better access and evaluate the financial reports submitted by these companies as well as their entire operations on a real time basis.

Impact: The change in the regulatory framework has made it possible for companies to be evaluated more regularly (quarterly vs. annually).

Source: Adapted from the case study submissions from Mexico and the Philippines.

Understanding that compliance with traditional regulatory approaches might be challenging for digital-economy firms employing new business models, many economies have introduced regulatory sandboxes to allow such firms to try out their ideas.¹⁰¹ Some examples of best practices on regulatory sandboxes which economies may wish to consider include: 1) having specific and clear entry conditions; 2) ensuring information to participants of regulatory sandboxes are clear and publicly available; 3) requiring firms to disclose to consumers that they are currently participating in a sandbox and the possible implications of receiving services from the firms; and 4) requiring firms to develop plans for controlled exits to better protect consumers.¹⁰² The use of regulatory sandboxes are particularly pertinent in highly regulated sectors such as finance and health. For instance, Russia and Chinese Taipei have each launched a fintech regulatory sandbox to help their institutions experiment with innovative financial products.¹⁰³ (see Box 2.9 and Box 2.10 for Chinese Taipei and Russia's case studies, respectively). These have included innovations in the area of loans,¹⁰⁴ blockchain and cryptocurrencies.¹⁰⁵ Additionally, some APEC economies have recognized e-signatures for general business use.

¹⁰¹ A regulatory sandbox is a regulatory approach which allows for live, time-bound testing of innovations under a regulator's oversight. For more details, see United Nations Secretary-General's Special Advocate for Inclusive Finance for Development (UNSGSA), 'Briefing on Regulatory Sandboxes' (2017), <https://www.unsgsa.org/files/1915/3141/8033/Sandbox.pdf>.

¹⁰² European Supervisory Authorities, 'FinTech: Regulatory Sandboxes and Innovation Hubs' (European Union, 2018), https://www.esma.europa.eu/sites/default/files/library/jc_2018_74_joint_report_on_regulatory_sandboxes_and_innovation_hubs.pdf.

¹⁰³ Shih-ching Kao, 'First Sandbox Experiment Approved', *Taipei Times*, 19 September 2018, <http://www.taipetimes.com/News/biz/archives/2018/09/19/2003700677>; Bank of Russia, 'Запуск Регулятивной Площадки Банка России' [Bank of Russia Launched Regulatory Sandbox], 19 April 2018, <http://cbr.ru/Press/event/?id=1765>.

¹⁰⁴ Kao, 'First Sandbox Experiment Approved'.

¹⁰⁵ Based on Russia's IER Submission on Sandboxes.

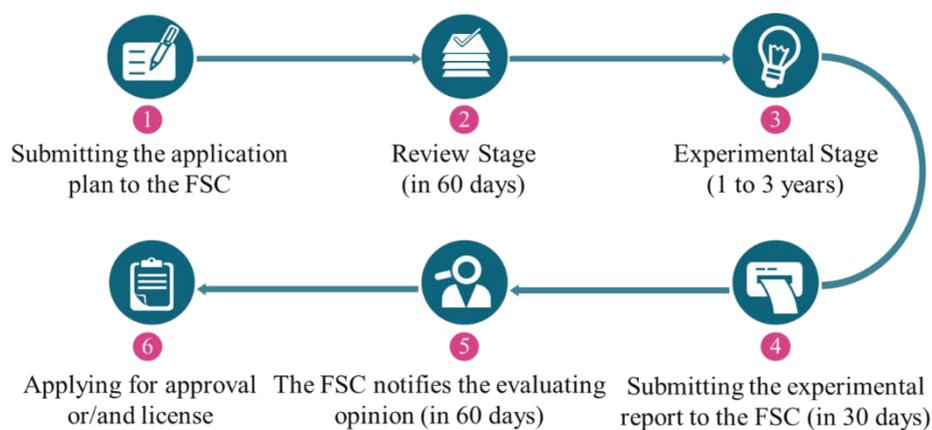
Box 2.9. The FinTech Innovative Experimentation Mechanism in Chinese Taipei

To promote financial inclusion and the development of financial technology (fintech), Chinese Taipei has established a regulatory sandbox mechanism under the Financial Technology Development and Innovative Experimentation Act, which came into force on 30 April, 2018. The Act aims to provide a safe environment for trials of fintech under development, assisting innovators to test and realize their innovative ideas and to accelerate the entry of innovative products or services into the market. Under this mechanism, fintech innovators are exempt from related criminal and administrative liabilities and applicable regulations during the period of experimentation.

The application and experiment process (see Figure 2.2.) includes:

- 1) **Application stage:** The applicant submits the experiment plan and other required documents to the Financial Supervisory Commission (FSC).
- 2) **Review stage:** The FSC decides to approve or reject the application and notifies the applicant of the decision within 60 days of receiving the application.
- 3) **Experimentation stage:** The applicant begins conducting the innovative experiment within three months of receiving the review decision. The length of experimentation is up to one year, with a one-time extension of six months available. If the contents of the experiment involves the need to amend regulations, the total experiment period can be extended to a maximum of three years.
- 4) **Reporting of experiment results:** The applicant reports results to the FSC within one month of the expiry of the experiment period.
- 5) **Experiment results assessment stage:** The FSC completes its assessment, and provides suggestions within 60 days of receiving the experiment results documents.
- 6) **Application for permission for business operation:** Permissions for business operation will be made according to existing or amended financial regulations.

Figure 2.2. The application and experimentation process for the FinTech Innovative Experimentation Mechanism



Accompanying measures were introduced to ensure the experiments are properly guided and related regulations are reviewed and revised accordingly. The FSC has set up the Financial Technology Development and Innovation Center to provide consultation and guidance to applicants. An inter-agency cooperation mechanism has also been set up. If the experiment involves business activities that are under the purview of another agency, the FSC will consult the agency involved for opinions and request a representative to join the review committee. The Center has also established a consultative group discussing cross-agency policies and the revision of related regulations.

Similar to the regulatory sandbox for fintech, Chinese Taipei has passed the Unmanned Vehicles Technology Innovative Experimentation Act. Within a certain range and under certain conditions, it provides temporary exemption of related regulations so as to promote innovative experimentation of the technical, service and/or business operation models of unmanned vehicles (i.e., automobile, aircraft, ship or any combination of these items) in a real-life environment.

Source: Adapted from Chinese Taipei's case study submissions.

Box 2.10. Regulatory sandboxes in the Russian Federation

Russia's draft law on experimental legal frameworks (regulatory sandboxes) aims to establish the procedures for initiating, establishing, implementing and monitoring the outcomes of controlled legal experiments pertaining to the use of digital innovations and other related activities within the economy.

The draft law defines innovation as a new tool based on big data technologies, neurotechnology and artificial intelligence, blockchain systems, quantum technologies as well as other technologies that are defined by the legal acts of the Russian Federation to belong to the category of digital technologies, the realm of the digital economy or a new form of use for existing systems.

The experimental legal framework establishes normative regulations for digital technologies and services when:

- There is no active regulation for the specific technology/service in the economy ('trial experimental regime').
- There are some legal barriers to the implementation of the technology/service in the economy such as restrictions and special conditions ('alternative experimental regime').

Key principles of these experimental legal frameworks are:

- 1) Reasonable minimisation of deviations from the existing legal regulation
- 2) Risk-minimisation relating to consumers
- 3) Newly introduced regulatory requirements do not apply to the participants of experimental legal frameworks during the test period if they put participants in a more disadvantaged position.

As such, these experimental legal frameworks allow different stakeholders (e.g. innovative companies, entrepreneurs, executive and local administrative authorities) to test their products/services in a limited market without adhering to mandatory regulations. Following analysis of the outcome, successful solutions may then be extended to the entire economy.

One institution that has developed a framework for regulatory sandboxes is the Bank of Russia, which launched it in April 2018. The key goals of the sandbox are:

- Development of financial technologies
- Improving the security of innovative services
- Promoting a competitive environment
- Increased financial inclusion
- Development of regulatory mechanisms

Most of the projects currently undertaken within the sandbox framework are those pertaining to blockchain or distributed ledger technology; crypto-assets or cryptocurrencies; and the digitalisation of certain processes related to the provision of financial services to clients.

If the tested product or service is deemed to be successful, a roadmap is developed to ensure the creation of the necessary legal framework for the launch of the product/service in the market.

Source: Adapted from Russia's case study submissions, Ministry of Economic Development, Russia and the Bank of Russia

The above approaches are not mutually exclusive and some economies have employed a combination of approaches concurrently to modernise their financial sector and ensure that it is digital economy-ready. Box 2.11 provides insights from Chile's financial sector.

Box 2.11. Chile's financial sector reforms

Chile has undertaken several regulatory reforms in its financial sector to support innovation and new business models, including gearing the sector to become digitally ready among others.

1. General Banking Law Reform

In 2018, the Chilean Congress approved major reforms to the General Banking Law to modernise and boost the international competitiveness of the financial sector. Key reforms include: (1) consolidating banking, insurance and securities regulatory functions under a single body, the Financial Market Commission (CMF); (2) adapting capital requirements to Basel III standards; (3) providing a new range of tools to the regulator to deal with unstable or weak banks; and (4) extending government guarantees to term deposits. Besides ensuring the stability of the financial system and removing barriers to funding and investment by foreign banks, the reforms are also collectively expected to allow entrepreneurs and MSMEs to better access funding.

2. Law no. 20,590 on means of payment

In 2016, Law no. 20,590 on means of payment came in to force. Under this law, the government and non-banking firms are authorised to provide funds or other similar system (e.g., prepaid cards). This reform creates room for greater innovation in the financial sector as it enables fintech companies to participate more extensively in creating alternative payment methods.

3. Fintech bill

While it is critical to create an enabling environment that is supportive of innovation, Chile recognises that it is also important to ensure the stability of the financial sector and protect its users. It thus introduced the fintech bill to regulate cryptocurrencies and fintech activities. To ensure that the regulation does not become cumbersome and impede the growth of the industry, it aims to be flexible and take into consideration the range of business models and risks of the different services provided.^a

The Chilean Central Bank also released its strategic plan for the year 2018–2022 which identified a Technology Observatory, TechLab and FinLab as potential means to better understand, manage and incorporate technological change.^b

1. Technology Observatory

Chile created the Technology Observatory to strengthen knowledge, coordination and information sharing with both the Chilean fintech community and abroad.^c The Technology Observatory aims to: (1) agree on common principles and contribute to coordination within the bank for the treatment of digital technologies; (2) promote and contribute to knowledge on innovation; and (3) create networks to build knowledge, identify opportunities and threat.

2. TechLab and FinLab

The aim of TechLab and FinLab is to develop regulatory capabilities to address disruptive technologies. TechLab aims to support the central bank in adopting emerging technologies to both maintain the quality and availability of services, while FinLab aims to enhance the regulatory framework in line with technological advances within the financial industry.

CMF issued a White Paper in February 2019 that, focuses on the relevance of having a regulatory framework for crowdfunding and related services in Chile. The paper also contains general guidelines that the relevant authorities should consider when designing such a framework. The development of this document took into consideration the experiences of foreign jurisdictions regarding the regulation of crowdfunding and fintech, and the principles and recommendations issued by international organisations. Additionally, the process took into account the experience and problems faced by the financial industry in Chile, the opinions and points of view of fintech companies, law firms, academics and other actors in the local capital market. The CMF has also signed collaboration agreements with foreign authorities to facilitate the exchange of information, experience, and knowledge related to the development of the fintech ecosystem.

Source: Adapted from Chile's IER, case study submission and other sources.

^a Adrian Zmudzinski, 'Chilean Government Introduces New Cryptocurrency and Fintech Regulation Bill to Congress', Yahoo! Finance, 21 April 2019, <https://finance.yahoo.com/news/chilean-government-introduces-cryptocurrency-fintech-125900811.html>.

^b Central Bank of Chile, *Strategic Plan for 2018–2022: A Project for All* (Central Bank of Chile, 2018), https://www.bcentral.cl/documents/145129/150750/pe2018_eng.pdf/4296cb0e-e729-9bd9-0015-f1bd7a063f0a.

^c International Monetary Fund (IMF), 'Chile: 2018 Article IV Consultation – Press Release; Staff Report; and Statement by the Executive Director for Chile' (IMF Country Report no. 18/311, November 2018), <https://www.imf.org/~media/Files/Publications/CR/2018/cr18311-Chile-Bundle.ashx>.

Although these are steps in the right direction, the development of further regulatory tools and approaches will likely be required. For instance, some have questioned the scalability of sandboxes. Others have observed that there is generally no or little alignment of sandbox frameworks across economies. Regulations on the use of e-signatures (and by extension e-contracts) also vary by individual APEC economies, which may increase the difficulty and cost of cross-border online contract fulfilment (see Table 2.1).¹⁰⁶

Table 2.1. E-signature legal model in APEC economies

| Economy | E-signature legal model |
|-------------------|-------------------------|
| Australia | Open |
| Brunei Darussalam | Tiered |
| Canada | Open |
| Chile | Tiered |
| China | Open |
| Hong Kong, China | Tiered |
| Indonesia | Tiered |
| Japan | Tiered |
| Korea | Tiered |
| Malaysia | Tiered |
| Mexico | Tiered |
| New Zealand | Open |
| Papua New Guinea | n.a. |
| Peru | Tiered |
| The Philippines | Tiered |
| Russia | Tiered |

¹⁰⁶ 'eSignature Legality Guide', DocuSign, accessed 2 June 2019, <https://www.docusign.com/how-it-works/legality/global>.

| | |
|--------------------------|--------|
| Singapore | Tiered |
| Chinese Taipei | Tiered |
| Thailand | Tiered |
| The United States | Open |
| Viet Nam | Tiered |

Note: Tiered economies recognise qualified electronic signatures (QES, or the locally named equivalent) as a distinct type of eSignature. In these economies, a QES has special legal status in the form of presumed authenticity, and may be legally required for a few, specific transaction types. On the other hand, open economies have no such technology requirements or eSignature types that receive special legal status.

Source: DocuSign

While digital technologies and tools have brought benefits, they have also facilitated the spread of disinformation and harmful content, including incitement to commit acts of terrorism. Although evaluating the spread of disinformation is beyond the scope of this paper, there is value in highlighting initiatives that economies have undertaken in this regard. Some economies have enacted or are in the midst of enacting regulations to protect domestic security and combat extremism, among others. For example, some economies are introducing legislation¹⁰⁷ that requires technology firms to either correct or remove inaccurate content. Others have started designing guidelines to aid technology firms in better responding to objectionable material online.¹⁰⁸ Despite the strides made in preventing the spread of disinformation, the question of how legitimacy of content will be determined and enforced is still to be answered.

C. Ease of doing business (EoDB)

The EC's work on EoDB aims to improve the overall business environment in the Asia-Pacific region. The latest EoDB program (2016-2018) focused on making it easier for firms to start a business, get credit, trade across borders, enforce contracts and deal with permits. Regardless of whether firms operate in the traditional economy or the digital economy, success depends partly on policymakers' ability to nurture a better business environment.

Economies' IER submissions show that economies have continued to facilitate starting a business in various ways. For example, Chile has created an electronic registry through its 'your business in a day' regulations that, allows people to set up, modify, transform, merge and dissolve legal entities. Through Government Regulation no. 24/2018, Indonesia has allowed a single electronic submission for all types of business licenses, hence simplifying the business licensing process. Business registrations in Papua New Guinea can now be done online with a turnaround time of less than a day. Despite these laudable efforts, more can be done to ensure that business environment evolves together with the changing economy.

One opportunity brought about by the advent of digital technology and tools is the ability to try out new businesses from home. However, this requires supportive business regulations that in some economies are in their infancy in this regard. For example, PSU notes that in one APEC economy, firms cannot use a home address to apply for a value-added tax (VAT) registration number, making it harder to register and operate their businesses.¹⁰⁹

¹⁰⁷ Yuen-C Tham, 'Parliament: Fake News Law Passed after 2 Days of Debate', *The Straits Times*, 8 May 2019 (updated 9 May 2019), <https://www.straitstimes.com/politics/parliament-fake-news-law-passed-after-2-days-of-debate>.

¹⁰⁸ Some examples include Eleanor Ainge Roy, 'Christchurch Call: Details Emerge of Ardern's Plan to Tackle Online Extremism', *Guardian*, 13 May 2019, <https://www.theguardian.com/world/2019/may/13/christchurch-call-details-emerge-of-arderns-plan-to-tackle-online-extremism>; Corinne Reichert, 'Canada Launches Digital Charter to Combat Hate Speech and Fake News', *CNET*, 21 May 2019, <https://www.cnet.com/news/canada-launches-digital-charter-to-combat-hate-speech-and-fake-news/>.

¹⁰⁹ Gloria O. Pasadilla and Andre Wirjo, 'Globalization, Inclusion, and E-Commerce: APEC Agenda for SMEs' (Singapore: APEC, February 2018), <https://www.apec.org/Publications/2018/02/Globalization-Inclusion-and-E-Commerce---APEC-Agenda-for-SMEs>.

Furthermore, regulations in some economies may inadvertently preclude foreign firms from participating in the e-commerce market. For instance, there may be regulations requiring listed sellers on domestic e-commerce platforms to be registered domestically. MSMEs, unlike aggregators (i.e., intermediary firms with sellers' accounts in various marketplace platforms, have experience in traditional trade and cross-border e-commerce and network relationships with logistics service providers, among others) or their larger counterparts may not have the resources to register and comply with differing regulations in other economies, may be shut out of international e-commerce opportunities. Even where regulations are not onerous, firms may have difficulty understanding e-commerce requirements in various jurisdictions and may be reluctant to operate internationally.

Although digital technology and tools have facilitated transactions (i.e. they would be considered *digitally enabled*), a significant share of products, especially goods are not digitally delivered. Thus, overcoming obstacles related to non-digital trade remains critical for the digital economy to operate efficiently. Cross-border e-commerce provides an avenue for buyers to access products that are not locally available, as well as for MSMEs to access new markets. However, compliance with border processes may be a challenge for some firms, especially MSMEs. Economies are taking steps to improve the situation. For example, Thailand has introduced a system that matches cargo electronically with the goods control list to reduce document inspection time. This initiative has been successful in reducing the time required for border compliance¹¹⁰ from 3-4 minutes to 30-40 seconds.¹¹¹ The ASEAN single window, first implemented by Indonesia; Malaysia; Singapore; Thailand; and Viet Nam, expedites cargo clearance and reduces paperwork.¹¹² OECD work on Single Windows indicators highlights the ongoing efforts of APEC economies in implementing such mechanisms, with notable progress achieved with respect to Single Windows legal frameworks and technological architecture, but with significant challenges remaining across institutional aspects and interoperability.¹¹³

There is considerable discussion on the extent to which current practices, regulations and approaches to structural reform are capable of responding to the changes brought by the explosion of e-commerce and new technologies. For example, considering the increase in the number of small packages that customs officials have to clear, would the practice of randomly selecting a certain pre-determined share of packages for inspection still be viable? In some economies where the import of certain products are regulated and require relevant authorities to provide certification prior to the release of products, would the relevant officers be able to certify the increasing number of such products within a reasonable timeframe? Some economies are already adopting innovative approaches to address customs challenges. For instance, China is experimenting with the use of artificial intelligence technology to screen packages.¹¹⁴ However, as such policies and innovations are still mostly in the experimental or pilot stage, their effectiveness is limited for now. For instance, the e-commerce lane in China may be used only for a specific list of products and may not be based on an international harmonized system of classification.

The rise of e-commerce has challenged the traditional tax collection mechanisms, as many of the transactions may not be covered or taxed. In response, some economies are starting to implement forms of e-commerce tax (either as an entirely new form of taxation or as an expansion of their current tax regime). For instance, Malaysia has introduced a digital tax on the electronic commerce sector of the

¹¹⁰ Somruedi Banchongduang, 'Doing Business Score up, but Ranking Slips to 27th', *Bangkok Post*, 2 November 2018, <https://www.bangkokpost.com/business/news/1568782/doing-business-score-up-but-ranking-slips-to-27th>.

¹¹¹ Wichit Chantanusornsiri, 'Customs Improvements to Lift Ranking', *Bangkok Post*, 17 November 2017, <https://www.bangkokpost.com/business/finance/1361767/customs-improvements-to-lift-ranking>.

¹¹² Yan Min Chia, 'Digital Platform Improves Customs Clearance', *The Business Times*, 26 April 2018, <https://www.businesstimes.com.sg/hub/asean-singapore-2018/digital-platform-improves-customs-clearance>.

¹¹³ OECD, 'Trade Facilitation and the Global Economy' (Paris: OECD, 2018), <https://doi.org/10.1787/9789264277571-en>.

¹¹⁴ 'Customs Using AI Technology To Keep up with E-Commerce Boom', *China.Org.Cn*, 6 March 2019, http://www.china.org.cn/china/NPC_CPPCC_2019/2019-03/06/content_74537486.htm.

economy.¹¹⁵ Singapore plans to impose the Goods and Service Tax (GST) on imported services (including B2C supplies of imported digital services) starting in 2020.¹¹⁶ Australia extended GST to imported digital products and services in 2017 and to low value imported goods in 2018. At the international level, the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS) is working on addressing the tax challenges arising from the digitalisation of the economy (see the Section on Fiscal Policy and Box A.1 in Annex A). As economies increasingly explore new models to tax and regulate the digital economy, it is important to ensure that they are implemented in a way that supports rather than impedes the growth of digital economy firms. This can include making reference to ongoing work by the international organisations mentioned above, as well as calling governments to enhance their public sector governance which is addressed in the section below.

D. Public sector governance

Public sector governance refers to the structure, laws, regulations and decision-making processes that pertain to the provision of goods and services by the government and institutions and policies that ensure the government's long-term financial sustainability. It also includes open government initiatives, government procurement and the provision of basic public services such as health and education, including through the use of electronic means.

Incorporating digital technologies and tools in the delivery of public services increases efficiency, reduces fraud and allows governments to employ data analysis to identify as well as analyse societal trends.¹¹⁷ The importance of digitalising government services has been identified by multilateral organisations such as the World Bank and this has led to programmes such as the GovTech Global Initiative in 2019. Under the initiative, a whole-of-government approach toward digitalisation is promoted, with the aim of improving service delivery and transparency, among others.¹¹⁸

One way governments have adopted technologies is through the **creating one-stop online government portals**, hence providing a single point of access for all public services. Among APEC economies, Hong Kong, China has created an online portal allowing citizens to access information from more than 850 e-government services as at end of 2018.¹¹⁹ Russia has made improvements to its public service portal so that it covers a wider range of services (see Box 2.12). Online portals have also been useful during times of emergencies. For instance, in the United States, the Disaster Assistance Improvement Programme (DAIP) has created an online portal to provide those affected with information on available programmes and help to determine their eligibility for benefits.

Box 2.12. Russia's public service portal

Pre-reform: The Russian government introduced the Electronic Russia 2002-2010 programme as part of a public administration reform process. Russia had initially focused its efforts on developing e-government infrastructure where the portal (ogic.ru) only contained a list of public services,

¹¹⁵ 'Parliament Passes Digital Tax Bill, Enforced Jan 1', *Malay Mail*, 8 April 2019,

<https://www.malaymail.com/news/malaysia/2019/04/08/parliament-passes-digital-tax-bill-enforced-jan-1/1741049>.

¹¹⁶ Kevin Kwang, 'Budget 2018: GST To Be Imposed on Digital Services from 2020', *Channel NewsAsia*, 19 February 2018, <https://www.channelnewsasia.com/news/singapore/budget-2018-gst-to-be-imposed-on-digital-services-from-2020-9970756>.

¹¹⁷ World Bank, 'GovTech: Putting People First', accessed 19 September 2019,

<https://www.worldbank.org/en/topic/governance/brief/govtech-putting-people-first>; GSMA and Boston Consulting Group, 'Embracing the Digital Revolution: Policies for Building the Digital Economy' (GSMA, February 2017),

https://www.gsma.com/publicpolicy/wp-content/uploads/2017/02/GSMA_DigitalTransformationReport2017_Web.pdf.

¹¹⁸ World Bank, 'GovTech'.

¹¹⁹ Legislative Council of Hong Kong, China, 'E-Government Services' (LC paper no. CB(1)1135/18-19(03), 10 June 2019), <https://www.legco.gov.hk/yr18-19/english/panels/itb/papers/itb20190610cb1-1135-3-e.pdf>

application forms in pdf formats and links to other government sites. However, it has identified the need to do more.

Response: In response, Russia launched a new public service portal, where it expanded the information provided to contain full information on 565 federal and 2,282 regional public services, including the list of required documents and application forms. In its second phase, public service delivery has been improved by allowing public services to be offered directly through the portal and by creating multifunctional centres to deliver these services. Additionally, to facilitate better information and communication, Russia has established an interagency system for electronic communication and created a document management system. The portal continues to be updated with new services, including choice of polling station; registration of marriage and birth; and by allowing parcels and registered letters to be received via an SMS (short messaging system) code (through the mobile application Gosuslugi Business).

Impact: The improvements have been successful in increasing the number of federal and municipal services provided digitally. The number of individuals using the public service portal and online federal and municipal services have grown to 86 million and 80 million users, respectively as of 2018. Furthermore, electronic forms are increasing in popularity with more than 60 million users filling them online in 2018. Payments have also been increasingly made through the portal with the value increasing from RUB 8.1 billion in 2016 to RUB 52.6 billion in 2018.

Source: Adapted from Russia's case study submission

Another example of adoption of technology by government is the use of cloud computing services to achieve cost savings for government agencies.¹²⁰ Additionally, digital technologies and tools are employed to deliver key services such as education, health and social assistance to individuals located away from centres of administration and/or in remote areas (see Box 2.13 for Indonesia's social assistance disbursement programme), thus helping to narrow the rural–urban divide. Governments could also use online portals to streamline applications for product standards, so that firms can apply for them regardless of location.¹²¹

¹²⁰ GovTech Singapore, 'Leveraging Commercial Cloud To Accelerate Digital Transformation', accessed 17 June 2019, <https://www.smartnation.sg/docs/default-source/press-release-materials/commercial-cloud-factsheet.pdf>.

¹²¹ Elijah Felice Rosales, 'DTI's Product Certification Goes Online', *BusinessMirror*, 14 April 2019, <https://businessmirror.com.ph/2019/04/14/dtis-product-certification-goes-online/>.

Box 2.13: Transformation of Indonesia's social assistance disbursement

Pre-reform: Indonesia provides social assistance programs to the poor and vulnerable to meet basic needs, ensure social welfare and reduce poverty. Prior to 2017, most assistance programs were distributed in the form of cash or goods/services and beneficiaries had to wait in line at the disbursement location at the predetermined schedule. Such disbursement mechanisms pose challenges for the governments as well as the beneficiaries. Disbursement to remote areas and islands was time-consuming and involved considerable costs and risks for government while the irregularity of the timing and amount made it harder for beneficiaries to manage their finances. Moreover, the quality of goods and services received often did not meet the expectations of beneficiaries.

Response: Recognising that the disbursement of social assistance could be made more efficient, timely and targeted, and in response to the Direction of the President of the Republic of Indonesia issued in April 2016, the Indonesian government transformed the disbursement from cash into non-cash by:

1. **Strengthening the legal basis.** Presidential Decree no. 63 issued in 2017 regulates the principles of disbursement, the mechanism and the role of the regional government among others.
2. **Developing a non-cash social assistance business model.** A business model for non-cash social assistance was formulated to ensure the sustainability of the programme. It covers the process of registration or account opening, the process of disbursement and withdrawal, and the development of materials to raise awareness about the programme.
3. **Improving infrastructure.** Appointed banking agents and branchless banking could act as delivery channels. The Combo Card was created as a payment instrument that can function as both electronic money and a basic savings account.
4. **Strengthening coordination.** The government formed an intergovernmental control team responsible for coordinating, monitoring, evaluating and reporting on the implementation of the Non-Cash Social Assistance Program.

Impact: The implementation of non-cash social assistance disbursement started as a pilot with the Conditional Cash Transfer Programme (PKH) in 2016. Since then, the number of beneficiaries has increased from 1.2 million in 2016 to 10 million in 2019. It also covers more cities/regencies (48 in 2016 vs. 514 in 2019). Non-cash disbursement has been extended to another programme, the Non-Cash Food Assistance Programme (BPNT), benefiting 15.6 million people in 514 cities/regencies.

Generally, non-cash disbursement has improved the governance of social assistance disbursement, payment security and transparency and has enhanced beneficiaries' capacity to manage risk and control their benefits. The BPNT has promoted women's economic empowerment by providing women with business opportunities.

Challenges and lessons learned: Although Indonesia has made significant progress, challenges remain. These include:

- **Infrastructure.** Coverage of the telecommunication network and access to electricity.
- **Data.** Management of beneficiaries' data including accuracy and quality.
- **Financial literacy.** Capacity of beneficiaries to access the funds.
- **Harnessing technological advancements.** Employment of technology to monitor the effectiveness and efficiency of the programmes.

Key takeaways from Indonesia's experience include the importance of:

- Regulation and supporting policies to implement programmes in an effective and efficient manner
- Strong and sound coordination in ensuring synergy
- Balancing the benefits and risks of innovation
- Raising awareness about various aspects of the programme to improve utilisation.

Source: Adapted from Indonesia's case study submission

Tools such as electronic/digital identification (eID) have enabled the government to reach and therefore provide more targeted support to specific groups. By creating a unique, digital identification for each individual, economies have made it possible for welfare payments to be digitally accessed. In some economies, the provision of eID has allowed government agencies, private firms and service providers to determine if holders are entitled to discounts, free basic necessities, etc. Examples of economies introducing electronic identification include: Australia (which has rolled out a pilot program to create a digital identity that would allow citizens to access government services online);¹²² Chile (which is awarding a 10-year concession contract to both upgrade its national identity system and issue electronic IDs and passports by 2020);¹²³ and Malaysia (which is expected to launch a digital identification initiative as part of its efforts to eliminate fraud in public services; this will complement the current physical identification card issued to citizens age 12 and above).¹²⁴ While there are significant benefits to the use of such identification, it is important that governments consider issues including but not limited to security, sustainability and technical obsolescence when introducing electronic identification.¹²⁵

Digital tools and data analytics can enhance public health and the delivery of health services by reducing the cost of medical treatment, predicting and mapping epidemic outbreaks, and helping to identify strategies to avoid preventable diseases. Telehealth services can improve human resource allocation and offer health services in remote communities that do not have hospitals and certain types of specialists. An electronic health records system that respects patients' privacy can greatly improve the efficiency of healthcare systems and help economies find ways to address rising healthcare costs.¹²⁶

Digital technology and tools also allow government to enhance policy design, experimentation, implementation, monitoring and evaluation among others.¹²⁷ They have enabled policymakers to better undertake stakeholder consultations. Digital technology can also be used to enhance the dissemination of data as well as information to individuals and businesses. For instance, Viet Nam is increasing its transparency and availability of information by creating an online law book case that is expected to be completed by 2020.¹²⁸ Furthermore, the analysis of data gathered via these tools has provided another avenue for the government to monitor and evaluate policies and make evidence-based adjustments if necessary.

In addition to harnessing digital tools to improve services, governments can act as an agent of change to encourage the increased use of such technologies and tools by the private sector and society as a whole. One area where governments can be a trailblazer is the promotion of data sharing. As the custodian of a large amount of public data, governments can encourage the use of its datasets for the provision of innovative, citizen-centric services. They can do so via open data policies (see Box 2.14 for Canada's efforts at creating an open government). Open data policies in many economies are based mainly on eight principles, namely that the data should be: (1) complete; (2) primary; (3) timely; (4) accessible; (5) machine-processable; (6) non-discriminatory; (7) non-proprietary; and (8) licence-free.

¹²² Digital Transformation Agency, Australia, 'Easier Access to Online Government Services', 24 July 2019, <https://www.dta.gov.au/our-projects/digital-identity/easier-access-online-government-services>.

¹²³ GSMA, World Bank Group and Security Identity Alliance, *Digital Identity: Towards Shared Principles for Public and Private Sector Cooperation* (World Bank, 2016), <https://doi.org/10.1596/24920>.

¹²⁴ Alita Sharon, 'Malaysian Citizens To Get a National Digital ID', OpenGov Asia, 13 October 2018, <https://www.opengovasia.com/malaysian-citizens-to-get-a-national-digital-id/>.

¹²⁵ ITU, *Digital Identity Road Map Guide* (Geneva: ITU, 2018), https://www.itu.int/en/ITU-D/ICT-Applications/Documents/Guides/ITU_eID4D_DIGITAL%20IDENTITY_ROAD_MAP_GUIDE_FINAL_Under%20Review_Until-05-10-2018.pdf.

¹²⁶ Mona Lebied, '12 Examples of Big Data in Healthcare that Can Save People', The datapine Blog, 18 July 2018, <https://www.datapine.com/blog/big-data-examples-in-healthcare/>.

¹²⁷ OECD, 'Going Digital: Making the Transformation Work for Growth and Well-Being' (Paris: OECD, 2017), <https://www.oecd.org/mcm/documents/C-MIN-2017-4%20EN.pdf>.

¹²⁸ Linh Phi, 'PM Approves Project Applying IT in Law Dissemination and Education', *Vietnam Economic Times*, 5 March 2019, <https://vneconomicstimes.com/article/vietnam-today/pm-approves-project-applying-it-in-law-dissemination-and-education>.

For instance, the Open Government Partnership (OGP) is a global open data initiative where participating economies pledge greater access to government information.¹²⁹

Box 2.14. Creating Open Government in Canada

Pre-reform: Canada has made efforts to support disclosure of public information in the past (e.g., through the Access to Information Act in 1983 and the Federal Accountability Act in 2006), and it has identified several benefits associated with such disclosure:

- **Advance government accountability and democratic reforms** by providing more information on government activities, programmes and expenditure
- **Support research and private sector innovation** by allowing individuals to better use public sector data
- **Support engagement and informed decisions by citizens** by enhancing their access to a range of government initiatives and public services, and by allowing them to better communicate their view on policies.

Response: The Canadian government introduced several policies such as:

1. **Open Government Initiative.** As part of the initiative, Canada has released four economy-wide action plans on open government that serve as frameworks for reforms. Additionally, in May 2019 it hosted the 6th OGP Global Summit as co-chair of the OGP Steering Committee with a focus on championing inclusion, protecting participation and delivering impact for digital democracy.
2. **Open Data and Information.** With the creation of its open data and information portal (Open.Canada.Ca), Canada has released information from federal departments. The release was primarily underpinned by the Directive on Open Government that established responsibilities with regard to information release. In addition to releasing information, the portal serves as a centralised repository for the proactive disclosure of financial and human resources related information by the government.
3. **Government Results and Delivery.** Canadians have direct access to government mandate letters through a ‘Mandate Letter Tracker’, which provides a status report on the fulfilment of objectives in the mandate letters and helps to ensure that the government is held accountable.
4. **Citizen Engagement.** Canada has conducted more than 400 public consultations across a range of policy areas (i.e., poverty reduction, national pharmacare, labour market opportunities for persons with disabilities, climate change, and national defence). For example, the Open Government initiative has engaged over 11,000 individuals both online and in-person.

Impact: Through Open.Canada.Ca, the government recently made 80,000 datasets and records available to the public as well as 900,000 proactive disclosures. This information release involved 67 federal departments and agencies. The government has also increased information accessibility for users through its information portal, with approximately 140,000 users accessing approximately 60,000 datasets each month.

Furthermore, the release of government data has encouraged innovation. For instance, a CODE hackathon, which brought together individuals to compete using publicly released data, led to more than 100 applications being created over two days. Similarly, the Canadian Open Data Exchange has led to private firms using its open data to launch new products and services, create ventures, optimise business processes and create economic benefits. Thus far, more than 150 firms have been able to innovate and create new products and services with this open data.

Source: Adapted from Canada’s case study submission.

¹²⁹ Open Government Partnership, ‘Open Data Archives’, accessed 12 June 2019, <https://www.opengovpartnership.org/policy-area/open-data/>.

Even as governments continue to increase their use of digital technologies and tools, it is important that policymakers do not underestimate the risks of employing such technologies and tools and become over-reliant on them. For example, some economies have explored the use of AI to automate application processes. The question arises as to what happens if an AI makes an error or causes harm. It is important to put mechanisms in place so that aggrieved parties can seek redress. APEC economies are exploring ways to better govern technologies such as AI. For example, even as it plans to launch a pilot cross-border innovation platform for MSMEs that uses AI to match buyers and vendors globally,¹³⁰ Singapore has collaborated with the World Economic Forum's Centre for Fourth Industrial Revolution to launch Asia's first model AI governance framework. The framework will focus on four areas: (1) internal governance; (2) decision-making models; (3) operations management; and (4) customer relationship management. It aims to assist organisations to build consumer confidence and to make efforts to follow practices in data management and protection.¹³¹ The Government of Canada has established a Directive on Automated Decision-Making, to ensure the utilisation of AI in making or assisting in making administrative decisions is compatible with administrative law principles such as transparency, accountability, legality, and procedural fairness.¹³²

E. Non-mutually exclusive nature of activities

While the discussions above categorise issues and reform activities by core areas as developed and elaborated by EC, in reality, they usually straddle multiple core areas. For example, the reforms to facilitate the use of e-signatures across a broader range of activities are important both from the perspective of regulatory reform and EoDB. In addition, the use of digital tools for stakeholder consultations is important for regulatory reform and public sector governance. It is also worthwhile to note that in order to leverage new technologies and business models, policymakers need to look at various core structural reforms concurrently. For example, reaping the benefits of fintech requires competition policy reform to enable non-traditional players to offer financial services. At the same time, regulatory reform would be needed to allow them to offer such services on a trial basis via regulatory sandboxes.

¹³⁰ Jamie Lee, 'Singapore Budget 2019: SMEs Go Digital Programme To Be Expanded', *The Business Times*, 18 February 2019, <https://www.businesstimes.com.sg/government-economy/singapore-budget-2019/singapore-budget-2019-smes-go-digital-programme-to-be>.

¹³¹ Personal Data Protection Commission, Singapore, 'A Proposed Model Artificial Intelligence Governance Framework' (Singapore: Personal Data Protection Commission, 2019), <https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/A-Proposed-Model-AI-Governance-Framework-January-2019.pdf>; Infocomm Media Development Authority, Singapore, 'Singapore Releases Asia's First Model AI Governance Framework', 6 May 2019, <http://www2.imda.gov.sg/news-and-events/Media-Room/Media-Releases/2019/singapore-releases-asias-first-model-ai-governance-framework>.

¹³² Government of Canada, 'Directive on Automated Decision-Making', modified 5 February 2019, <https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32592>.

PART 3: STRUCTURAL REFORMS, THE DIGITAL ECONOMY AND INCLUSION

A. Introduction

Definition and motivation for efforts to promote inclusion

There is no agreed definition of ‘inclusion’ in the APEC context. This report will use three definitions of inclusion, based on agreed APEC instruments and analytic inputs that are deemed necessary to assess the impact of policies and regulations on inclusion with respect to the digital economy.

The **first** definition is **Equality of Opportunity**. The EC’s *Structural Reforms for Inclusive Growth: Three Approaches* document views inclusive growth as:

“growth that encompasses more equal access to economic opportunities for all, and which addresses the variety of barriers which can prevent people from accessing opportunities and contributing to economic growth.”

This definition aligns with the social and economic inclusion pillars of the APEC Action Agenda on Advancing Economic, Financial and Social Inclusion in the APEC Region (hereafter the *Action Agenda*), endorsed by APEC Leaders in 2017. The *Action Agenda* defines **social inclusion** (pillar 3) as:

“the process of improving the terms of participation in society for people who are at risk of poverty and social exclusion and enhancing equity.”

According to pillar 1 of the *Action Agenda*, **economic inclusion** refers to:

“equality in being informed of and having access to economic opportunity for all members of society to meaningfully participate in their economy.”

The first aspirational objective of the economic inclusion pillar is to:

“advance progress towards achieving full and productive employment and decent work for all, including young people, the elderly, and persons with disabilities, and equal pay for equal work”

The **second** definition of inclusion involves **Greater Income Equality**. It is important to track indicators of economic inequality such as the Gini coefficient¹³³ and the share of income captured by the top and bottom deciles in each economy, for several reasons. First, such indicators are one way to measure the impact of digital economy trends on the effectiveness of policy measures to promote inclusion. Second, increasing income inequality can undermine economic growth.¹³⁴ For instance, in a study of OECD economies across a period of 30 years, income inequality was found to have a negative and statistically significant impact on growth. The study also found that inequality has a dampening effect on skills development in terms of both education level and skills attained among individuals with

¹³³ The Gini index or coefficient Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

¹³⁴ United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), *Inequality in Asia and the Pacific in the Era of the 2030 Agenda for Sustainable Development* (Bangkok: UN, 2018), <https://www.unescap.org/sites/default/files/publications/ThemeStudyOnInequality.pdf>.

poorer parental education backgrounds.¹³⁵ Similarly, the IMF found a robust relationship between lower net inequality and faster as well as more sustainable growth.¹³⁶ Third, some features of the digital economy exacerbate the current trend toward greater income inequality in APEC economies (see following subsection). Fourth, if the benefits of the digital economy or economic growth are largely captured by a small segment of the population, this could undermine public support for efforts to promote trade and the digital economy.

In the *Action Agenda*, the second aspirational objective of the economic inclusion pillar is to:

“progressively achieve and sustain income growth of the bottom 40 percent of the population at a rate higher than the average level in each economy as envisioned in the 2030 Agenda on Sustainable Development.”

The **third** definition of inclusion used in this report is **Financial Inclusion**. According to the *Action Agenda*, a focus on financial inclusion involves efforts to ensure that:

“individuals and businesses have appropriate access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way.”

The *Action Agenda* calls on APEC economies to:

“Strengthen the capacity of financial institutions to encourage and expand access to banking, insurance and financial services, and increase financial literacy and capability of all to access finance.”

The application of digital technologies, tools and business models such as blockchain, crowdfunding/crowdsourcing and internet-only banks to the financial sector has the potential to make access to finance (or financial services provision) more inclusive to wider segments of the society. In this regard, the paper also considers how structural reform in the digital economy can be employed to achieve financial inclusion.

Call for inclusive growth: The empirical evidence

In recent years, a combination of factors has brought fresh impetus to APEC’s work to promote inclusive growth. The **first** is the widening disparity across different dimensions amidst the benefits of globalisation. APEC Structural Reform Ministers noted in their meeting in 2015 that ‘while absolute poverty has fallen and average income per capita has increased in the region, growth in some cases has widened income disparities between the rich and poor’. The Ministers further observed that ‘the benefits of rapid economic growth have been unevenly shared both across and within individual APEC economies, and that ‘there are groups, firms and regions that have benefited proportionately less from economic growth and globalization.’

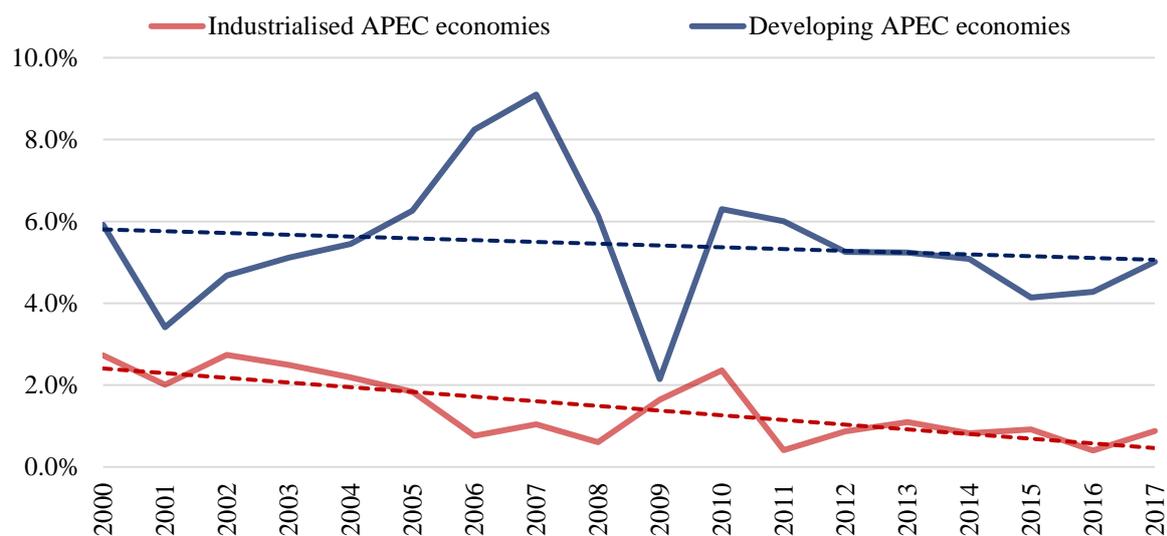
Second, and specifically in the context of the digital economy, is the observation that while advancements in new technologies and business models have led to more opportunities, there is a need to ensure that ordinary workers (labour) share in the benefits of the digital economy. There are at least two ways that welfare of labour can be measured over time. One is through growth in labour productivity. In a competitive market economy, growth in labour productivity is a pre-requisite for

¹³⁵ Federico Cingano, ‘Trends in Income Inequality and Its Impact on Economic Growth’ (Paris: OECD, 2014), <https://doi.org/10.1787/5jxrjncwxv6j-en>.

¹³⁶ Jonathan Ostry, Andrew Berg and Charalambos Tsangarides, *Redistribution, Inequality, and Growth* (Washington DC: IMF, 2014), <http://elibrary.imf.org/view/IMF006/21122-9781484352076/21122-9781484352076/21122-9781484352076.xml>.

growth in real wages, which translates to improved welfare for labour and households. Economists have noted that labour productivity growth has been on a downward trend over the past two decades. The International Monetary Fund (IMF) has found reductions in labour productivity growth across the G5 and emerging market economies.¹³⁷ The slowdown in labour productivity growth is observed in APEC economies as well. Between 2000 and 2017, both industrialised and developing APEC economies experienced declining labour productivity growth with the former declining at a faster rate (Figure 3.1).¹³⁸ While measurement issues could have contributed to the downward trend (see Section B of Part1), structural barriers may have played a role too.

Figure 3.1: Growth of labour productivity in APEC, 2000-2017



Source: APEC Policy Support Unit, 'APEC Regional Trends Analysis: The Digital Productivity Paradox' (Singapore: APEC, November 2018), <https://www.apec.org/Publications/2018/11/APEC-Regional-Trends-Analysis---The-Digital-Productivity-Paradox>.

Another way to measure welfare to labour over time is through share of labour compensation in GDP. Labour share is often considered an indicator of the distribution of income and the inclusiveness of economic growth because the majority of people in a society are workers and not capital owners. A falling share is indicative of increasing income inequality for two reasons. First, low-skilled and, to a certain extent, middle-skilled workers experience a decline in real earnings. Second, a lower labour share translates to a higher capital share and hence higher compensation to capital, since the majority of capital owners belong to the top income distribution bracket.¹³⁹ Although the labour share in many economies has been stable throughout the second half of the last century, several studies have noted the decline of labour share in recent years,¹⁴⁰ and a similar pattern is being observed in APEC economies as well. Labour shares that have been adjusted to include imputed wages for self-employed workers (which is gaining importance in the digital economy) show that both industrialized and developing

¹³⁷ IMF, 'Is Productivity Growth Shared in a Globalized Economy?' in *World Economic Outlook, April 2018: Cyclical Upswing, Structural Change* (Washington DC: IMF, 2018), <https://www.elibrary.imf.org/view/IMF081/24892-9781484338278/24892-9781484338278/ch04.xml>.

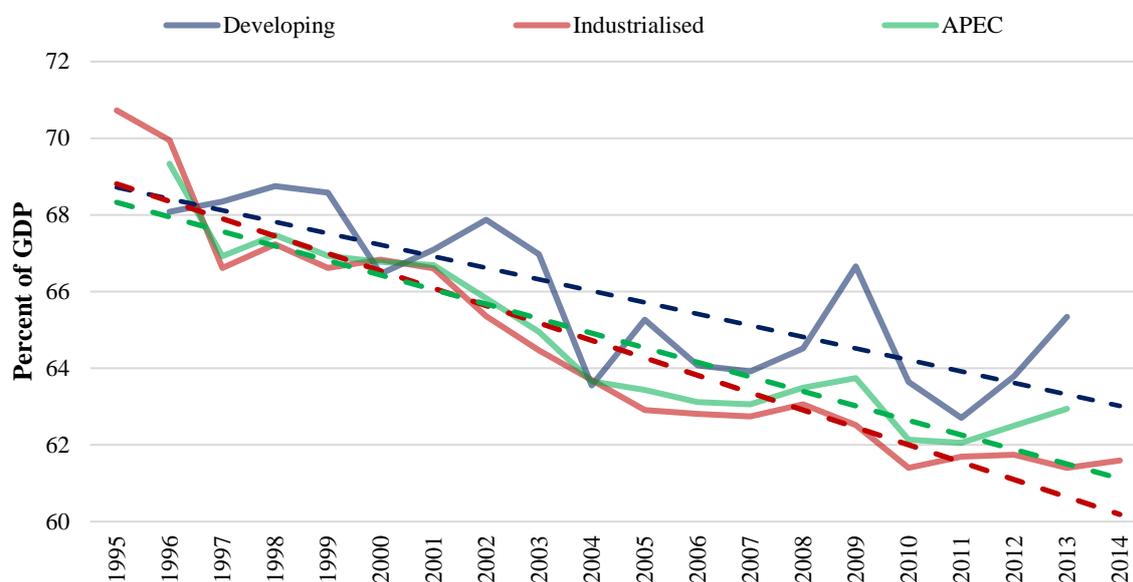
¹³⁸ APEC Policy Support Unit, 'APEC Regional Trends Analysis: The Digital Productivity Paradox' (Singapore: APEC, November 2018), <https://www.apec.org/Publications/2018/11/APEC-Regional-Trends-Analysis---The-Digital-Productivity-Paradox>.

¹³⁹ IMF, 'Understanding the Downward Trend in Labor Income Shares', in *World Economic Outlook, April 2017: Gaining Momentum* (Washington DC: IMF, 2017), <https://www.imf.org/en/Publications/WEO/Issues/2017/04/04/world-economic-outlook-april-2017>.

¹⁴⁰ ILO and OECD, 'The Labour Share in G20 Economies' (report for the G20 Employment Working Group, Antalya, Turkey, 2015), <https://www.oecd.org/g20/topics/employment-and-social-policy/The-Labour-Share-in-G20-Economies.pdf>.

APEC economies exhibited a downward trend in labour share between 1995 and 2014, indicating that income inequality is increasing in the region (Figure 3.2).¹⁴¹ Several factors associated with or aggravated by the digital economy can put downward pressure on wages. These are discussed later in the report.

Figure 3.2. Adjusted labour share in APEC



Source: APEC Policy Support Unit, 'APEC Regional Trends Analysis: Declining Labour Share and the Challenge of Inclusion' (Singapore: APEC, November 2017), <https://www.apec.org/Publications/2017/11/APEC-Regional-Trends-Analysis-2017>.

The impact of the digital economy on inclusion

The digital economy can have an impact on inclusion through different channels. One is through reduction in jobs and employment opportunities. As with past technological revolutions (e.g., mechanisation, steam engine, mass production, electrification), ensuring that the benefits of the digital economy are shared broadly will require supporting factors such as providing workers with the right skills and ensuring that all have access to infrastructure, technology, and adequate social protection. For example, in the financial sector, the ability to access services provided by online-only banks and therefore, enhance financial inclusion is dependent on having access to mobile phones, the internet and the skills to utilise them including financial literacy. Limitations in any one of these factors may affect the ability of individuals and firms to fully participate in the digital economy. This section will discuss each in more detail.

1. Reduction in jobs and employment opportunities

The relationship between digital technology and employment is unclear. Preliminary estimates conducted by the PSU show that there is no statistically significant correlation between digital technology use (measured as mobile cellular and fixed broadband subscriptions per 100 people) and employment.¹⁴² Although more research is required to determine the exact relationship between digital

¹⁴¹ APEC Policy Support Unit, 'APEC Regional Trends Analysis: Declining Labour Share and the Challenge of Inclusion' (Singapore: APEC, November 2017), <https://www.apec.org/Publications/2017/11/APEC-Regional-Trends-Analysis-2017>.

¹⁴² APEC Policy Support Unit, 'APEC Regional Trends Analysis: Rethinking Skills Development in the Digital Age' (Singapore: APEC, November 2016), <https://www.apec.org/Publications/2016/11/APEC-Regional-Trends-Analysis-Rethinking-Skills-Development-in-the-Digital-Age>.

technologies and employment, this could be pointing to the opposing impacts of digital technologies and tools on employment. For example, even as digital technologies are complementing labour and improving their productivity, as well as creating new jobs and hence opportunities for employment, they are also making some jobs obsolete through automation.

Repetitive and routine jobs are being replaced by computers and/or robots that can do the job more efficiently. McKinsey estimates that about 50 percent of time spent on existing work activities can technically be automated using currently demonstrated technologies, and that up to 375 million workers may need to move to a different occupational category by 2030. The same report further notes that although less than 5 percent of occupations can be fully automated, 60 percent of current occupations have at least one-third of their constituent activities technically automatable.¹⁴³ A study by Frey and Osborne observes that up to 47 percent of jobs in the United States are at risk of computerisation,¹⁴⁴ with jobs requiring a higher skill level less likely to be computerised than lower-skilled routine jobs. Nedelkoska and Quintini find approximately 14 percent of jobs in OECD economies participating in the Survey of Adult Skills to be highly automatable (i.e., having an automation probability of over 70 percent). This suggests that automation could affect more than 66 million workers in OECD economies.¹⁴⁵ As seen in Figure 3.2, the declining labour income shares is also observed in developing economies, with technological change being identified as one possible cause.¹⁴⁶

In the past, due to the high cost of adopting newer technologies, many firms preferred human labour. However, technological advancements have been such that besides making machines, robots and computers more effective at performing tasks, improved production methods and global value chains have also made them more affordable. As a result, the relative cost of accessing production capital has fallen to the point that it is often more efficient for firms to automate certain tasks, especially routine ones.¹⁴⁷ While it has been shown that developing economies are exposed to routinisation to a significantly lesser extent than developed economies, Das and Hilgenstock also note that automation may have sizeable impacts in some developing economies because of the rapid pace they have adopted technology, with potential for significant labour displacement.¹⁴⁸ The increasing efficiency and cost-effectiveness of new technologies could tilt production capital-labour ratios in favour of capital even in labour-abundant developing economies. A study by the IMF shows that for a 15 percent decrease in the relative price of investment goods, the labour share in an economy with high and low initial exposure to routinisation decreased by 1.5 and 0.4 percentage points, respectively.¹⁴⁹

A related impact of digital technology, and more specifically, automation is job polarisation whereby low-wage/low-skill and high-wage/high-skill work remains, while jobs in the middle range largely

¹⁴³ James Manyika et al., 'Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation' (McKinsey Global Institute, 6 December 2017), <https://www.mckinsey.com/~/media/mckinsey/featured%20insights/Future%20of%20Organizations/What%20the%20future%20of%20work%20will%20mean%20for%20jobs%20skills%20and%20wages/MGI-Jobs-Lost-Jobs-Gained-Report-December-6-2017.ashx>.

¹⁴⁴ Carl Benedikt Frey and Michael A. Osborne, 'The Future of Employment: How Susceptible Are Jobs to Computerisation?' (Oxford: Oxford University, September 2013), https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf.

¹⁴⁵ The Survey of Adult Skills comes under the OECD Programme for the International Assessment of Adult Competencies. See Ljubica Nedelkoska and Glenda Quintini, 'Automation, Skills Use and Training' (Paris: OECD, 8 March 2018), https://www.oecd-ilibrary.org/employment/automation-skills-use-and-training_2e2f4eea-en.

¹⁴⁶ APEC Policy Support Unit, 'APEC Regional Trends Analysis: Declining Labour Share and the Challenge of Inclusion' (Singapore: APEC, November 2017), <https://www.apec.org/Publications/2017/11/APEC-Regional-Trends-Analysis-2017>.

¹⁴⁷ For examples, see OECD, 'Labour Losing to Capital: What Explains the Declining Labour Share?', in *OECD Employment Outlook 2012* (Paris: OECD, 2012), 109–61, https://doi.org/10.1787/empl_outlook-2012-4-en; Loukas Karabarbounis and Brent Neiman, 'The Global Decline of the Labor Share' (Cambridge, MA: National Bureau of Economic Research, June 2013), <https://doi.org/10.3386/w19136>.

¹⁴⁸ Mitali Das and Benjamin Hilgenstock, 'The Exposure to Routinization: Labor Market Implications for Developed and Developing Economies', IMF Working Paper WP/18/135 (Washington DC: IMF, 2018), <https://www.imf.org/~/media/Files/Publications/WP/2018/wp18135.ashx>

¹⁴⁹ IMF, 'Understanding the Downward Trend in Labor Income Shares'.

decline. This is based on the observations that the most vulnerable workers are those in middle-skill jobs such as assembly, transcription and data entry. Such jobs involve routine tasks that can be replaced by robotisation or the use of algorithms, yet are valuable enough for firms to invest in their automation. Indeed, besides the OECD estimate indicated in the preceding paragraph, another 31 percent of jobs are estimated to be at risk of significant change as a result of automation, implying that half of all jobs will experience significant change.¹⁵⁰ Specifically in Chile, OECD estimated that about 30 percent of jobs are considered at risk of significant change, and some 20 percent jobs are estimated to be at a high risk of automation.¹⁵¹

Other empirical data have already begun showing a gradual phasing out and automation of middle-skill jobs. For instance, a European jobs monitor conducted in 2014 shows that when employment rates declined across the European Union between 2011 and 2013, the greatest share of decline was among low- to middle-paid workers in construction and manufacturing.¹⁵² In the United States, Autor and Dorn note a U-shaped employment patterns with a decline in the middle-skill workers even as employment gains were observed at the tails.¹⁵³ This calls for policymakers to explore policies to re-skill people who have lost their job so that they are able to find another one, thereby giving them a stake in the new economy instead of being excluded. This point is related to the discussion on skills development in the next section.

2. *Lack of skills for the new digital economy jobs among the population*

Even as technology displaces workers, it has also led to the creation of new jobs and opportunities. A Google search of ‘10 jobs that didn’t exist 10 years ago’ shows that while positions such as app developer, social media manager, cloud computing specialist, digital marketing specialist, and data scientist are more common now, they would have been unheard of a decade ago or so. In its Future of Jobs report, the World Economic Forum notes that most in-demand occupations did not even exist five to 10 years ago. It also predicts that 65 percent of children joining primary school today would be working in jobs yet to exist.¹⁵⁴

Technology also has the ability to complement existing jobs and improve worker productivity either directly or indirectly. Instead of making jobs obsolete, certain technologies can assume some aspects of a job and allow workers to focus on those aspects that cannot be automated. As a result, firms are able to undertake more activities, increase profits and even hire more people. For example, property agents are increasingly using digital tools to obtain information such as capital appreciation, net rental yield and last transacted price for a specific property. Some are even employing drones to better show the property and surrounding facilities to potential buyers or tenants.

However, being able to perform at the new jobs and leverage these technologies requires individuals with the requisite knowledge and skills. It can take a considerable amount of time to provide workers with skills for the industries of tomorrow. An assembly line worker today cannot become an app developer tomorrow. Likewise, a transcriber today cannot become a drone operator tomorrow. Even for skills upgrades that require significantly less time, such as learning a new software package, mastery cannot be achieved overnight.

¹⁵⁰ Nedelkoska and Quintini, ‘Automation, Skills Use and Training’.

¹⁵¹ OECD, ‘Making the Digital Transformation Work in LAC’ (OECD Science, Technology and Innovation Directorate, forthcoming 2019).

¹⁵² World Economic Forum, ‘The Future of Jobs Report 2016’.

¹⁵³ Enrique Fernández-Macías and John Hurley, *Drivers of Recent Job Polarisation and Upgrading in Europe: European Jobs Monitor 2014* (Luxembourg: Publications Office of the European Union, 2014), <https://www.eurofound.europa.eu/publications/report/2014/labour-market/drivers-of-recent-job-polarisation-and-upgrading-in-europe-european-jobs-monitor-2014>.

¹⁵⁴ David H. Autor and David Dorn, ‘The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market’, *American Economic Review* 103, no. 5 (August 2013): 1553–97, <https://doi.org/10.1257/aer.103.5.1553>.

¹⁵⁴ World Economic Forum, ‘The Future of Jobs Report 2016’.

Although some economies are emphasising the importance of continuously upgrading their labour force, the rapid evolution of technologies associated with the digital economy has added to the challenge. The most efficient way of doing things today may no longer be appropriate a few months or years down the road. Essentially, rapid changes have led to a shortening of the period between upgrading. Naturally, it has also led to a diminishing ability of governments and firms to identify and predict future skills demand and hence coordinate training needs. While industrial and education policies can coordinate the labour market for skill sets that remain largely unchanged for prolonged period of time, they cannot do so when in-demand skills change within a shorter period of time than it takes to train people.

Consequently, observations of mismatch between what workers know and what industries need have become more prevalent. For example, a 2013 survey conducted by the OECD found that about 21 percent and 13 percent of workers in OECD economies are employed in jobs for which they are either under- or over-qualified respectively.¹⁵⁵ Further, 17 percent of workers reported skill mismatches at their current jobs. More recently, another OECD study found that three out of four firms in Latin American economies reported having difficulties in filling vacancies.¹⁵⁶ By preventing labour from being used optimally, skills mismatch reduces productivity, as shown by McGowan and Andrews.¹⁵⁷

3. *Lack of access to infrastructure*

Infrastructure development is critical to ensure that more segments of the population are able to access economic opportunities. In the context of the digital economy, energy infrastructure is required to power hardware devices such as computers, broadband modems and mobile phones. Telecommunications serve as the backbone infrastructure necessary to access the internet, which in turn allow individuals to access and leverage related services. For example, only individuals with access to the internet can make and receive digital payments, provide digital services or use e-commerce as a sales channel.

Governments around the world are launching e-government portals to deliver public services such as licence applications and tax filing. In rural and remote places where the population size may not justify the establishment of administrative offices, schools and health clinics, digital means of public service provision can arguably complement the traditional delivery of education and healthcare services.¹⁵⁸ In general, government efforts to employ digital technologies and tools to improve public services provision depend on the targeted population having access to the internet. The importance of universal and affordable access to the internet is highlighted by its inclusion in the UN Sustainable Development Goals.¹⁵⁹

The digital economy also requires access to non-digital infrastructure in order to function optimally. While an increasing number of goods and services are digitally ordered, a significant share are not digitally delivered. Basic infrastructure such as roads, ports and airports remain critical for the production of goods and services, trade and mobility.

Academic literature has frequently emphasised the strong linkages between infrastructure and inclusion. For example, Calderon and Servén find that a one standard deviation improvement in the index of

¹⁵⁵ OECD, *OECD Skills Outlook 2013* (Paris: OECD, 2013), https://www.oecd-ilibrary.org/education/oecd-skills-outlook-2013_9789264204256-en.

¹⁵⁶ OECD, 'Hacia Una América Latina 4.0' [Towards a 4.0 Latin America], Making Development Happen Series no. 5 (OECD Development Centre, forthcoming).

¹⁵⁷ Müge Adalet McGowan and Dan Andrews, 'Labour Market Mismatch and Labour Productivity: Evidence from PIAAC Data' (Paris: OECD, 28 April 2015), <https://doi.org/10.1787/5js1pzx1r2kb-en>.

¹⁵⁸ For examples, see Emmanuel A. San Andres, Satvinderjit Kaur Singh and Jenny Ayumi Kai, 'Development and Integration of Remote Areas in the APEC Region' (Singapore: APEC, November 2018), <https://www.apec.org/Publications/2018/11/Development-and-Integration-of-Remote-Areas-in-the-APEC-Region>.

¹⁵⁹ UN, 'Goal 9: Build Resilient Infrastructure, Promote Sustainable Industrialization and Foster Innovation', Sustainable Development Goals, 2015, accessed 16 September 2019, <https://www.un.org/sustainabledevelopment/infrastructure-industrialization/>.

infrastructure stocks and quality would raise growth by 2.9 and 0.68 percentage points, respectively.¹⁶⁰ Fan et al. find that 3.2 individuals were lifted out of poverty in China for every RMB 10,000 invested in rural road infrastructure.¹⁶¹ According to Chandara and Thompson, for US counties with new interstate highways running through them, earnings rose by approximately up to 8 percent and services and retail industries grew by up to 8 percent over 25 years after the initial opening. On the other hand, counties adjacent to new interstate highways saw total earnings fall by up to 3 percent and retail earnings fall by up to 11 percent.¹⁶²

Despite the importance of infrastructure, however, economies have often underinvested with potentially consequent negative implications for efforts to promote inclusion. In 2018, the International Telecommunication Union (ITU) found that while most of the world's population had mobile cellular coverage, only 51.2 percent or 3.9 billion people were using the internet, possibly pointing to affordability being an issue.¹⁶³ In many economies, disparity in access to crucial infrastructure is a major factor that explains why people in rural areas have been unable to deepen their participation in the economy vis-à-vis their urban counterparts. Specifically in APEC, economies face significant gaps for broad categories of infrastructure including ICT, with one study indicating that APEC economies will collectively need to spend USD2 trillion per year from 2020 to 2025. This is expected to rise to almost USD 2.5 trillion per year on infrastructure in the 2030–2035 period. The region's overall infrastructure needs are expected to rise by almost 92 per cent between 2010 and 2035.¹⁶⁴ With the continuous development and rollout of new technologies such as 5G, new infrastructure would need to be built, hence possibly further widening the gap.

4. Lack of technological diffusion

Each phase of technological change and advancement including the current digital revolution has changed the way people work, live and interact. GPS-enabled phones and devices installed in vehicles are now used to find directions instead of printed paper maps. Emails and messaging apps are used to send communications instead of snail mail. Instead of going through volumes of books and other resource materials in libraries, the first go-to option for information nowadays is a search engine such as Google or Duck Duck Go. In fact, a smartphone today has more computational power than all the computers used to send humans to the Moon, and the transistor count per integrated circuit has increased exponentially from about 2,000 in 1972 to more than 19 billion in 2017.¹⁶⁵ Furthermore, internet speeds are now a multiple of what they were in the 1990s.

This growth in computational capability has led to innovations that have transformed how firms and people work. Many tasks such as accounting, inventory management and transcription have become easier and faster to complete. Specifically, data serve as critical inputs in value chains. In the transport and logistics sector, data are used for monitoring and assessing the safety, capacity and efficiency of asset deployment as well as to tailor loyalty schemes to attract and retain customers. In the manufacturing sector, data are used across the various stages of the value chain to reduce machine

¹⁶⁰ César Calderón and Luis Servén, 'The Effects of Infrastructure Development on Growth and Income Distribution' (Washington, DC: World Bank, 2004), <https://doi.org/10.1596/1813-9450-3400>.

¹⁶¹ Shenggen Fan, Linxiu Zhang and Xiaobo Zhang, 'Growth and Poverty in Rural China: The Role of Public Investments' (Washington, DC: International Food Policy Research Institute, 2000), <https://ideas.repec.org/p/fpr/eptddp/66.html>.

¹⁶² Amitabh Chandra and Eric Thompson, 'Does Public Infrastructure Affect Economic Activity? Evidence from the Rural Interstate Highway System', *Regional Science and Urban Economics* 30, no. 4 (2000): 457–90.

¹⁶³ ITU, 'ITU Releases 2018 Global and Regional ICT Estimates', 7 December 2018, <https://www.itu.int/en/mediacentre/Pages/2018-PR40.aspx>.

¹⁶⁴ APEC, *APEC Economic Policy Report 2018*.

¹⁶⁵ Karl Rupp, '40 Years of Microprocessor Trend Data', 25 June 2015, <https://www.karlrupp.net/2015/06/40-years-of-microprocessor-trend-data/>.

downtime and track inventory, among others. Data analytics are also used to detect anomalies, combat fraud and provide enterprise solutions.¹⁶⁶

For new technologies and tools to contribute to productivity growth, they must be employed in the production of goods and services, but several factors can hinder their utilization. **First**, the growing complexity of the technologies and the knowledge required to apply them may prevent their efficient transfer to and by more firms. For example, the OECD has indicated that while most firms have access to high-speed broadband networks, fewer have access to more advanced, productivity-enhancing tools such as enterprise resource planning systems or big data analytics. In OECD economies, only 28 percent of large firms have performed big data analysis. The share was even lower for small (9 percent) and medium-sized firms (16 percent).¹⁶⁷

Second, the diffusion of the technologies could be impeded by the lack of a supportive business environment and appropriate regulations in areas such as data and technology sharing. As an illustration, the OECD has found that diffusion of some digital technologies is generally more advanced in sectors where firm turnover (i.e. entry and exit) is higher.¹⁶⁸ Consequently, frontier firms are able to enjoy significant gains from their new technologies, while non-frontier firms face a range of structural and legal barriers preventing them from harnessing these technologies, with negative implications for their productivity. For example, Bahar and Rapoport find that the fastest productivity growth in Europe is concentrated among the most and least productive firms, while the rest of the firms are trapped in a middle productivity trap.¹⁶⁹

Box 3.1. Uneven adoption and diffusion of digital technologies help explain the digital ‘productivity paradox’

One of the great promises of the digital transformation is accelerated productivity growth through new avenues for innovation and reduced costs of business processes. But despite the diffusion of digital technologies since the mid-1990s, aggregate productivity growth has slowed over the past decade or so, sparking a lively debate about the potential for digital technologies to raise productivity. While some have suggested that this digital ‘productivity paradox’ may partly be explained by inadequate measurement, OECD work suggests that this does not explain the slowdown.

Moreover, the adoption and diffusion of digital tools is not uniform across firms, industries, sectors and economies. Importantly, the aggregate productivity slowdown masks a widening gap in multi-factor productivity (MFP) growth among firms, with firms in ICT-intensive services sectors leading at the frontier (Figure 3.3). Throughout the economy, this divergence is driven not only by some leading firms pushing out the productivity frontier, but also by the stagnating productivity of a long tail of laggard firms that seemingly lack the capabilities or incentives to adopt new technology and best practices.

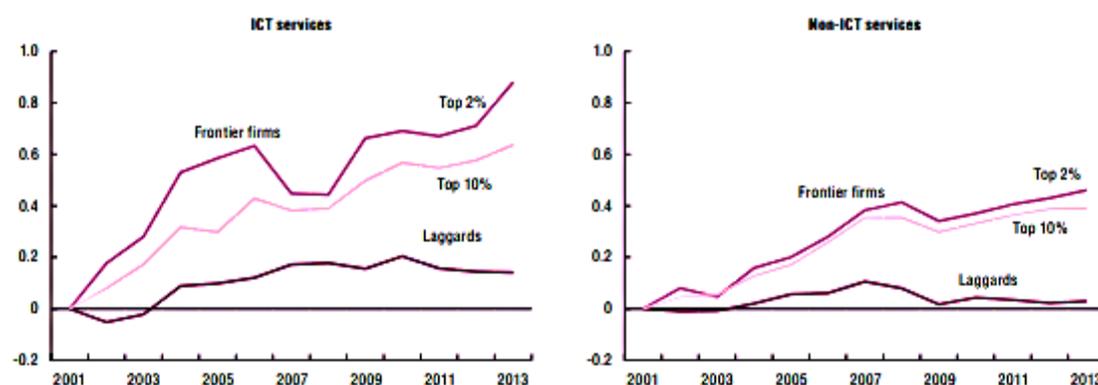
¹⁶⁶ Vishal Beri et al., ‘Fostering an Enabling Policy and Regulatory Environment in APEC for Data-Utilizing Businesses’ (Singapore: APEC, July 2019), <https://www.apec.org/Publications/2019/07/Fostering-an-Enabling-Policy-and-Regulatory-Environment-in-APEC-for-Data-Utilizing-Businesses>.

¹⁶⁷ OECD, ‘Productivity Growth in the Digital Age’ (Paris: OECD, February 2019), <https://www.oecd.org/going-digital/productivity-growth-in-the-digital-age.pdf>.

¹⁶⁸ Flavio Calvino and Chiara Criscuolo, ‘Business Dynamics and Digitalisation’ (Paris: OECD, 2019), https://www.oecd-ilibrary.org/science-and-technology/business-dynamics-and-digitalisation_6e0b011a-en.

¹⁶⁹ Dany Bahar and Hillel Rapoport, ‘Migration, Knowledge Diffusion and the Comparative Advantage of Nations’, *The Economic Journal* 128, no. 612 (2018): F273–305, <https://doi.org/10.1111/eoj.12450>.

Figure 3.3. Widening gap in multi-factor productivity growth



These signs suggest that the main source of the productivity slowdown may not be so much a slowing of innovation by the most globally advanced firms, but an uneven uptake and diffusion of these innovations throughout the economy. This could also reflect the being the cusp of a new technological wave where only a few front-runners have mastered the new opportunities created by digital technologies, and the know-how needed to exploit these opportunities has not yet been codified for easy dissemination. Adoption and diffusion of digital technologies remain well below potential, but can be facilitated by public policy.

Adapted in full or part from:

- Avi Goldfarb and Catherine Tucker, 'Digital Economics' (National Bureau of Economic Research, August 2017), <https://doi.org/10.3386/w23684>.
- Nadim Ahmad, Jennifer Ribarsky and Marshall Reinsdorf, 'Can Potential Mismeasurement of the Digital Economy Explain the Post-Crisis Slowdown in GDP and Productivity Growth?' (Paris: OECD, 2017), https://www.oecd-ilibrary.org/economics/can-potential-mismeasurement-of-the-digital-economy-explain-the-post-crisis-slowdown-in-gdp-and-productivity-growth_a8e751b7-en.
- Flavio Calvino and Chiara Criscuolo, 'Business Dynamics and Digitalisation' (Paris: OECD, 2019), https://www.oecd-ilibrary.org/science-and-technology/business-dynamics-and-digitalisation_6e0b011a-en.
- OECD, *OECD Science, Technology and Industry Scoreboard 2017: The Digital Transformation* (Paris: OECD, 2017), https://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard-2017_9789264268821-en.
- Dan Andrews, Chiara Criscuolo and Peter Gal, 'The Best vs the Rest: The Global Productivity Slowdown Hides an Increasing Performance Gap across Firms', blog, VoxEU.Org, 27 March 2017, <https://voxeu.org/article/productivity-slowdown-s-dirty-secret-growing-performance-gap>.
- OECD, *The Future of Productivity* (Paris: OECD, 2015), <https://doi.org/10.1787/9789264248533-en>.

5. Lack of access to social protection

Capital and labour are two inputs commonly used by economists in a production function. One fundamental difference between the two inputs is that while capital can be liquidated or moved from one sector to another, more time and resources are needed to redeploy and/or retrain workers. This is particularly so if the sectors are very different in terms of skills requirements, in which case the unemployed workers would need assistance to enrol in the training programmes that would equip them with the relevant skills. Assistance programmes should be updated to include support for individuals and households during lengthy periods of retraining and adjustment.

While APEC economies have various kinds of social protection systems, many are primarily focused on temporary setbacks such as injury or short-term unemployment, and are not an appropriate form of

support for a period of extensive retraining. In the absence of an up-to-date social protection system, unemployed workers may become risk averse and decide to save their limited resources for a medical emergency rather than investing in skills training. It has been found that better social protection allows for increased accumulation of assets and improves labour market participation.¹⁷⁰ The lack of social protection will have significant impact on workers accumulating the right skills and they may find it even more challenging to find a new job. On the intergenerational front, unemployed or underemployed workers who typically have no or lower income may be more reluctant to invest in their children's education, thus passing the inclusion issue on to the next generation.¹⁷¹

Even for economies with more robust social protection systems, the new digital economy business models have exacerbated trends that, if not addressed, are likely to have negative implications for inclusion. In many economies only those with gainful employment can participate in social protection systems. The digital economy, however, has led to the rise of newer forms of employment such as private-hire drivers, freelancers and other self-employed workers that are regarded as independent contract workers rather than employees.¹⁷² While there are advantages to such forms of employment, one critical disadvantage is that workers are usually not entitled to social security contributions and may also have fewer opportunities to access training, union representation and health benefits that permanent/full time employees enjoy.¹⁷³ In fact, it has been suggested that the digital economy may be creating a precarious class of on-demand workers or independent contractors.

Enhancing inclusion in the digital economy: the EC's three approaches

The digital economy has wide-ranging implications for society as a whole. Specifically from the lens of inclusion, the above discussions have shown that although EC's core structural reforms are essential, they constitute only one aspect of structural-reform related work and should be complemented with other policies. In recognition of this, the Committee produced the *Three Approaches* in 2018. The document outlines three approaches that economies may take to better harness structural reform to tackle complex challenges such as inclusive growth (see Box 3.2.). The first approach (Approach I), known as 'Getting the Basics Right' involves ensuring that core structural reforms are correctly applied. Part 2 of the main report was about getting the basics right with regards to four core structural reforms as applied to digital economy challenges. This is followed by two more complex and holistic strategies. The second approach (Approach II) involves making core structural reforms pro inclusive and/or undertaking structural reforms in specific areas to generate positive externalities for inclusion such as education and skills, infrastructure and social security. The third approach (Approach III) involves ensuring that core structural reforms are aligned with other types of reforms and supporting policies to maximise the impact with respect to policy objectives such as inclusive growth. As will be seen in the next section, these approaches can equally be applied to the intersection between the digital economy and inclusion.

¹⁷⁰ Department of Foreign Affairs and Trade, Australia, 'Social Protection and Growth – Briefing', accessed 23 August 2019, <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9100.pdf>.

¹⁷¹ Shelley A. Phipps and Lynn Lethbridge, *Income and the Outcomes of Children* (Ottawa: Statistics Canada, 2006).

¹⁷² OECD, *The Future of Social Protection: What Works for Non-Standard Workers?* (Paris: OECD, 2018), <https://doi.org/10.1787/9789264306943-en>; Joseph V. Kennedy, 'Three Paths to Update Labor Law for the Gig Economy' (Information Technology and Innovation Foundation, April 2016), <http://www2.itif.org/2016-labor-law-gig-economy.pdf>.

¹⁷³ OECD, *The Future of Social Protection*; James Manyika et al., 'Independent Work: Choice, Necessity, and the Gig Economy' (McKinsey Global Institute, October 2016), <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Employment%20and%20Growth/Independent%20work%20Choice%20necessity%20and%20the%20gig%20economy/Independent-Work-Choice-necessity-and-the-gig-economy-Executive-Summary.ashx>.

Box 3.2. Three Approaches – Key definitions

Core Structural Reforms – the six core structural reform functions of the Economic Committee’s work programme: Competition Policy and Law; Regulatory Reform; Ease of Doing Business (EoDB); Public Sector Governance (PSG); Strengthening Economic and Legal Infrastructure (SELI); and; Corporate Law and Governance (CLG). This report applies the first four of these six core structural reforms to meet digital economy challenges, but the other two (SELI and CLG) are relevant as well (see Part 2).

Supplementary Structural Reforms – can range from macroeconomic policy to a variety of changes to laws, regulations and institutions that directly or indirectly improve the functioning of markets, but that do not fall under the EC’s six Core Structural Reforms.

Supporting Policies – policies required to advance government objectives but that generally do not involve changes in laws or institutions. They often (but not always) involve government expenditures (e.g., programmes, grants, incentives). When deployed along with Core and Supplementary Structural Reforms, they can be part of an integrated package designed to promote inclusive growth or attain other broad policy goals.

Source: APEC, ‘Structural Reforms for Inclusive Growth: Three Approaches’ (Singapore: APEC, 2015), <https://www.apec.org/-/media/Files/Groups/EC/Structural-Reforms-for-Inclusive-Growth---Three-Approaches.docx?la=en&hash=BD201A724890FAADE32D3A9A0E5999A8A6F51C10>.

B. Harnessing structural reforms to support inclusion

In line with Approach II (see Box 3.2), this section will examine the application of structural reforms to four broad government policy areas with strong externalities for inclusion: human capital development (HCD), social protection, infrastructure and fiscal policy. Policymakers often employ a mix of structural reforms and supporting policies to achieve a specific policy objective, per Approach III. While the EC’s *Three Approaches* has made a clear distinction between structural reforms and supporting policies (see Box 3.2.), it is often challenging to do so in practice. Furthermore, Approach II and Approach III are not mutually exclusive. Through side-by-side consideration of the application of structural reforms and supporting policies to areas such as human capital development and infrastructure, the following section will provide greater understanding of the relationship between structural reforms and supporting policies, and between Approach II and Approach III, in the efforts to promote inclusive growth. Applications of Approach III will be discussed in more detail in Section 3C.

Human capital development

While the digital economy has brought many opportunities, the distribution of benefits has been uneven. As indicated previously, digitisation has created new job categories but has also led to job losses as some tasks can now be more easily automated. Workers are less likely to feel excluded if they have access to the necessary skills and reasonable prospects of obtaining employment in the digital economy.

The human capital development challenges posed by the digital economy calls for holistic policy frameworks that align structural reforms with supporting policies in areas such as training and other programs for unemployed workers. **Active labour market policies (ALMPs)** can play an important role here. The set of policies could include job search assistance, hiring subsidies, and information on relevant training programmes to help the unemployed find jobs more quickly and ensure that their skills

continue to be relevant during the search.¹⁷⁴ For instance, Canada has updated its Youth Employment and Skills Strategy (YESS), which focuses on youth facing barriers to employment, to include digital skills and work experience. It supports recent post-secondary graduates who are generally job-ready but may require a first employment experience through wage-subsidy opportunities that connect them with small businesses and not-for-profit organisations where they can gain meaningful work experience.¹⁷⁵ Governments in Latin America have developed skills-enhancing programmes for youth that combine classroom teaching, workplace learning and job search services to help young Latin Americans transition to employment. Training interventions for youth in the region, such as *Plan Nacional de Lenguas Digitales* in Chile, *Puntos Mexico Contactado* in Mexico and *ProJoven* in Peru, prove that comprehensive interventions have positive results on youth employability, earnings and especially job quality¹⁷⁶.

Even for the employed, there is a need to ensure they remain relevant as technology evolves. For example, although the use of ICT at work is generalised, the OECD found that over 60 percent of the EU labour force reported their computer skills as insufficient to apply for a new job.¹⁷⁷ Economies have responded to this need with digital training programmes for a range of individuals. Australia, for example, launched the Be Connected programme to improve the digital skills of older individuals.¹⁷⁸ Similarly, the Philippines has launched the Tech4Ed programme which establishes centres across the economy to provide access to information, online government services, skills training and business portals among others.¹⁷⁹

As shown in Figure 3.4., the World Bank indicates that three types of skills are becoming increasingly important in labour markets, namely, advanced cognitive skills (e.g., complex problem-solving), sociobehavioural skills (e.g. teamwork, empathy, conflict resolution, and relationship management), and skill combinations that are predictive of adaptability (e.g., reasoning and self-motivation). The OECD concurs, noting that while economies should endeavour to equip individuals with a range of generic and advanced ICT skills, such skills are not in and of themselves sufficient to thrive in the digital economy.¹⁸⁰ While it is essential that individuals have good literacy and numeracy skills, in the digital workplace, it is also important to develop complementary skills including socioemotional skills¹⁸¹ that enable workers to collaborate effectively. Some economies have provided **avenues for lifelong learning** where individuals are able to enrol and acquire new skills. For instance, Indonesia has launched a free industrial skill training programme that aims to train approximately 162,000 participants between 2017 and 2019.¹⁸² To ensure that seniors are equipped with the relevant skills,

¹⁷⁴ OECD, 'Preventing Unemployment and Underemployment from Becoming Structural' (*G20 Labour and Employment Ministerial Meeting*, Melbourne, Australia, 2014), <https://www.oecd.org/els/emp/OECD-Preventing-unemployment-and-underemployment-from-becoming-structural-G20.pdf>.

¹⁷⁵ From Canada's IER submission.

¹⁷⁶ OECD, 'Making the Digital Transformation Work in LAC'.

¹⁷⁷ OECD, *Measuring the Digital Economy: A New Perspective* (Paris: OECD, 2014), <https://doi.org/10.1787/9789264221796-en>.

¹⁷⁸ Department of Social Services, Australia, 'Be Connected – Improving Digital Literacy for Older Australians', 18 January 2018, <https://www.dss.gov.au/seniors/be-connected-improving-digital-literacy-for-older-australians>.

¹⁷⁹ Department of Information and Communications Technology, Philippines, 'e-Filipino Tech4Ed', DICT, accessed 11 September 2019, <https://dict.gov.ph/major-programs-and-projects/e-filipino/e-filipino-technology-for-the-economic-development-tech4ed/>.

¹⁸⁰ OECD, 'Skills for a Digital World' (Paris: OECD, December 2016), <https://www.oecd.org/els/emp/Skills-for-a-Digital-World.pdf>.

¹⁸¹ Socioemotional skills (also referred to as soft or noncognitive skills) encompass a broad range of malleable skills, behaviours, attitudes and personality traits that enable individuals to navigate interpersonal and social situations effectively. These include grit or the perseverance to finish a job or achieve a long-term goal, teamwork, punctuality, organisation, commitment, creativity and honesty. See World Bank, *World Development Report 2016: Digital Dividends* (Washington, DC: World Bank, 2016).

¹⁸² Stefani Ribka, 'Govt Launches Free Industrial Skills Training Program Nationwide', *The Jakarta Post*, 1 March 2017, <https://www.thejakartapost.com/news/2017/03/01/govt-launches-free-industrial-skills-training-program-nationwide.html>.

Singapore's IMDA Silver Infocomm Initiative provides digital clinics and experiential learning journeys for the elderly to allow them to engage with technology.¹⁸³

Figure 3.4. Skills needed in the modern economy

| Cognitive | Social and Behavioural | Technical |
|--|---|--|
| <ul style="list-style-type: none"> • Literacy, numeracy and cognitive skills • Problem-solving skills • Verbal ability, memory and mental speed | <ul style="list-style-type: none"> • Socioemotional skills and personality • Openness to experience, conscientiousness, extraversion and emotional stability • Self-regulation, mindset and interpersonal skills | <ul style="list-style-type: none"> • Knowledge of methods and tools • General technical skills from schooling and training • Occupation-specific skills |

Source: World Bank, *World Development Report 2016: Digital Dividends* (Washington, DC: World Bank, 2016).

While the above has focused on equipping both the unemployed and employed with the necessary skills to thrive in the digital economy, economies need to ensure that new entrants to the workforce are prepared for the new jobs and skill requirements. They need to ensure that **education systems evolve in line with the requirements of the digital economy**. Special attention should be paid to early childhood development since some of these skills are best acquired in one's early years. For instance, programming education will be mandatory in all elementary schools in Japan from April 2020.¹⁸⁴ Singapore has also responded by introducing coding classes for all upper primary pupils as an enrichment programme before being rolled to all primary schools by 2020.¹⁸⁵ Similarly, Canada has introduced the CanCode program to help young people learn to code, develop analytical thinking and foster problem-solving techniques that are important in in-demand STEM fields.¹⁸⁶

Other reform efforts should include **complementing classroom-based education with alternatives such as online courses**. The rate at which skills needs are changing has raised the question as to whether the current tertiary education¹⁸⁷ system could be complemented by shorter-term courses focusing on specific skill needs akin to what have been offered by some massive open online course (MOOC). According to Global Shapers, a community of young people under the World Economic Forum, found that in a survey of 25,000 young people, 77.84 percent reported having taken online courses in the prior year.¹⁸⁸ Despite the increasing trend toward online courses, academic leaders have been split in their opinion of such course, with only 27.8 percent agreeing it is a sustainable method for offering courses.¹⁸⁹

¹⁸³ Kevin Kwang, 'Singapore Libraries Have a New Remit: Equip Seniors with Digital Skills', *Channel NewsAsia*, 6 March 2018, <https://www.channelnewsasia.com/news/singapore/singapore-libraries-have-a-new-remit-equip-seniors-with-digital-10016716>.

¹⁸⁴ Atsuko Sano, 'Coding Will Be Mandatory in Japan's Primary Schools from 2020', *Nikkei Asian Review*, 27 March 2019, <https://asia.nikkei.com/Economy/Coding-will-be-mandatory-in-Japan-s-primary-schools-from-2020>.

¹⁸⁵ Hariz Baharudin, 'Enrichment Classes on Coding for All Upper Primary Pupils next Year', *The Straits Times*, 10 July 2019, <https://www.straitstimes.com/tech/coding-to-be-made-compulsory-for-all-upper-primary-pupils-next-year>.

¹⁸⁶ From Canada's IER submission.

¹⁸⁷ As defined by World Bank, 'tertiary education' refers to all post-secondary education, including both public and private universities, colleges, technical training institutes, and vocational schools. 'Tertiary Education', The World Bank, accessed 11 September 2019, <https://www.worldbank.org/en/topic/tertiaryeducation>.

¹⁸⁸ Jiyuan Yu and Zi Hu, 'Is Online Learning the Future of Education?', World Economic Forum, 2 September 2016, <https://www.weforum.org/agenda/2016/09/is-online-learning-the-future-of-education/>.

¹⁸⁹ I. Elaine Allen and Jeff Seaman, 'Changing Course: Ten Years of Tracking Online Education in the United States', (Babson Survey Research Group and Quahog Research Group, 2013), <http://www.onlinelearningsurvey.com/reports/changingcourse.pdf>.

Box 3.3. Digital learning tools for adult and life-long learning

Digital learning and open education come in many forms (e.g., post-secondary, undergraduate and graduate education, continuing education, short-term training and professional development). It can be offered by formal educational institutions, industry, or new entrants in the education and training fields. Digital learning can lower the cost of training, increase flexibility in training provision, and better meet individual needs, among others. Digital learning and open education holds much promise to foster adult and life-long learning.

One form of digital learning is online learning, which notably enables distance learning and can be open to a large number of students. Online learning includes tutorials, recorded lectures, online educational resources, as well as small, private online courses or massive open online courses (MOOCs). MOOCs have attracted much attention in recent years, but the returns from efforts to promote them in terms of widespread improvements to education and training have so far been limited.

While the first popular MOOCs were offered by formal post-secondary educational institutions and focused on traditional academic subject areas, more recently the number of MOOCs that aim at enhancing skills and providing professional development have increased. Some of these skills-oriented MOOCs have been created by, or in co-operation with, multinationals that help set the curricula or are prepared to accept certificates of successful MOOC completion in their hiring processes. For firms, MOOCs may provide a potentially cost-effective means of investing in their employees. Users of open education are largely employees that combine it with formal education and, to a lesser extent, workers on the job.

One key challenge facing many MOOCs is that completion rates are very low, and that patterns of participation and completion seem to replicate offline learning patterns, i.e., the highly educated and highly skilled are more likely to participate in and finish courses than low-skilled ones. For this reason, it is not yet clear if MOOCs will reduce or reinforce inequalities among workers. For those who complete online courses, certification and/or their recognition remains a challenge, despite many innovative approaches to certification that have evolved with digital learning, e.g. digital badges, nano and micro degrees, and other forms of credentials.

Adapted in full or part from:

- OECD, *Going Digital: Shaping Policies, Improving Lives* (Paris: OECD, 2019), 90, <https://doi.org/10.1787/978OECD.9264312012-en>.
- Almedina Music and Stéphan Vincent-Lancrin, 'Massive Open Online Courses (MOOCs): Trends and Future Perspectives' (Paris: OECD, 8 November 2016), [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/CERI/CD/RD\(2016\)5&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/CERI/CD/RD(2016)5&docLanguage=En).
- OECD, *OECD Skills Outlook 2019: Thriving in a Digital World* (Paris: OECD, 2019), <https://doi.org/10.1787/df80bc12-en>.

In addition, some technical skills can be acquired **through work-shadowing and apprenticeship programmes**. This underscores the importance of recognising skills outside formal channels through vehicles such as certifications and referral letters to complement the current education system. Malaysia's skills development initiative, TalentCorp, has created internships and apprenticeship programmes whose objective is to increase the supply of skilled labour for Malaysia's National Key Economic Areas.¹⁹⁰

¹⁹⁰ Kim Song Tan and James Tang, 'Managing Skills Challenges in ASEAN-5' (Singapore Management University and J.P. Morgan, October 2016), https://socsc.smu.edu.sg/sites/socsc.smu.edu.sg/files/%5Bcurrent-domain%3Amachine_name%5D/news_room/Managing%20Skills%20Challenges%20in%20ASEAN-5_Final%20Report.pdf.

Social protection

The new business models made possible by digital technologies pose challenges to traditional social protection frameworks and may require them to be updated accordingly. The fact that many jobs are vulnerable to the digital transformation process (e.g., driverless cars replacing drivers, online courses replacing after-school tutors, AI replacing interpreters, automation replacing pipeline workers) makes it all the more urgent for policymakers to ensure social protection frameworks are adapted to the new economy.

Traditional social programmes that provide subsidies, loans and retraining may still remain useful in the digital economy. For instance, the Employment Benefits and Support Measures (EBSM) programme in Canada, started in 1996, aims to get unemployed people back into the labour market quickly through measures delivered in partnership with the provincial and territorial governments, such as skills development initiatives, wage subsidies, and employment assistance services. The European Globalisation Adjustment Fund (EGF), set up by the European Union (EU) in 2007, supported 27,610 people between 2013 and 2014 and achieved a 50 percent re-employment rate through assistance efforts that include training, relocation and subsistence allowances. Similarly, Mexico's labour retraining programme (PROBECAT) provides retraining and placement services.¹⁹¹

Where social programmes designed for the analogue age are inadequate to face the challenges of the digital economy, economies could consider two approaches: (1) expanding and upgrading the current social protection programmes in terms of coverage and depth; or (2) introducing new programmes and policies that includes mandatory provision of certain forms of insurance and social benefits by companies.

The existing social protections can be further expanded and deepened to be more inclusive and provide stronger support when individuals face adversity. **A universal social protection based on need rather than employment conditions and earnings** is one possible direction. For instance, universal health insurance coverage is already provided in economies such as Australia; Canada, Japan; and New Zealand.¹⁹² Discussions and progress are also seen on expanding employment-related social protection programs to include other non-standard employment forms, especially self-employment, independent contract work, or platform work without contracts. For example, to better protect individuals who are self-employed, Malaysia has introduced i-Saraan (previously known as 1Malaysia Retirement Savings Scheme (SP1M)) under the Employees Provident Fund (EPF) to allow more individuals regardless of their employment status (including those working in the gig economy), to make voluntary contributions and receive additional contributions from the government.¹⁹³ Denmark has improved the ability of the self-employed and other non-standard workers to access unemployment benefits. The new reform only requires one to meet a minimum taxable income over a three-year period to be eligible for the benefits regardless of the employment type.¹⁹⁴

Other policies have been explored by economies to provide a variety of protections to workers in light of changes wrought by the digital economy. For instance, Indonesia has introduced a compulsory accident insurance scheme for moto-taxi rides made through an online app, by automatically deducting

¹⁹¹ Carlos Kuriyama et al., 'APEC Regional Trends Analysis: Globalisation: The Good, The Bad, and the Role of Policy' (Singapore: APEC, May 2017), <http://publications.apec.org/Publications/2017/05/APEC-Regional-Trends-Analysis-Globalisation-The-Good-The-Bad-and-the-Role-of-Policy>.

¹⁹² International Travel Insurance Group, 'Countries with Free or Universal Health Care', accessed 23 August 2019, <https://www.internationalinsurance.com/health/countries-free-healthcare.php>.

¹⁹³ Employees Provident Fund (KWSP), Malaysia, 'i-Saraan: Securing Retirement with Voluntary Contribution', accessed 19 September 2019, <https://www.kwsp.gov.my/member/contribution/i-saraan>.

¹⁹⁴ OECD, *The Future of Social Protection*.

a small amount of the fare to insure both driver and passenger for the duration of the trip.¹⁹⁵ In responding to the fast development of the food delivery and logistics industries, Beijing's municipal government established several policy measures in early 2019 to enhance the working conditions of the delivery person. Measures include making sure that employers comply with labour regulations such as the need to employ workers using formal contracts and to include certain mandatory provisions (e.g., on-the-job injury compensation and medical insurance). Supplementary measures include providing housing assistance. Indeed, the city government will provide 2,400 public dormitory rooms for rent to local couriers to address the housing shortage issue.¹⁹⁶

Infrastructure

In 2018, the International Telecommunication Union (ITU) found that while most of the world's population live within mobile cellular coverage areas, only 51.2 percent or 3.9 billion people were using the internet.¹⁹⁷ Although universal, reliable and affordable access to ICT is essential to participate in the digital economy, access in many rural and remote areas remains inadequate. For example, 39 percent of the rural population in the United States lack access to high-speed fixed broadband services (at 25Mbps/3Mbps), while the number in urban areas is only 4 percent.¹⁹⁸ Disparities in critical ICT infrastructure limit the ability of people and businesses in those areas to participate in digital activities and seize new digital opportunities, further widening socio-economic gaps.

Governments have put in place **economy-wide programmes to improve the coverage, quality and affordability of their ICT infrastructure**. Canada's 'Connect to Innovate' program aims to expand its high capacity backhaul to rural and remote communities. The initiative is expected to improve connectivity for over 900 communities.¹⁹⁹ In Indonesia, one of the government's infrastructure priority projects is the Palapa Ring project, which aims to connect telecommunication and communication networks throughout the economy.²⁰⁰ Malaysia has established an economy-wide target of 1 percent of gross national income per capita for fixed broadband cost. So far, significant progress has been made. Entry level fixed broadband prices have decreased by over 40 percent through measures such as encouraging common infrastructure sharing and greater transparency in wholesale level pricing.²⁰¹ In Australia, the National Broadband Network (NBN) provides economy-wide high-speed broadband wholesale services through a mix of three technologies: optical fibre, fixed wireless, and next-generation satellite. The wholesale access price of the its services is fixed per user with no fees charged for a new connection or line rental, and users subscribe to the system through a third retailer. NBN is now available to approximately 80 per cent of Australian premises, and the government aims to increase the coverage to all Australian homes and businesses by mid-2020.²⁰²

¹⁹⁵ ILO and OECD, 'Promoting Adequate Social Protection and Social Security Coverage for All Workers, Including Those in Non-Standard Forms of Employment' (paper presented at the *1st Meeting of the G20 Employment Working Group*, Buenos Aires, Argentina, 20–22 February 2018), https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_646044.pdf.

¹⁹⁶ Jill Shen, 'Beijing Begins Introducing Measures to Protect Gig-Economy Workers, Starting with Delivery Drivers', *TechNode*, 20 February 2019, <https://technode.com/2019/02/20/beijing-delivery-drivers-welfare/>; Wang Wei, '北京将为快递员提供 2400 套宿舍' [Beijing will provide 2400 dormitories for delivery person], *Beijing Youth Daily*, 20 February 2019, http://epaper.yynet.com/html/2019-02/20/content_319884.htm?div=-1.

¹⁹⁷ 'Access to and Use of ICTs Keep Growing but Stronger ICT Skills Needed to Connect People Everywhere', ITU, 11 December 2018, <https://www.itu.int/en/mediacentre/Pages/2018-PR41.aspx>.

¹⁹⁸ US Federal Communications Commission, US, *2016 Broadband Progress Report* (US Federal Communications Commission, 29 January 2016), https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf.

¹⁹⁹ APEC, *APEC Economic Policy Report 2018*.

²⁰⁰ From Indonesia's IER submission.

²⁰¹ From Malaysia's IER submission.

²⁰² From Australia's IER submission; Matthew L. James, 'National Broadband Network (NBN) – Budget Review 2013–14', Parliament of Australia, May 2013, https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/BudgetReview2013/4/NBN.

While public sector investment has driven the bulk of infrastructure development in the past and will likely continue to do so, economies will need to **mobilise private sector investment** to help meet funding requirements. This would entail economies implementing structural reforms to promote competition and improve procurement processes alongside supporting policies to allow private sector actors easier access to financing for infrastructure projects. For example, the Ultra-Fast Broadband (UFB) programme in New Zealand, which aims to connect 87 percent of New Zealanders in over 390 towns and cities to fibre by the end of 2022, is a public-private partnership between government and four companies with a total government investment of NZD 1.5 billion.²⁰³ In the United States, the American Broadband Initiative aims to direct the increased private investment in broadband infrastructure and services to fill broadband connectivity gaps in America by measures such as streamlining federal permitting processes and encouraging private companies to invest in telecommunications infrastructure, especially in rural areas.²⁰⁴ The USDA ReConnect Program offers up to USD 600 million in loans and grants to telecommunications companies, rural electric cooperatives and utilities, internet service providers and municipalities to build broadband infrastructure in rural America.²⁰⁵

Investment in hard digital infrastructure aside, governments would also need to put in place **policies geared toward ensuring that specific groups in society are not prevented from accessing infrastructure**. For instance, Mexico's Federal Telecommunications and Broadcasting Law prohibits discrimination in providing services based on ethnic origin, gender, age, social status, health conditions, religion, opinions and marital status among others.²⁰⁶ Governments should also consider providing funding and assistance to specific groups in society who have difficulty accessing these services. In Chinese Taipei, the government provides subsidies for people with disabilities to purchase assistive communication devices including mobile phones. It also encourages telecommunications operators to provide services tailored to people with disabilities such as special phone rental and sale services and telecommunication relay services. Funding is also provided for ICT projects that design communications devices for people with seeing, hearing, reading, and writing disabilities.²⁰⁷ In the United States, the Federal Communications Commission established the National Deaf-Blind Equipment Distribution Program in 2011. It provides up to USD 10 million a year to support local programmes which distribute equipment to low-income deaf and blind individuals so as to help them access telecommunications and internet services.²⁰⁸

Fiscal policy

Investments in infrastructure and other areas that are likely to support inclusive growth require governments to have sufficient fiscal space. The World Bank estimates that investments in human capital, basic social protection and productive opportunities for youth are likely to cost between 6 to 8 percent of GDP per year.²⁰⁹ At the same time, the digital economy has exacerbated the fiscal challenges that economies face (e.g., inadequate tax bases and large informal sectors). To increase their fiscal resources economies could enhance the capacity of their tax administration, close tax loopholes, and explore new sources of revenues, or expand those revenue sources that support inclusive growth such as property taxes²¹⁰.

²⁰³ From New Zealand's IER submission.

²⁰⁴ From the US IER submission.

²⁰⁵ From the US IER submission.

²⁰⁶ Mexican Congress, 'Federal Telecommunications and Broadcasting Law' (Federal Official Gazette, 1 June 2016), <http://www.ift.org.mx/sites/default/files/contenidogeneral/asuntos-internacionales/federaltelecommunicationsandbroadcastinglawmexico.pdf>.

²⁰⁷ Department of Communications and the Arts, Australia, 'Policies, Legislation, and Initiatives to Promote Access to ICTs for People with Hearing and/or Speech Impairment' (Singapore: APEC, October 2018), <https://www.apec.org/Publications/2018/10/Policies-Legislation-and-Initiatives-to-Promote-ICT-Access>.

²⁰⁸ Department of Communications and the Arts, Australia.

²⁰⁹ World Bank, *World Development Report 2019: The Changing Nature of Work* (Washington, DC: World Bank, 2019).

²¹⁰ OECD, 'Tax Policies for Inclusive Growth in a Changing World' (OECD Report to G-20 Finance Ministers and Central Bank Governors, July 2018), <http://www.oecd.org/g20/Tax-policies-for-inclusive-growth-in-a-changing-world-OECD.pdf>

The relative ease of shifting profits to lower-tax jurisdictions by firms, and the inherent difficulty of taxing some digital economy transactions (e.g., domestic services enabled through digital platforms and selling products through social media like Facebook and Instagram) can undermine existing tax bases. To tackle **base erosion and profit shifting (BEPS)** issues, the OECD established a BEPS Action Plan in 2013 and produced a set of 15 measures in 2015 to provide guidance on the domestic and international rules and instruments that economies can put in place to ensure that profits are taxed where the economic activities generating the profits are performed and where value is created.²¹¹ Their multilateral forum – the OECD/G20 Inclusive Framework on BEPS – now has more than 130 members accounting for over 95 percent of the world’s GDP.²¹² The implementation of the BEPS package is well under way, including in APEC economies.²¹³ (Refer to Box A.1 in Annex A for more information on efforts made under BEPS)

Improving the coverage of current taxation to include more digital activities is one way of increasing government revenue. For instance, Chinese Taipei enacted the Value-Added and Non-Value-Added Business Tax Act ("Business Tax Act") in 2017. The Act requires foreign enterprises without a fixed place of business in Chinese Taipei but selling services electronically into the economy to register and pay Value-Added Tax (VAT).²¹⁴ In Singapore, a goods and services tax (GST) is set to be imposed on B2C imported digital services (e.g., movie and music streaming) in 2020. Service providers without a physical presence in Singapore need to register themselves if their annual global turnover exceeds SGD 1 million, and sales to Singapore exceeds SGD 100,000.²¹⁵ Australia has introduced measures to extend GST to digital products and services that are imported by consumers in Australia from offshore. These include intangible supplies such as e-books, video streaming services or game downloads. The measure also includes services provided from offshore to consumers including legal and accountancy services supplied by offshore entities. The law applies to offshore vendors and electronic distribution platforms with Australian turnover of \$75,000 or more.²¹⁶

New taxes have also been explored by some economies, including a digital services tax (DST). This is a flat-rate tax on the total turnover of large technology firms or digital platforms in one economy. France recently passed legislation imposing a 3 percent DST on multinational digital services providers if their global turnover from digital services reaches EUR 750 million and the turnover in France reaches EUR25 million.²¹⁷ New Zealand is also considering applying a unilateral DST at a flat rate of 2 to 3 percent to the gross turnover of big multinational digital companies generated in New Zealand.²¹⁸ In introducing these taxes, it is important for economies to also take into consideration ongoing multilateral work to ensure alignment and consistency.

²¹¹ OECD, 'BEPS Actions', BEPS, accessed 15 September 2019, <http://www.oecd.org/tax/beps/beps-actions/>.

²¹² OECD, 'OECD/G20 Inclusive Framework on BEPS', BEPS, accessed 15 September 2019, <http://www.oecd.org/tax/beps/>; OECD, 'OECD/G20 Inclusive Framework on BEPS: Progress Report July 2017–June 2018' (Paris: OECD, June 2018), <https://www.oecd.org/ctp/inclusive-framework-on-beps-progress-report-june-2017-july-2018.htm>.

²¹³ OECD, 'Secretary-General Report to the G20 Finance Ministers and Central Bank Governors' (Paris: OECD, June 2019) and OECD, 'Third Annual Progress Report of the OECD/G20 Inclusive Framework on BEPS' (Paris: OECD, June 2019).

²¹⁴ Nicholas V. Chen and Kaian Yu, 'Taiwan Imposes VAT on Cross-Border E-Commerce Sales of Digital Services and Goods', *Mondaq*, 1 August 2018, <http://www.mondaq.com/x/724650/tax+authorities/Taiwan+Imposes+VAT+On+CrossBorder+ECommerce+Sales+Of+Digital+Services+And+Goods>.

²¹⁵ Kwang, 'Budget 2018: GST To Be Imposed on Digital Services from 2020'.

²¹⁶ Australian Taxation Office, 'Australian GST Registration for Non-residents', accessed 19 September 2019, <https://www.ato.gov.au/Business/International-tax-for-business/In-detail/Doing-business-in-Australia/Australian-GST-registration-for-non-residents/>.

²¹⁷ KPMG, 'France: Digital Services Tax (3%) Is Enacted', 25 July 2019, <https://home.kpmg/us/en/home/insights/2019/07/tnf-france-digital-services-tax-enacted.html>

²¹⁸ EY, 'New Zealand Government To Seriously Consider a Digital Services Tax', 5 June 2019, <https://www.ey.com/gl/en/services/tax/international-tax/alert--new-zealand-government-to-seriously-consider-a-digital-services-tax>.

C. Address structural barriers through reforms and supporting policies

In many cases, increasing inclusion requires that structural reforms be complemented by an array of supporting policies. There are barriers to inclusion that can only be addressed by programmes that change attitudes, level the playing field or encourage individuals and groups that previously had not done so to participate in digital economy. Such supporting policies should be aligned with market-enhancing structural reforms. This section will focus on reforms and policies that address barriers to innovation in the digital economy and those faced by women and MSMEs. The approach can just as easily be applied to other groups that have historically been excluded from or underrepresented in the digital economy. The objective of this section is to illustrate the application of Approach III from the EC's Three Approaches document to the challenge of promoting inclusion with respect to the digital economy. However, it should be noted that efforts to promote innovation and enable women, MSMEs and groups that have been excluded in the past are likely to enhance efforts to promote societal inclusion, per Approach II (covered in Section B).

Promote innovation and boost productivity of some sectors and firms

Promoting innovation and boosting productivity in the digital economy require at least two conditions: (1) adoption of relevant technologies and tools; and (2) a conducive environment for the utilisation of these technologies and tools. Specifically, on the former, adoption varies between sectors and firms. For example, McKinsey finds that even in developed economies like the United States, only 18 percent of its digital potential has been captured, with industries such as mining and construction remaining largely undigitised.²¹⁹ With regard to the latter, despite being a critical input to technologies such as AI, the literature has shown that data sharing is not prevalent. According to a study by the Economist Intelligence Unit, 36 percent of respondents identified the unwillingness to share data as an impediment to innovation.²²⁰ In response to these issues, this section discusses some of the options available to policymakers.

1. Promote research and development

Policymakers can provide **research and development (R&D) incentives** to encourage firms to experiment and incorporate new digital technologies into their businesses. Economies have approached this in various ways with Australia providing tax offsets to incentivise companies to invest in R&D.²²¹ China has expanded the coverage of its 175 percent tax deductible rate for R&D activities from only technology MSMEs to all Chinese enterprises.²²²

There is also value in complementing structural reform with supporting policies that promote **greater collaboration between research institutions and businesses** to ensure that firms have avenues to engage more actively in research networks. Governments can support this process through the development of geographically concentrated clusters of firms to encourage flow of knowledge and human capital, as well as to promote cross-sectoral and international interactions.²²³ Canada's Innovation Superclusters Initiative is one such example (see Box 3.4.).

²¹⁹ Manyika et al., 'Digital America: A Tale of the Haves and Have-Mores'.

²²⁰ The Economist Intelligence Unit, 'The Hype and the Hope – The Road to Big Data Adoption in Asia-Pacific' (London: The Economist, 2013), https://eiperspectives.economist.com/sites/default/files/HDS_exec%20summary_FINAL.pdf.

²²¹ Australian Taxation Office, 'Research and Development Tax Incentive', modified 23 June 2017, <https://www.ato.gov.au/Business/Research-and-development-tax-incentive/?default>.

²²² EY, 'China Expands R&D Super Deduction Rate to All Enterprises', 8 October 2018, <https://www.ey.com/gl/en/services/tax/international-tax/alert--china-expands-r-and-d-super-deduction-rate-to-all-enterprises>.

²²³ OECD, 'Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards a More Responsible and Inclusive Globalisation' (Second OECD Conference of Ministers responsible for Small and Medium-sized Enterprises (SMEs), Istanbul, Turkey: OECD, 2004), <https://doi.org/10.1787/9789264044357-en>; OECD, *OECD SME and Entrepreneurship Outlook 2019* (Paris, France: OECD, 2019), <https://doi.org/10.1787/34907e9c-en>.

Box 3.4. Forming superclusters for innovation in Canada

Pre-reform: Canada has built knowledge and technological advantages in areas such as quantum computing, machine learning, blockchain, fintech, AI, autonomous vehicles and 5G. Canada is ranked 5th in creative thinking and 9th in problem-solving in a technology-rich environment among OECD economies. Despite these successes, Canada's R&D indicators have been falling in global rankings and R&D expenditures have dropped in recent years. Moreover, adoption of new technologies by its firms has lagged.

Response: Although indirect measures (e.g., tax incentives) had been Canada's main policy tools previously, it has begun to look for more direct ways to connect businesses, governments, academic and research institutions so as to mobilise innovation. This led to Canada's Innovation and Skills Plan which was released in 2017 with the Innovation Superclusters Initiative (ISI) being a centrepiece of the plan. To support the ISI, the government will be providing funding of up to CAD 950 million over 5 years for five business-led innovation "superclusters" to accelerate Canada's economic growth in the following areas: digital technology; protein industries; next generation manufacturing; AI-powered supply chains (SCALE.AI); and oceans (see below).

| | Supercluster | Location | Types of activities |
|---|---|---|--|
|  | <u>Canada's Digital Technology Supercluster</u> | British Columbia | Using virtual, mixed, and augmented reality, data, and quantum computing to improve service delivery in the natural resources, precision health and manufacturing sectors. |
|  | <u>Protein Industries Canada Supercluster</u> | The Prairie provinces | Using plant genomics and novel processing technology to increase the value of key Canadian crops. |
|  | <u>Next Generation Manufacturing Supercluster</u> | Ontario | Building up next-generation manufacturing by adopting advanced processes and by developing and deploying new technologies like internet of things, robotics and 3D printing. |
|  | <u>AI-Powered Supply Chains Supercluster (SCALE.AI)</u> | Quebec and spanning the Quebec-Windsor Corridor | Bringing the retail, manufacturing, transportation, infrastructure, and ICT sectors together to build intelligent supply chains through artificial intelligence and robotics. |
|  | <u>Canada's Ocean Supercluster</u> | Atlantic Canada | Harnessing emerging technologies to strengthen Canada's ocean industries, such as marine renewable energy, fisheries, aquaculture, oil and gas, defense, shipbuilding, and transportation. |

Each supercluster will receive either up to CAD 153 million or up to CAD 230 million, with industry players matching these contributions at least dollar-for-dollar. Each will be led by an industry-driven, membership-based not-for-profit organisation, which selects projects and acts as a central organising body.

Impact: The selected proposals brought together more than 450 businesses, 60 post-secondary institutions and 180 other partners. All five superclusters are now in operation, and are expected to create over 50,000 jobs and add more than CAD 50 billion to the Canadian economy over the next 10 years.

Challenges and lessons: One key challenge was to activate as many high-potential industries and firms as possible, and to motivate them to come together around transformative proposals. This gave rise to a high-quality shortlist but it also generated high expectations among sectors, with keen interest in the government's ultimate selections. In response, Innovation, Science and Economic Development Canada (ISED) officials, other relevant federal organisations, third-party contractors, and expert reviewers administered a rigorous assessment of proposals. The assessment considered the ultimate value the applications would deliver for Canada, including the potential to create jobs. It also considered the superclusters' plans to increase the representation of women and other underrepresented groups in supercluster activities and leadership, and help them succeed in skilled jobs in highly innovative industries.

Another challenge was to encourage applicants to come together in new ways to achieve transformative results that will extend beyond their existing partnerships and lines of business. For many applicants, this challenge meant that they needed to think about shared challenges and interests in disruptive technologies, and how they might advance these interests by collaborating in new ways (including sometimes with their competitors). To bring new partners together around shared priorities, supercluster staff work actively with industry partners to think beyond the status quo, help shape projects, and promote frictionless collaboration. Projects are also evaluated for their benefits to the members' broader ecosystems, which provide incentive for them to consider potential partners and applications beyond their direct interests.

Source: Adapted from Canada's case study submission

2. Support for upgrading by firms particularly MSMEs

Some firms, especially MSMEs, can struggle with skills shortages and poor management practices. The rise of the digital economy, where firms need to employ digital technologies and tools to improve their productivity and maintain their competitiveness, may exacerbate this situation. For instance, MSMEs find it harder to develop, exploit and protect intellectual property (IP) and leverage other intangibles than larger firms. MSMEs may also not be familiar with new technologies such as cloud computing and their benefits. Consequently, there is room to provide MSMEs with information and **skills training programmes** geared to the digital economy. For instance, Indonesia's Regional IT Centers of Excellence (RICE) provide ICT-related training and seminars to start-ups in growth industries.²²⁴ In Singapore, the government launched a portal to make training programmes available to owners and directors of MSMEs which has attracted more than 10,000 users.²²⁵

Despite the availability of training programmes, data on OECD economies shows that employees of MSMEs participate in 50 percent fewer training activities compared to larger firms. Their lack of participation is usually driven by factors such as cost and lack of access to formal training opportunities. Additionally, in terms of cost of employee time, many MSMEs lack the critical mass that would enable them to allow employees to participate in training.²²⁶ To overcome some of these challenges, supporting policies such as **co-investment to participate in training programme** could be required in some cases. For instance, Hong Kong, China has launched the Reindustrialization and Technology Training Programme (RTTP) to subsidise firms on the cost of training their staff with digital skills deemed relevant for Industry 4.0.²²⁷ Similarly, Singapore provides 'enhanced training support' that includes subsidies of up to 90 percent of course fees for participating MSMEs.²²⁸

²²⁴ Tan and Tang, 'Managing Skills Challenges in ASEAN-5'.

²²⁵ Sue-Ann Tan, 'New Portal for SME Bosses to Reskill and Deepen Knowledge', *The Straits Times*, 14 March 2019, <https://www.straitstimes.com/business/new-portal-for-sme-bosses-to-reskill-and-deepen-knowledge>.

²²⁶ OECD, *Skills Development and Training in SMEs* (Paris: OECD, 2013), <https://doi.org/10.1787/9789264169425-en>.

²²⁷ Vocational Training Council, Hong Kong, China, 'Reindustrialisation and Technology Training Programme', accessed 19 September 2019, <http://rttp.vtc.edu.hk/>.

²²⁸ Enterprise Singapore, 'Enhanced Training Support for SMEs', SME Portal, modified 1 April 2019, <https://www.smeportal.sg/content/smeportal/en/moneymatters/grants/enhanced-training-support-for-smes.html>.

Furthermore, MSMEs usually require **support in identifying, adopting and applying new technologies** including ICT hardware and software into their businesses. Economies have rolled out some programmes to help firms on this front. In 2019, under the new Tech-celerate for Law programme, Singapore launched a one-year initiative providing funding of up to 70 percent for the adoption of new technologies by law firms. Its support now extends to more than just baseline solutions (e.g., online legal research and document management), but also advanced ones which such as AI.²²⁹

3. Increase data sharing between firms

Although technical, economic and social factors may determine the pace and extent of technology adoption, one way to promote the diffusion of technology across wider segments of the business community including MSMEs and non-frontier firms²³⁰ is to encourage greater data sharing. Access and analysis of valuable data have improved productivity in many frontier firms especially those in the technology sector. Data can be used by firms to create better quality products as well as to customise products to fit the needs of consumers. Without access to such data, which are usually collected by frontier firms such as platforms, it would be challenging for non-frontier firms to improve their productivity. This has led to discussions on whether existing competition policies can be enhanced to address issues such as data sharing, portability and interoperability. This is yet another illustration of why efforts to regulate the digital economy cannot be conducted in silos. For example, it is easy to foresee a situation where an economy's data security regulations or policy on data sharing could either reinforce or work at cross-purposes with other objectives of competition policy, such as encouraging new entrants and greater participation of MSMEs in the digital economy.

One way forward would be to create mechanisms that facilitate **data portability** between firms. Besides reducing the switching costs for consumers and hence allowing them to change service providers easily,²³¹ such mechanisms lower barriers to entry for new market players as they would no longer need an established customer base to compete effectively with incumbents.²³² The new players could also use the data to improve their products and services. For instance, Australia's Consumer Data Right was implemented to allow consumers to better compare products and services, and also to increase data transparency and promote competition between service providers. It is expected to be rolled out to the banking sector in 2019.²³³ Data portability has also been put in place by economies outside of APEC. The European Union's General Data Protection Regulation (GDPR) mandates data portability.²³⁴

Another option is for governments to create **data sharing frameworks and guidelines**, including on ways to ensure that datasets do not contain personally identifiable information. Singapore is addressing these challenges through a framework introduced by the Infocomm Media Development Authority and the Personal Data Protection Commission. This framework helps firms navigate the complexities of exchanging consumer data with other firms as well as provide information on: strategies and models through which firms can share data; anonymising and transmitting personal data; regulatory

²²⁹ Fiona Lam, 'Bigger S\$3.68m Scheme Launched To Boost Tech Use by Singapore Law Firms', *The Business Times*, 2 May 2019, <https://www.businesstimes.com.sg/government-economy/bigger-s368m-scheme-launched-to-boost-tech-use-by-singapore-law-firms>.

²³⁰ Non-frontier firms are those firms that are not at the productivity frontier and hence less productive than frontier firms.

²³¹ Joshua Gans, 'Enhancing Competition with Data and Identity Portability' (Washington, DC: The Hamilton Project, June 2018), https://www.hamiltonproject.org/assets/files/Gans_20180611.pdf.

²³² Personal Data Protection Commission, and Competition and Consumer Commission of Singapore, 'Discussion Paper on Data Portability' (Singapore: Personal Data Protection Commission, 25 February 2019), <https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/Data-Portability/PDPC-CCCS-Data-Portability-Discussion-Paper--250219.pdf>.

²³³ Australian Competition and Consumer Commission, 'Consumer Data Right (CDR)'.

²³⁴ European Commission, 'Guidelines on the Right to Data Portability' (16/EN WP 242 rev.01, 5 April 2017), https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=611233.

consideration and required safeguards; as well as on good data sharing practices that ensure transparency and accountability.²³⁵

Supportive business environment for MSMEs

Efforts taken under the Ease of Doing Business (EoDB) Initiative have improved the business environment for all firms, with APEC economies collectively registering progress across five of the World Bank's Doing Business priority areas between 2016 and 2017.²³⁶ Despite the progress made, there is a risk that economies' efforts to reduce the regulatory burden and promote EoDB do not go far enough in taking into account the inherent challenges facing MSMEs. Given that a significant proportion of individuals in the APEC region are entrepreneurs or owners or employees of MSMEs, ensuring that MSMEs have access to tools, information and financing so that they can fully participate in the digital economy is an inclusion issue that needs to be addressed on an urgent basis.

1. Reducing impact of regulation

MSMEs are often disproportionately affected by a complex regulatory environment as they tend to be less efficient than larger firms and have fewer resources.²³⁷ The OECD notes that, on average, MSMEs bore over five times the compliance costs per employee as compared to larger companies, and that reduction in business regulations can greatly reduce MSMEs' fixed costs, thereby levelling the playing field in the market.²³⁸ Additionally, Bickerdyke and Lattimore have found that compliance cost as a proportion of turnover declined with respect to a firm's size.²³⁹ As such, minimising the impact of regulations on MSMEs would likely improve their ability to better adapt and grow within the digital economy.

Holistic policy frameworks for MSMEs. One possible reform mentioned in a study by the APEC Policy Support Unit is the **creation of government agencies** dedicated to MSMEs.²⁴⁰ Through direct interactions with MSMEs, such agencies would be able to better identify challenges faced by MSMEs and propose adjustments to existing policies as well as suggest new policies for their benefit.

Improved government services. Government agencies can also serve as one-stop shops for MSMEs to apply for licenses and other documents. For instance, Enterprise Singapore has established a business grant portal that makes it easier for MSMEs to search for business solutions and apply for grants.²⁴¹ Russian Small and Medium Business Corporation (RSMB Corporation) has set up the SME Business Navigator to consolidate relevant information for MSMEs in a single portal (see Box 3.5.). In a similar vein, the Korea SMEs and Startups Agency (KOSME) integrates all MSME government support into one agency, thereby creating a unified channel to provide policy information.²⁴²

²³⁵ Jun Sen Ng, 'New Framework Launched To Boost Trust in Data Sharing among Companies', *TODAY*, 28 June 2019, <https://www.todayonline.com/singapore/new-framework-launched-boost-trust-data-sharing-among-companies>.

²³⁶ Carlos Kuriyama, Denise Cheok and Divya Sangaraju, 'APEC's Ease of Doing Business – Interim Assessment 2015–2017' (Singapore: APEC, August 2018), <https://www.apec.org/Publications/2018/08/APECs-Ease-of-Doing-Business>.

²³⁷ OECD, 'Improving the Business Environment for SMEs through Effective Regulation' (*SME Ministerial Conference*, Mexico City, Mexico, 2018), <https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Parallel-Session-1.pdf>.

²³⁸ OECD, *Businesses' Views on Red Tape* (Paris: OECD, 2001), https://read.oecd-ilibrary.org/governance/businesses-views-on-red-tape_9789264193468-en.

²³⁹ Ian Bickerdyke and Ralph Lattimore, 'Reducing the Regulatory Burden: Does Firm Size Matter?' (Canberra: Industry Commission, 1997), <https://www.pc.gov.au/research/supporting/regulatory-burden-firm-size/regburd.pdf>.

²⁴⁰ Ben Shepherd, Olivier Cattaneo and Charles Tsai, 'Regulatory Reform Case Studies on Improving the Business Environment for Small and Medium Enterprise' (Singapore: APEC, November 2015), <http://publications.apec.org/Publications/2015/11/Regulatory-Reform-Case-Studies-on-Improving-the-Business-Environment-for-Small-and-Medium-Enterprise>.

²⁴¹ Lee, 'Singapore Budget 2019: SMEs Go Digital Programme To Be Expanded'.

²⁴² Sangjik Lee, 'Korea SMEs and Startups Agency – Message from the President', accessed 23 August 2019, <https://www.kosmes.or.kr/sbc/SH/EHP/SHEHP005M0.do>.

Box 3.5. Russia's SME Business Navigator

Pre-reform: Improving the investment climate has long been a priority of Russia. Since 2012, Russia had introduced and implemented 12 roadmaps which include actions to digitalise public services related to business processes. Among the achievements of these roadmaps are online company registration, payment of customs duties, submission of customs transit declaration, and registration of property titles. However, several challenges remain, including the lack of entrepreneurship education as well as the absence of centralised information both on public support for SMEs and the regulatory prerequisites to start and run a business.

Response: To deal with these gaps, Russia introduced the SME Business Navigator in 2016. It serves as a one-stop shop to allow entrepreneurs to access a range of services. Some examples of services provided are:

- Creation of a preliminary business plan
- Information on bank loans and application for a guarantee
- Information on public support measures for SMEs
- Checking trustworthiness of partners
- Information on legal, accounting and management challenges on the help desk
- Preparation to exit from business

Impact: From its launch in 2016 to August 2019, 4.8 million unique users had visited the portal and the number of registered users had increased to 1.9 million. Additionally, the number of registered SMEs using the services provided reached 1.4 million in August 2019. Among the most popular services provided by the portal are checking the trustworthiness of partners, estimation of market niche and search for public procurement. Moving forward, the SME Business Navigator Portal will be integrated with the Public Services Portal to better support SME measures as well as technology and industrial parks.

Source: Adapted from Russia's case study submission and SME Business Navigator Portal website²⁴³

Regulatory tiering, or varying regulatory requirements according to firm size, is another way to make adhering to regulations less burdensome for MSMEs. This could be in the form of exemptions (e.g., exempting MSMEs from the substantive requirements of a regulation) and/or lighter requirements (e.g., less burdensome reporting and record keeping requirements). Regulatory tiering does not mean allowing MSMEs to act in a way that is contrary to the public policy objectives behind laws and regulations. Rather, it involves ensuring that MSMEs are not subjected to unnecessary requirements given their size. This can be implemented by exempting regulations for MSMEs where possible, or offering a partial exemption if a full exemption would make the regulation irrelevant. Economies can create thresholds for such exemptions based on specific criteria but these should be regulated such that firms are not dependent on these exemptions.²⁴⁴ For example, regulatory tiering has been implemented in Singapore where MSMEs with revenue below SGD 5 million are no longer required to provide

²⁴³ JSC RSMB Corporation, 'SME Business Navigator', Information Resources Portal, accessed 11 September 2019, <https://smbn.ru/msp.htm>.

²⁴⁴ European Commission, 'Models To Reduce the Disproportionate Regulatory Burden on SMEs: Report of the Expert Group' (Brussels: European Commission, May 2007), <https://ec.europa.eu/docsroom/documents/10037/attachments/1/translations/en/renditions/native>.

audited financial statements to participate in government tenders.²⁴⁵ The EU GDPR includes an exemption for organisations with fewer than 250 employees with regard to data record-keeping.²⁴⁶

Yet another way to minimise regulatory burden to MSMEs is to implement **regulatory impact assessment** (RIA). This can be done, for example, by disaggregating the calculations of regulatory costs and benefits by firm size, thereby enabling the cost impacts of regulations on MSMEs vis-à-vis their larger counterparts to be assessed. In turn, they can then be used as inputs to ensure that new regulations do not unduly burden MSMEs. The European Union has implemented the SME test to analyse the impact of legislative proposals. It includes consulting MSMEs, identifying affected businesses and analysing the impact of alternative measures.²⁴⁷ Among APEC economies, Viet Nam has required RIA to be conducted in the early stages of the rule-making process for all legal documents since 2016.²⁴⁸ In the United States, the Regulatory Flexibility Act requires the federal government to determine the impact of regulations on small businesses and explore alternative solutions to reduce their impact on MSMEs. Subsequently, these evaluations are submitted to the Small Business Association for comments.²⁴⁹ Canada has adopted a Small Business Lens as part of its RIA that requires its regulators to consider the impact that regulations have on small business to ensure they do not have unintended consequences.²⁵⁰

2. Improving access to credit

Apart from the burden of compliance with new and existing regulations, MSMEs often find it difficult to access credit for various reasons including asymmetric information, lack of collateralisation due to the lack of fixed assets and limited credit history from inability to access to traditional financing sources.²⁵¹ As an indication of this challenge, the median interest rate spread between MSMEs and larger firms in the OECD has increased from 0.82 percentage points in 2008 to 1.40 percentage points in 2015.²⁵² Consequently, limited access to finance may prevent MSMEs from investing in or utilising digital technology and tools despite their falling costs. A study by Bain & Company finds only 16 percent of MSMEs in ASEAN to be truly digitalised.²⁵³

One way to improve the situation is for governments to **adopt risk-sharing principles for MSME financing** through mechanisms such as credit guarantees, securitisation and insurance.²⁵⁴ For instance, Malaysia has created a Credit Guarantee Corporation to offer guarantees and loans to improve the credit

²⁴⁵ Bei Yi Seow, 'Rules Eased for SMEs Bidding for Public Projects', *The Straits Times*, 17 August 2018, <https://www.straitstimes.com/singapore/rules-eased-for-smes-bidding-for-public-projects>.

²⁴⁶ Small Business Team of the Bonhill Group, 'What Does GDPR Mean to Me and My Small Business?', [smallbusiness.co.uk](https://smallbusiness.co.uk/what-does-gdpr-mean-business-2538556/), 17 October 2018, <https://smallbusiness.co.uk/what-does-gdpr-mean-business-2538556/>.

²⁴⁷ European Commission, 'SME Test', https://ec.europa.eu/growth/smes/business-friendly-environment/small-business-act/sme-test_en.

²⁴⁸ Joseph Lemoine, 'Global Indicators of Regulatory Governance: Worldwide Practices of Regulatory Impact Assessments' (Washington, DC: World Bank, 2018), 10, <http://documents.worldbank.org/curated/en/905611520284525814/Global-Indicators-of-Regulatory-Governance-Worldwide-Practices-of-Regulatory-Impact-Assessments.pdf>.

²⁴⁹ Jacqueline Snijders et al., 'SME Promotion Agencies: Is There a Best Set-up? A Quest for Good Practices' (Geneva: International Labour Organization, 2016), https://ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---ifp_seed/documents/publication/wcms_532833.pdf.

²⁵⁰ Government of Canada, 'Small Business Lens', modified 8 July 2016, <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/small-business-lens.html>.

²⁵¹ World Bank, 'Improving Access to Finance for SMEs: Opportunities through Credit Reporting, Secured Lending and Insolvency Practices' (Washington, DC: World Bank, May 2018), <https://www.doingbusiness.org/content/dam/doingBusiness/media/Special-Reports/improving-access-to-finance-for-SMEs.pdf>.

²⁵² OECD, *Financing SMEs and Entrepreneurs 2017: An OECD Scoreboard* (Paris: OECD, 2017), https://doi.org/10.1787/fin_sme_ent-2017-en.

²⁵³ Florian Hoppe, Tony May and Jessie Lin, 'Advancing towards ASEAN Digital Integration: Empowering SMEs To Build ASEAN's Digital Future' (Bain & Company, 2018), http://mddb.apec.org/Documents/2019/EC/WKSP2/19_ec_wksp2_006.pdf.

²⁵⁴ Miriam Koreen and André Laboul, 'G20/OECD High-Level Principles on SME Financing' (2015 G20 Antalya Summit, Antalya, Turkey, 2015), <https://www.oecd.org/finance/G20-OECD-High-Level-Principles-on-SME-Financing.pdf>.

worthiness of MSMEs.²⁵⁵ Similarly, Indonesia has launched both central and regional credit guarantee programmes such as the Indonesia Entrepreneur Credit Guarantee Institution (PKPI) and the Regional Credit Guarantee Corporation (Perum Jamkrida).²⁵⁶

In addition, governments can **reduce information asymmetries pertaining to MSMEs** by creating or enhancing the credit information infrastructure. This could include complementing the use of traditional information with non-traditional information (e.g., payment to retailers) to expand the data sources used in compiling credit information.²⁵⁷ Within APEC, Thailand has created FICO SME scores to allow financial institutions to evaluate the creditworthiness of MSMEs. The score aims to provide an indication of an SME's probability of delinquency based on data from the National Credit Bureau of Thailand and the Business Online Public Company Limited.²⁵⁸ Malaysia has established the Credit Guarantee Corporation (CGC) to offer services such as credit information.²⁵⁹

Enhancing gender equality

Enabling greater participation by all segments of the society is key to the effective utilisation of human capital and to achieving inclusive growth. Data from the ILO indicate that female participation in the labour force lags behind males in APEC economies (see Figure 3.5). The digital economy could potentially widen the gender gap, particularly if women are disadvantaged or face barriers that prevent them from benefiting from the opportunities brought by the digital transformation. Statistics show that on average, women are 26 percent less likely than men to own a smartphone. Fewer women who are active internet users, and the internet penetration rate among women is lower than that of men (45 vs. 51 percent).²⁶⁰

Women in digital economy jobs. Women are also less represented in technology-related occupations. Globally, men are four times more likely than women to become ICT specialists.²⁶¹ Based on LinkedIn data, only 22 percent of AI professionals are female despite both genders having acquired AI skills at approximately the same rate.²⁶² Moreover, women take up less than 20 percent of leadership roles and account for only 27 percent of all jobs in the software and IT services industry.²⁶³ The OECD also finds that only 0.5 percent of girls aspire to become ICT professionals at age 15, while the number is 5 percent for boys across OECD economies.²⁶⁴

²⁵⁵ Credit Guarantee Corporation, 'Credit Guarantee Corporation Malaysia Berhad – Mission', CGC, 2014, https://www.cgc.com.my/?page_id=5750#mission.

²⁵⁶ Naoyuki Yoshino and Farhad Taghizadeh-Hesary, eds, *Unlocking SME Finance in Asia: Roles of Credit Rating and Credit Guarantee Schemes* (New York: Routledge, 2019), 193.

²⁵⁷ World Bank, 'Improving Access to Finance for SMEs'.

²⁵⁸ World Bank.

²⁵⁹ United Overseas Bank, Dun & Bradstreet and EY, 'ASEAN SMEs: Are You Transforming for the Future?' (EY, 2018), <http://www.dnb.com.sg/pdfN/newsletter/ey-asean-smes-are-you-transforming-for-the-future.pdf>.

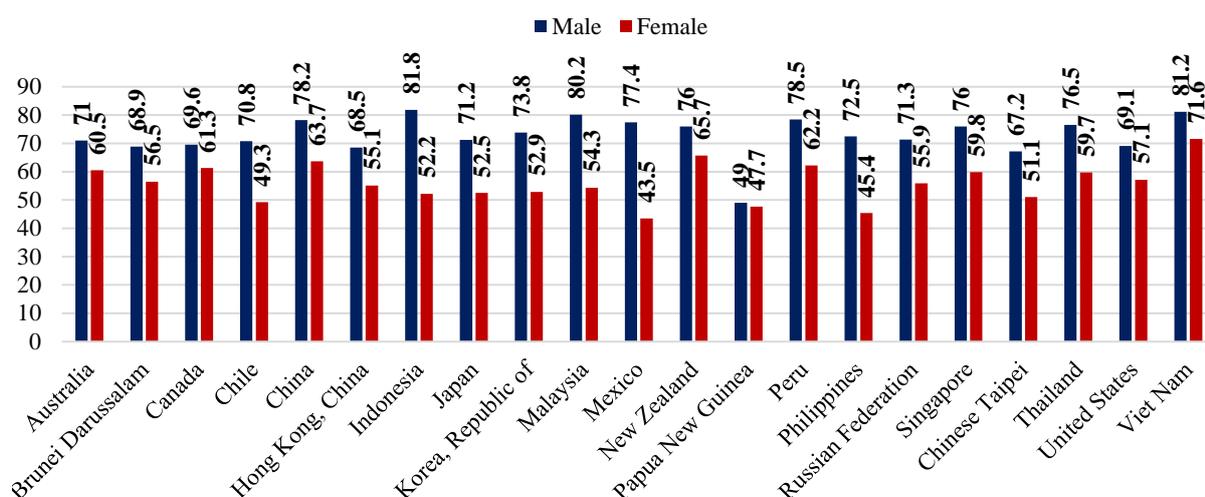
²⁶⁰ OECD, *Bridging the Digital Gender Divide: Include, Upskill, Innovate* (Paris: OECD, 2018), <https://www.oecd.org/going-digital/bridging-the-digital-gender-divide-key-messages.pdf>.

²⁶¹ OECD.

²⁶² World Economic Forum, *The Global Gender Gap Report 2018* (Geneva: World Economic Forum, 2018), http://www3.weforum.org/docs/WEF_GGGR_2018.pdf.

²⁶³ World Economic Forum, *The Global Gender Gap Report 2017* (Geneva: World Economic Forum, 2017), http://www3.weforum.org/docs/WEF_GGGR_2018.pdf.

²⁶⁴ OECD, *Bridging the Digital Gender Divide: Include, Upskill, Innovate*.

Figure 3.5: Labour force participation rate (%), aged 15+ for latest available year

Source: Compiled by APEC Policy Support Unit based on data from ILO Statistics, and the Census and Statistics Department of Hong Kong, China (see International Labour Organization, 'ILO Statistics', accessed 12 June 2019, <https://www.ilo.org/ilostat>; The Census and Statistics Department of Hong Kong, China, 'Labour Force', accessed 13 September 2019, <https://www.censtatd.gov.hk/hkstat/sub/sp200.jsp?tableID=007&ID=0&productType=8>)

Note: Data from latest available year are evaluated from either the labour force survey, population census and household income/expenditure survey. Latest available year for economy data are as indicated in brackets: Australia (2018); Brunei Darussalam (2017); Canada (2018); Chile (2018); China (2010); Hong Kong, China (2018); Indonesia (2017); Japan (2018); Korea (2018); Malaysia (2016); Mexico (2018); New Zealand (2018); Papua New Guinea (2010); Peru (2018); Philippines (2018); Russian Federation (2018); Singapore (2017); Chinese Taipei (2018); Thailand (2018); United States (2018); and Viet Nam (2017).

Various factors contribute to the observed gender divide. **First**, cultural norms may require women to do more domestic work than men. Indeed, data from UN Women reveal that women do 2.6 times the amount of unpaid care and domestic work than men do, which leads to less time to dedicate to their careers.²⁶⁵ **Second**, women are more affected by the absence of pro-inclusion regulations and social support, including maternity leave and childcare support. As an illustration, in 2018, the World Bank found that equal remuneration for work of equal value to be mandated by law only in 7 out of 21 APEC economies. Only half (11) of APEC economies offer 100 percent maternity leave benefits or parental leave benefits when maternity leave is unavailable. Additionally, only nine economies in the region prohibit discrimination by creditors on the basis of gender.²⁶⁶

A **third** factor that influences the digital gender divide is affordability and accessibility of internet and digital devices. A **fourth** factor is the lower digital illiteracy of women relative to men. This can be affected by biased socio-cultural norms and expectations that make girls less confident in maths and science courses.²⁶⁷ Collectively, the aforementioned factors can translate into a less favourable environment for girls and women to use digital technologies and seek employment in the digital economy.

Government interventions consisting of structural reforms, and supplementary reforms and supporting policies (see Box 3.2.) can be deployed to improve gender inclusion and bring more diversity to the digital economy. The World Bank notes 274 **reforms to laws and regulations** aimed at improving

²⁶⁵ UN Women, ed., *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development* (New York: UN Women, 2018), <http://www.onumulheres.org.br/wp-content/uploads/2018/02/SDG-report-Gender-equality-in-the-2030-Agenda-for-Sustainable-Development-2018-en.pdf>.

²⁶⁶ World Bank, *Women, Business and the Law 2019: A Decade of Reform* (Washington, DC: World Bank, 2019), <https://openknowledge.worldbank.org/bitstream/handle/10986/31327/WBL2019.pdf?sequence=4&isAllowed=y>.

²⁶⁷ OECD, *Bridging the Digital Gender Divide: Include, Upskill, Innovate*.

gender equality in 131 economies.²⁶⁸ These reforms came in various forms, including removing barriers for women to register businesses and open bank accounts, eliminating discrimination in social programs and employment, including by prohibiting the dismissal of pregnant women, enforcing mandatory paid maternity and paternity leave and improving working conditions for women including through laws and regulations prohibiting sexual harassment in the workplace. Other reforms are aimed at ensuring that women have equal access to education, financial services and other social and digital infrastructure. For instance, Maldives passed the Gender Equality Act in 2016, which mandates that financial institutions have to ensure that men and women have equal access to financial services and facilities.²⁶⁹

Besides reforming regulations, supporting policies such as **programmes and initiatives to raise awareness, provide training and mentorship, advocate gender equality and address gender stereotype** are vital to address structural barriers and create an enabling social and economic environment for women to participate in the digital economy. For instance, many programs have been put in place to encourage women and girls to pursue studies and careers in ICT and STEM. In Argentina, the *Ellas Hacen (They Do)* programme aims to improve digital literacy among unemployed women, and equip them with digital skills and technologies. In Mexico, *NiñaSTEM PUEDEN*, started in 2017, aims to create a professional network by inviting successful working women to mentor and encourage young students to participate in STEM studies.²⁷⁰ Similarly, the Australian government has adopted a series of measures such as expanding the Science in Australia Gender Equity (SAGE) pilot, and supporting the inaugural Women in STEM Ambassador, and a ‘Girls in STEM’ Toolkit to foster school-age girls’ interest in a STEM career.²⁷¹

Other supporting programmes focus on **improving ease of doing business for women and creating a more women-friendly business and working environment**. For example, Canada’s Women Entrepreneurship Strategy (WES) helps women grow their businesses through better access to financing, talent, networks and expertise. Since 2018, CAD 30 million has been allocated to the Women Entrepreneurship Fund and more than 325 projects at women-owned and -led businesses across Canada have been funded to pursue market opportunities abroad and to support scale-up, expansion and growth.²⁷² In Australia, the Future Female Entrepreneurs Program organises workshops and provides mentoring to help young women and girls to start their own small business. The Boosting Female Founders Initiative provides targeted funding to support women-led startups.²⁷³

Finally, it is possible to put in place cross-cutting approaches to ensure that gender issues are taken into account in the policymaking process and the implementation of structural reforms. The 2018 Canadian Gender Budgeting Act requires the government to take into account gender impacts of policies for all Canadians in the budget process.²⁷⁴ Other tools to mainstream gender concerns include Gender-based Analysis Plus (GBA+), which in 2016 became mandatory for all Memoranda to Cabinet and Treasury Board submissions and is now used across government departments in Canada.²⁷⁵

At the international level, ITU initiated the International Girls in ICT Day in 2018 to encourage girls and women to study for and pursue careers in the ICT sector. It has so far engaged over 377,000 girls

²⁶⁸ World Bank, *Women, Business and the Law 2019*.

²⁶⁹ World Bank.

²⁷⁰ Danielle Simone Robinson et al., ‘Digital Jobs for Youth: Young Women in the Digital Economy’ (Washington, DC: World Bank, 2018), <http://documents.worldbank.org/curated/en/503651536154914951/Digital-Jobs-for-Youth-Young-Women-in-the-Digital-Economy>.

²⁷¹ From Australia’s IER submission.

²⁷² From Canada’s IER submission.

²⁷³ From Australia’s IER submission.

²⁷⁴ Canada Justice Laws, ‘Canadian Gender Budgeting Act’, 20 June 2019, <https://laws-lois.justice.gc.ca/eng/acts/C-17.2/page-1.html>.

²⁷⁵ Government of Canada, ‘Introduction to GBA+’, Status of Women Canada, modified 26 September 2018, https://cfc-swc.gc.ca/gba-acsc/course-cours/eng/modA1/modA1_01_05.html#pop-11.

and young women in the celebration events held by UN agencies, governments and the private sector.²⁷⁶ UN Women has established an online learning platform called WeLearn to provide courses in areas such as fundamental digital skills, financial literacy and business development.²⁷⁷

In APEC, the Policy Partnership on Women and the Economy forum has established an APEC Women and Economy Sub-fund in 2018 to support projects focused on improving economic opportunities for women in the region. Ongoing initiatives include the APEC Women in STEM Initiative, which aims to increase women's participation in STEM education and careers; the Women Entrepreneurship in APEC Initiative, which supports capacity-building activities for women entrepreneurs; and the Women's Micro-Enterprise Trade Network Project, which connects local women-owned MSMEs with the global market.²⁷⁸

D. Optimising structural reforms – developing holistic policy frameworks

Structural reforms are important to maximise the benefits and economic opportunities brought about by the digital economy while overcoming challenges and avoiding harms. However, structural reforms need to be optimised to ensure their continued relevance. Prior to embarking on new structural reform efforts, it is crucial for economies to establish a baseline and identify their plans moving forward. Economies may wish to conduct a stocktake of their policies to identify those relevant to the digital economy and better understand the gaps and challenges. They will also need to recognise that implementing structural reforms is not a one-off activity but rather a process. They need to ensure that policies and regulations are regularly reviewed and updated, particularly in light of the ever-shifting challenges posed by the digital economy.

For the digital economy to work seamlessly, there are several aspects to be tackled. When implementing policies, policymakers need to ensure they are well-coordinated, coherent and complementary to one another. In other words, it is important for economies to approach policy issues and objectives in a holistic rather than in a piecemeal manner. As indicated in *Structural Reforms for Inclusive Growth: Three Approaches*, this would entail getting the basics right by focusing on core structural reforms, and complementing them with supplementary structural reforms and supporting policies. Otherwise, there are risks that policies in one area would have inadvertent negative impacts on another. Lack of coordination can also lead to missed opportunities regarding possible synergies with other structural reforms and supporting policies that would increase the likelihood of attaining policy objectives. This requires policymakers to reach across traditional policy silos as well as across different ministries and levels of government to develop an integrated, whole-of-government approach to policymaking.

Enhance labour market efficiency

If the policy objective is to assist workers with adjusting to the economic and technological shifts brought by the digital economy, economies have to first ensure that their labour markets are functioning well through core structural reforms to tackle issues such as hiring and firing practices, cooperation in labour-employer relations and flexibility in wage determination. Considering that the digital economy is likely to destroy jobs and disrupt entire sectors even as it creates new job opportunities, economies would also need to put in place active labour market policies (ALMPs). A well-coordinated ALMP would gather, analyse and make available accurate and timely labour market information, both from the supply-side as well as the demand-side. Concurrently, economies would need to develop skills definitions and certification mechanisms to recognise skills obtained outside formal channels.

²⁷⁶ ITU, 'Girls in ICT Portal', 2019, <https://www.itu.int/en/ITU-D/Digital-Inclusion/Women-and-Girls/Girls-in-ICT-Portal/Pages/Portal.aspx>.

²⁷⁷ United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), 'Virtual Skills School' (brochure, UN Women, 2017), <https://www.unwomen.org/en/digital-library/publications/2017/3/un-women-virtual-skills-school-brochure>.

²⁷⁸ Emmanuel A. San Andres et al., 'APEC Regional Trends Analysis: Trade, Policy, and the Pursuit of Inclusion' (Singapore: APEC, May 2018), <https://www.apec.org/Publications/2018/05/APEC-Regional-Trends-Analysis>.

Tackle the rural-urban divide

Similarly, if the policy objective is ensure that people in rural and remote communities benefit from the digital economy, enhancing competition policies and regulations (per Approach I) to give existing and new telecommunications providers incentives to improve their service offerings, while a good first step, would not be sufficient. Supporting policies (per Approach II) including incentives (e.g., grants, tax breaks) and in some cases mandates that private firms extend services to underserved areas would have to be put in place as well.

Improve MSME participation

Likewise, if the policy objective is to empower more MSMEs to participate in the digital economy, even as economies continue to simplify their EoDB procedures such as starting a business and accessing credit (per Approach I), they also need to put in place more targeted policies beyond core structural reforms (per Approach III). These include training and mentorship programmes and grants to facilitate technology adoption by MSMEs. As economies put in place a whole-of government effort to update regulations to meet the challenges of the digital economy, they should ensure that the policy process takes into account the particular needs of MSMEs as a cross-cutting issue.

Empower women economically

If the policy objective is to increase gender inclusion in the digital economy, economies need to explore and implement a full range of policy options which encompasses both core and supplementary structural reforms and supporting policies. Starting with core structural reforms, economies would have to ensure that competition policies and regulations are reformed in such a way that they create an enabling environment for businesses and investors (including venture capitalists) to operate. At the same time, there is a need for regulations and reforms in areas such as childcare and maternity leave to encourage women's participation in entrepreneurship and the labour force. Last but not least, supporting policies have to be implemented to counter the stereotypes associated with the digital economy and hence enhance the attractiveness of digital-related sectors to women. These include introducing STEM education for women, enhancing outreach activities to showcase women in high-tech jobs and promoting voluntary reporting of hiring by gender, among others.

While policies may be well-intended and well-targeted, achieving the desired outcome is not a given and could be affected by issues such as delivery mechanisms and resource availability. Communication is key to ensure that all stakeholders understand how proposed policies and regulations will affect them and that they can access relevant information. To ensure responsiveness, economies would need to build monitoring and evaluation (M&E) activities into the policymaking process. This is particularly so in the context of the digital economy whose rapid evolution can make even recent policies obsolete very quickly. A mix of specific and broad indicators would be useful, particularly given the challenges of measuring the digital economy outlined in Section B of Part 1 and elaborated in Annex A, as the different types of indicators can complement one another. Specific indicators will allow for better tracking of a particular policy objective, while broad indicators will allow for its economy-wide implications to be monitored. In the absence of ex post evaluation of the effectiveness of policies designed for the digital economy, it would be difficult for APEC economies to track progress and determine how policies and regulations can be enhanced and kept relevant.

PART 4: SUMMARY OF KEY POINTS FROM INDIVIDUAL ECONOMY REPORTS AND MAJOR APEC INITIATIVES RELATED TO THE DIGITAL ECONOMY

A. Highlights from Individual Economy Reports

Individual Economy Reports (IERs) are an integral component of the APEC Economic Policy Report (AEPR). The questionnaires provide first-hand insights from APEC economies relating to various aspects of the focus issue. Specifically on the digital economy, all 21 economies have submitted their IERs, providing valuable information in areas such as barriers and challenges; policy gaps; best practices; and action plans. Economies also shared information on their efforts to enhance inclusion in the new economy and their perspectives on how regional cooperation fora such as APEC can facilitate their efforts in maximising opportunities while overcoming the challenges presented by the digital economy. This section provides highlights from the IERs and a summary of the efforts taken by APEC economies to address challenges in the digital economy.²⁷⁹

Barriers and challenges

Several economies including Brunei Darussalam; China; Indonesia; Mexico; the Philippines; Singapore; Chinese Taipei; the United States; and Viet Nam noted the challenges in scoping and measuring the digital economy. The difficulty in accurately measuring the digital economy makes it harder for policymakers to prioritise projects, assess the costs and benefits of regulatory interventions, and communicate the benefits of the digital economy to the general public.

In the category of regulatory and legal frameworks, several economies including Australia; Canada; Chile; Hong Kong, China; Indonesia; Korea; Malaysia; Mexico; and the Philippines opined that balancing policies to achieve various objectives have become more challenging given the rapid evolution of the digital economy. On the one hand, there is a need to ensure that regulations are flexible, agile and adaptable to the changing market conditions so as to encourage innovation and the development of new business models. On the other, there is a need to ensure predictability of regulations, the integrity and stability of sectors, and that consumers are protected. Economies also noted the inconsistency of regulations across jurisdictions, the difficulty in classifying disruptive technologies into the remit of specific regulatory departments since they are often cross-sectoral in nature, and the lack of coordination among agencies.

On competition policy, economies noted the challenges in ensuring that the relevant authority strikes a balance between law enforcement and unnecessary intervention. Competition law enforcement and investigations have also become more challenging. For example, Chinese Taipei indicated that, due to the difficulty of obtaining certain kinds of business data relevant to the digital economy, it is challenging to evaluate firms' market power. Moreover, Japan noted that coordination of competition policy in the digital economy requires high-level expert knowledge and overcoming vertical divisions among ministries and agencies in order to facilitate timely responses amidst accelerating changes.

With regard to public sector governance, while economies acknowledged the need to build public trust and confidence in the governments' use of data, they observed that barriers such as the lack of regulations, privacy considerations and security risks may inhibit the ability of government agencies to share and realise the full potential of public sector data. Furthermore, economies noted the challenges in getting their public sector to adopt new technologies and tools.

Other challenges raised by economies relate to infrastructure availability and affordability; and low uptake of digital technology and tools by some segments of their society including firms.

²⁷⁹ Please refer to Annex B for the full Individual Economy Reports (IERs) submitted by economies.

Policy gaps

Amid the wide range of barriers and challenges, it is crucial that economies identify specific policy gaps to ensure more targeted efforts. Some indicated the need to focus efforts toward scoping and measuring the digital economy so that policymakers can have baseline data and can better understand the need and value of regulatory intervention.

Several economies including China; Chile; Indonesia; Korea; Malaysia; New Zealand; Papua New Guinea; the Philippines; Chinese Taipei; and Thailand identified that an important gap to address would be the lack of regulatory frameworks to support new business models and encourage the growth of digital economy firms. They seek a better understanding of how existing regulatory frameworks could limit the potential of the digital economy and how they could be improved. For example, Chile has identified policy gaps on the regulation and supervision of various alternative financial services and the transaction of securities and other virtual assets. The importance of overcoming the silo approach to policymaking through collaboration among different government agencies was also noted.

In addition, economies acknowledged the importance of improving trust in the digital economy and indicated that one way to do so would be to enhance regulations pertaining to digital identity. For example, Australia's Digital Transformation Agency with its Trusted Digital Identity Framework emphasised the need to better identify various online users (e.g., businesses, individuals and government agencies) to ensure users feel they are engaging in low-risk and transparent interactions with actual service providers.

Economies also noted the importance of enhancing public communication on the benefits and risks of digital transactions. Other gaps noted by economies include public sector digitisation, digital skills, and access to personal data held by governments and businesses.

Finally, some economies flagged the importance of addressing gaps pertaining to international cooperation on digital rules and standards. For example, there is a need to develop policy frameworks and international standards for the digital economy that enhance certainty for digital firms operating across borders, reduce entry barriers and create a supportive investment environment. Economies also noted the importance of ensuring alignment in areas such as data protection and cyber security.

Best practices

Improving metrics and undertaking structural reform can play an important role in enabling economies to overcome the challenges and policy gaps associated with the digital economy. To better scope and measure the digital economy, Chile's Ministry of Economy is currently surveying firms to obtain data on e-commerce, the digital economy and key ICT indicators. The United States' Bureau of Economic Analysis (BEA) is in the midst of developing tools to better measure high-tech goods and services and the digital economy's contribution to GDP as well as to provide a more complete picture of international trade.

With regards to legal and regulatory frameworks, economies have either undertaken or are in the midst of regulatory updates in areas such as cybersecurity, online identity management and data use. To coordinate efforts pertaining to the digital economy, Thailand has established the Ministry of Digital Economy and Society. Its role is to plan, promote, develop and implement activities related to a digital society and economy. To improve data availability and use, Australia, for example, announced a suite of reforms aimed at balancing privacy and security concerns with the benefits of sharing and using data more efficiently. These include: (1) establishing an Office of the National Data Commissioner (ONDC) and appointing an Interim National Data Commissioner; (2) developing a Consumer Data Right to give citizens greater data portability; and (3) developing legislation on Data Sharing and Release legislation to improve sharing, use and re-use of public sector data. Hong Kong, China announced a new open data policy that requires all government departments to release data in machine-readable formats for free

public use via the Public Sector Information (“PSI”) portal (data.gov.hk), subject to any justifiable policy, legal and/or operational reasons for not doing so. To enhance cybersecurity in a connected world, Mexico presented a National Cybersecurity Strategy in November 2017. This led to the cybersecurity provisions in the legal framework for banking institutions being modified to guarantee the protection of personal data. On online identity management, Russia has introduced the Unified System of Identification and Authentication and the Unified State Automated Information System. To better regulate e-commerce, China introduced the E-Commerce Law which came into force in January 2019. The law covers various aspects, including registration of legal entities, responsibility of platform, prohibition of false advertising, protection of intellectual property rights (IPR) and taxation.

On the competition policy front, Chinese Taipei’s Fair Trade Commission (FTC) has become more active, assessing 13 mergers of the digital economy’s firms and prohibiting 10 of them in the past five years. Mexico published the Federal Telecommunications and Broadcasting Law to regulate the use, development and operation of the radio spectrum and public telecommunications network and access to various components such as infrastructure and satellites.

In their efforts to improve the ease of doing business, Australia and New Zealand signed an e-invoicing arrangement to create and maintain a common approach based on the open Pan-European Public Procurement On-Line (PEPPOL) interoperability framework and standards employed widely in Europe since 2012 and in Singapore since January 2019 as an enabler for e-invoicing and wider e-procurement. The Philippines has introduced SEC-iView, an online pay-per-use facility that allows users to obtain copies of documents from companies registered with the Securities and Exchange Commission (SEC). Through the ‘your business in a day’ regulations, Chile has created an electronic registry that allows people to set up, modify, transform, merge and dissolve legal entities. It is administered by the Ministry of Economy, Development and Tourism. Indonesia has simplified business licensing processes through Government Regulation no. 24/2018, which allows a single electronic submission for all types of business licenses. Brunei’s BusinessBN aims to provide businesses with essential information on government services and reforms related to doing business, while OneBiz serves as a one-stop online portal to facilitate the starting up of businesses. Similarly, business registrations in Papua New Guinea can now be done online with a turnaround time of less than a day. Malaysia launched the Digital Free Trade Zone (DFTZ) to facilitate seamless cross-border e-commerce trade by connecting businesses and various services providers through an e-services platform (to manage cargo clearance and other processes needed for cross-border trade). China’s joint customs, immigration and maritime inspection has reduced the customs clearance time for export and import in 2018 by 61.2 and 56.4 percent respectively compared to 2017.

On public sector governance, Hong Kong, China established a Smart Government Innovation Lab in 2019 to facilitate the adoption of IT solutions and products to enhance public services delivery. Brunei Darussalam’s E-Government National Centre (EGNC) serves as the centralised organisation overseeing the development of IT personnel, procurement of IT equipment and providing common government-wide applications and shared IT services to all ministries. Since 2013, the Korean government has promoted administrative innovation to integrate government services and eliminate silos among ministries, in order to provide proactive and customised services to the citizens and facilitate the disclosure of government data. In the Philippines, the e-Government Master Plan led by the Department of Information and Communication Technology aims to improve government services through a wider e-government presence and reduction of bureaucratic red tape (e.g., payroll through mobile-based e-money or e-banking; and digital payments by the general public, specifically to local government units and non-government organisations). In 2015, Viet Nam adopted Resolution 36a/NQ-CP on e-government to promote the use of IT in public services provision. In line with its Digital Economy programme, Russia has implemented a federal project aimed at the digital transformation of state/municipal services through the ‘gosuslugi.ru’ website, which has proven effective at processing various public services. Peru’s GOB.PE platform aims to allow its citizens to access various public services within a single location, while the PAGALO.PE platform simplifies fee payment to different public entities.

To overcome the silo approach to policymaking, Brunei Darussalam has set up the Digital Economy Council (DEC) under the co-chairmanship of the Minister in the Prime Minister's Office and the Second Minister of Finance and Economy with the Minister of Transport and Infocommunications to give strategic leadership on initiatives for the digital economy at the economy level. Peru has established the High Level Committee for a Digital, Innovative and Competitive Peru chaired by the President of Peru and the Presidency of the Council of Ministers. The committee guides, directs, supervises and evaluates the development of the digital economy and government.

One sector that has benefited from such structural reform efforts is the financial sector. On the payments front, Australia developed the New Payments Platform (NPP) in February 2018 to enable households, businesses and government agencies to make near real-time funds available to recipients on a 24/7 basis. Papua New Guinea's Kina Automated Transfer System (KATS) led to a reduction in payment clearance from about four days to two days. The Philippines established the National Retail Payment System Framework in 2017 to facilitate more convenient, affordable and secure electronic fund transfers and payments, and aims to increase electronic retail payments from 1 percent in 2013 to 20 percent by 2020.

To enhance the regulation of new business models in the financial sector including fintech, Chinese Taipei's Financial Services Commission (FSC) revised regulations relating to requirements for the establishment of internet-only banks in April 2018. The Securities Commission Malaysia has adopted a facilitative approach to regulating equity crowdfunding, peer-to-peer financing and digital investment management activities, where regulation is imposed on a graduated scale depending on market growth and product complexity. Peru's Securities Market Superintendent (SMV), Central Reserve Bank, Superintendency of Bank and Insurance, and Ministry of Economy and Finance are working on a draft law to regulate financial crowdfunding activities and to consider implementing a regulatory sandbox to develop such activities. Mexico's National Banking and Securities Commission (CNBV) is working to develop and implement a supotech platform to receive regulatory reports from authorised fintech firms and to obtain data from commercial banks related to anti-money laundering and combating the financing of terrorism (AML/CFT) efforts. In 2019, New Zealand overhauled the regulation of financial advice by repealing and replacing the Financial Advisers Act 2008 and amending the Financial Service Providers Act 2008 to remove regulatory barriers that had prevented the provision of some types of financial advice including online or robo advice. Canada has made legislative amendments to enable federally-regulated financial institutions to invest in firms that blend financial and commercial services.

To promote technology adoption and innovation in the financial sector, Hong Kong, China set up the FinTech Facilitation Office under the Hong Kong Monetary Authority to improve the fintech ecosystem in the city. The office acts as a platform to exchange ideas, an interface between market participants and regulators, an initiator of industry research regarding the potential application and risks of fintech solutions and a facilitator to nurture talents to create a pipeline for the economy's growing fintech needs. Similarly, Japan's Financial Services Agency (FSA) has established the FinTech Innovation Hub to serve as a platform for interactions with fintech firms so as to better understand and make use of the insights to create a better environment for such firms to thrive. Chile's Central Bank has created a Tech Observatory to detect the opportunities and potential impacts of new technologies in the financial sector and other areas. The United States Commodity Futures Trading Commission (CFTC) has established LabCFTC to promote responsible fintech innovation and fair competition for public benefit. Thailand's Central Bank, the Office of Insurance Commission and the Securities and Exchange Commission have put in place regulatory sandboxes to promote innovation in the financial sector. The Bank of Russia established a regulatory sandbox for fintech projects in April 2018 and is considering the introduction of a special licensing regime for new market participants to test their service on real customers for a set period of time. The Philippines' Central Bank, Bangko Sentral ng Pilipinas (BSP) is in the final stages of the pilot implementation of an Application Programming Interface (API) system to automate the collection, processing and analysis of data from BSP-supervised financial institutions.

Action plans

Many APEC economies have recently launched or are in the midst of implementing economy-wide strategies related to the digital economy. Australia launched its Digital Economy Strategy in December 2018 setting out a seven-year vision (2018-2025) on how businesses, governments and local communities can work together to maximise the benefits and opportunities enabled by digital technology. In Russia, the “Digital Economy of the Russian Federation” programme is in force until 2024 and focuses on normative regulation in the digital environment, information infrastructure, personnel, information security, digital technologies and digital public administration. In May 2018, Singapore’s Ministry of Communication and Information, in collaboration with the Infocomm Media Development Authority of Singapore launched the Digital Economy Framework for Action to build Singapore’s competitive edge in the digital era through promoting collaboration and building a vibrant ecosystem. The Philippines’ E-Commerce Roadmap 2016-2020 aims to increase the contribution of e-commerce to 25 percent of its GDP by 2020. It is currently updating the roadmap and plans to launch the Philippine E-Commerce Roadmap 2020-2022 before the end of 2019. Thailand’s Digital Economy and Society Development Plan (2018-2037) aims to drive the economy and build an equitable and inclusive society through digital technology.

On the competition policy front, Chinese Taipei’s Fair Trade Commission has formed the Digital Economy and Competition Policy Task Force in April 2017 to collect and study relevant literature and to observe trends in competition enforcement globally. In the same vein, Japan has made plans to establish the Digital Markets Competition Headquarters to better promote competition, improve the environment for digital firms and provide recommendations to further develop the digital market.

Chile has launched its Digital Agenda 2020, a roadmap whose goal is to reduce inequality through the widespread use of technologies, and by creating more and better opportunities. In November 2018, Korea has introduced a comprehensive strategy called ICT for ALL aimed at building ‘a human-centred intelligent information society for all’. Hong Kong, China has a Smart City Blueprint for Hong Kong that covers 76 initiatives, including launch of the Faster Payment System as well as the provision of Electronic Identity (eID) for free to all residents.. Bank Indonesia’s Payments System Blueprint 2025 aims to support the development of a supportive ecosystem such as implementation of an open API standard and facilitation of digital technology deployment to promote digital transformation within the banking industry, while ensuring monetary and financial system stability. Malaysia has launched the National eCommerce Strategic Roadmap and the National Policy on Industry 4.0 (Industry4WRD) to enhance the e-commerce ecosystem and drive digital transformation in the manufacturing and services sectors, respectively.

Inclusion

APEC economies are making efforts to minimise gaps and ensure that the domestic digital divide does not prevent them from benefiting from the opportunities presented by the digital economy. According to *Structural Reforms for Inclusive Growth: Three Approaches* (hereafter referred to as *Three Approaches*), an EC document endorsed at the High-Level Structural Reform Officials Meeting (HLSROM) in 2018, one strategy for promoting inclusive growth is to focus structural reform efforts in areas that have strong pro-inclusion externalities. These include infrastructure, human capital development and efforts to promote financial inclusion (see Part 3 for more details).

Infrastructure. Australia has committed to delivering high-speed broadband to all homes and businesses over the National Broadband Network (NBN) by mid-2020, including to regional and remote areas that have traditionally had poor broadband availability. Chinese Taipei is continuing with its free public wifi deployment so that people in remote areas are able to access the internet. In addition, internet service providers (ISPs) are required to reduce access fees gradually. Indonesia’s Palapa Ring project, which aims to enhance telecommunications and communication networks across the archipelago, has been completed for the western and central parts of the economy. New Zealand has undertaken an Ultra-

Fast Broadband (UFB) programme which is expected to enable 87 percent of its population spread over 390 towns and cities to access fibre broadband by the end of 2022. Canada's Connect to Innovate program is helping to build high-capacity internet connection in more than 900 rural and remote communities. The Philippines' National Broadband Plan aims to improve overall internet speed and service availability and affordability across the economy particularly in remote areas through the deployment of fibre optics and wireless technologies. The United States has several initiatives including the American Broadband Initiative, the BroadbandUSA Program and the United States Department of Agriculture (USDA) ReConnect Program whose objectives include expanding broadband coverage across the economy. Malaysia has set a target that fixed broadband cost should not be more than 1 percent of gross national income per capita, and it has managed to reduce fixed broadband cost by more than 40 percent through common infrastructure sharing and greater transparency in wholesale level pricing. Japan aims to extend 5G-related services to all prefectures by 2020 by providing necessary assistance for the development of ICT infrastructure such as 5G base stations and optical fibres. Furthermore, it plans to deploy artificial technologies through the use of geospatial information. China notes that its basic telecommunication companies are required to provide universal telecommunication services and to ensure that network rates in poor areas are not higher than the average rates of the surrounding areas. In addition, it has facilitated faster and more affordable internet connections to schools, especially those in rural areas. China's Ministry of Education is currently coordinating with basic telecommunication firms to connect the approximately 30,000 schools that have yet to be connected to the internet. It also plans to provide broadband network to 24,085 schools by 2020.

Skills. To overcome skills shortages in the digital age, New Zealand has established the Future of Work Tripartite Forum which brings together government, business and unions to improve the use of technology, create more productive workplaces and improve the skills of its workers. Furthermore in 2016, New Zealand's Ministry of Education undertook a review of the positioning and content of digital technologies within the New Zealand Curriculum and Te Marautanga o Aotearoa, which led to digital technologies becoming more prominent in the curriculum. Canada has introduced programs such as #PromoScience to support hands-on learning experiences for young students and their teachers to promote understanding of science and engineering (including mathematics and technology). The Youth Employment and Skills Strategy (YESS) has been modernised and will focus on providing support to youth, particularly those facing barriers to employment, to gain essential skills including digital skills and work experience.

Women's economic empowerment. Since 2016, in response to the gender barriers in the digital world, Australia has invested significantly in boosting the participation of girls and women in STEM education and careers. Examples include: (1) 'Girls in STEM' Toolkit to help school-age girls to understand what a STEM career may entail and assist them in matching their interests to a STEM career; and (2) SheStarts to help women to build tech start-ups. Statistics Canada publishes on a regular basis a gender-based statistical report which provides an overview of women and education, including their integration into STEM fields and their entry into and exit from the field. Tracking such metrics is critical in supporting greater gender inclusion in the digital economy.

Specifically on promoting entrepreneurship in the digital age, Malaysia has introduced digital entrepreneurship programmes such as eUsahawan and eRezeki, whose objectives encompass providing training and matching digital tasks to relevant individuals particularly those from lower income groups so as to enable them to take advantage of potential business opportunities created by the sharing/gig economy.

To ensure that the disadvantaged and the elderly are able to access government subsidies and other services in the absence of computer and internet access, civil servants in Chinese Taipei visit their homes and serve them using tablet PCs. Hong Kong, China started the ICT Outreach Programme in 2014 for the Elderly to help institutionalised and "hidden" (i.e., socially isolated) elderly and those who receive day or home care services experience how ICT can promote active and healthy ageing. Activities such as programmes on using smart bracelets for health monitoring, virtual reality games for reminiscence therapy, intelligent robots and brain-training interactive games to help slow down the

deterioration of elderly people with dementia. There is also an ICT Training Programme for the Elderly where senior citizens are equipped with basic ICT knowledge so that they can serve as trainers for their peers. With regard to efforts to promote rural inclusion in the digital economy, Korea is operating information villages in rural and mountainous areas that take part in e-commerce (InVil Shopping), providing local delicacies and tour programmes to consumers from larger cities.

Financial inclusion. The Bank of Russia approved the Financial Inclusion Strategy for Russia 2018-2020 to improve the accessibility and quality of financial services available to consumers in remote or inaccessible areas, as well as MSMEs and other groups with limited access to financial services. Through its Federal Telecommunications Institute (IFT), Mexico is currently implementing the Financial Inclusion Global Initiative (FIGI) to accelerate the implementation of reform actions so as to meet the economy's financial inclusion targets. Papua New Guinea's Financial Inclusion Policy and Strategy aims to ensure that all residents are financially competent and able to access a wide range of financial services. Thailand has introduced the Basic Banking Account (BBA) to improve access to financial services for low-income earners. Bank Indonesia has put in place initiatives such as non-cash social assistance programmes (i.e., transfers to bank account), which in addition to enhancing efficiency and security, promotes financial literacy among recipients as it encourages them to learn how to access financial services.

Regional cooperation

Economies noted the value of regional cooperation such as APEC in responding to the shared challenges of the digital economy. They stressed the importance of APEC's role in facilitating discussion and knowledge sharing on best practices and innovative regulatory approaches to emerging technologies and business models. Dialogues, workshops and other capacity-building activities involving academia, the private sector and other international organisations can also contribute to enhancing collaboration in areas such as competition enforcement.

To improve measurement of the digital economy, APEC can consider taking actions to: (1) develop common definitions, measurement approaches and standards across the region; (2) develop an approach to collecting data in the digital economy that includes services, productivity and inclusion; and (3) strengthen the capacity of statistical agencies to measure the digital economy through best practice and experience sharing.

In the areas of structural reform, APEC can encourage: (1) the development of approaches such as regulatory sandboxes and innovation hubs that support firms in employing new business models; (2) continued improvements in the business regulatory environment; (3) the development of knowledge repositories and the production of guidebooks on digital economy-related topics to serve as additional reference materials; and (4) the facilitation of greater public and private sector data sharing including experience sharing on how to improve public trust on data usage by government and the private sector.

B. Major APEC initiatives on the digital economy

As early as two decades ago, APEC had recognised the importance of the digital economy including e-commerce in linking member economies. Through its 1998 Declaration, APEC Leaders commended the **APEC Blueprint for Action on Electronic Commerce** which sets out principles for promoting and developing e-commerce in the region.²⁸⁰ In 1999, the Electronic Commerce Steering Group (ECSG) was established as an APEC Senior Official's Special Task Force before it was aligned with the Committee on Trade and Investment (CTI) to ensure a stronger focus on trade and investment issues. Besides coordinating e-commerce activities based on the principles identified in the blueprint, the ECSG works to promote the development and use of e-commerce by supporting the creation of legal, regulatory and policy environments in the APEC region that are predictable, transparent and consistent.

²⁸⁰ APEC, '1998 Leaders' Declaration' (Singapore: APEC, 1998), https://www.apec.org/Meeting-Papers/Leaders-Declarations/1998/1998_aelm.

In 2014, APEC Leaders endorsed the **APEC Initiative of Cooperation to Promote Internet Economy** and established the Ad-hoc Steering Group on Internet Economy (AHSGIE) to guide the discussion on issues arising in this area.²⁸¹ In 2017 APEC Leaders welcomed the **APEC Internet and Digital Economy Roadmap (AIDER)**²⁸² that had been developed by AHSGIE. The roadmap is a living document designed to promote the development and growth of the internet and the digital economy in the region and to highlight potential areas of cooperation among APEC fora. Economies will concentrate, but not limit, their work to the following 11 focus areas: (1) development of digital infrastructure; (2) promotion of interoperability; (3) achievement of universal broadband access; (4) development of holistic government policy frameworks for the internet and the digital economy; (5) promoting coherence and cooperation of regulatory approaches affecting the internet and the digital economy; (6) promoting innovation and adoption of enabling technologies and services; (7) enhancing trust and security in the use of ICTs; (8) facilitating the free flow of information and data for the development of the internet and the digital economy, while respecting applicable domestic laws and regulations; (9) improvement of baseline internet and the digital economy measurements; (10) enhancing the inclusiveness of the internet and the digital economy; and (11) facilitation of e-commerce and advancing cooperation on digital trade.

The **APEC Framework on Cross-border E-commerce Facilitation**, endorsed in 2017 has five main objectives: (1) create a favourable regulatory ecosystem for e-commerce to promote predictability, transparency, security, fair competition and consistency; (2) promote the development of ICT infrastructure to facilitate cross-border e-commerce; (3) encourage and facilitate greater participation of businesses in global commerce, in particular MSMEs; (4) enhance cooperation between the public and private sectors, including on consumer protection; and (5) contribute to trade and investment facilitation in the region, and support the achievement of the Bogor Goals and post-2020 vision.

Five working pillars were identified to achieve these objectives. They are: (1) promoting transparent and predictable legal and regulatory approaches and measures that are business-friendly and coherent to facilitate cross-border e-commerce in the region; (2) enhancing capacity building so that APEC economies can assist MSMEs to increase their cross-border e-commerce participation in global and regional markets; (3) strengthening cross-border data privacy protection through increased implementation of existing APEC programs; (4) facilitating cross-border paperless trade in the region; and (5) addressing emerging and cross-cutting issues in cross border e-commerce. Specific activities were placed under each of the pillars to encourage action and monitor progress.²⁸³

Furthermore, in 2018, the **APEC Action Agenda for the Digital Economy** commits economies to prepare a comprehensive work programme on future implementation with contributions from committees and sub-fora as well as to develop further the digital economy-related work areas.²⁸⁴ Additionally, it aims to develop a programme for future data and analytical support for APEC work under the roadmap. The action agenda also welcomed the establishment of the **Digital Economy Steering Group (DESG)**, a new governance mechanism that monitors and reports the progress made within focus areas identified in AIDER to Senior Officials. The DESG was established by restructuring the former ECSG and will carry forward the ECSG's existing work program.²⁸⁵

²⁸¹ APEC, '2014 Leaders' Declaration' (Singapore: APEC, 2014), https://www.apec.org/Meeting-Papers/Leaders-Declarations/2014/2014_aelm.

²⁸² APEC, 'APEC Internet and Digital Economy Roadmap' (2017/CSOM/006, Singapore: APEC, 2017), https://www.apec.org/-/media/Files/Groups/ECSG/17_csom_006.pdf.

²⁸³ APEC, 'Annex A: APEC Cross-Border E-Commerce Facilitation Framework' (Singapore: APEC, 2017), https://www.apec.org/Meeting-Papers/Annual-Ministerial-Meetings/2017/2017_amm/Annex-A.

²⁸⁴ APEC, *APEC Economic Policy Report 2018*.

²⁸⁵ APEC, 'Terms of Reference of the APEC Digital Economy Steering Group (Endorsed)' (Singapore: APEC, 2019), http://mddb.apec.org/Documents/2019/SOM/SOM3/19_som3_022.pdf

As seen in the previous sections, maximising opportunities provided by the digital economy while overcoming its challenges requires work to be undertaken in specific key areas. In the area of infrastructure, for example, the **APEC Connectivity Blueprint** was formulated with the aim of ensuring a ‘seamless and comprehensively connected and integrated Asia-Pacific’. Digital connectivity falls under the blueprint’s physical pillar, specifically the area of ICT infrastructure.²⁸⁶ In its efforts to promote infrastructure development, the Finance Ministers’ Process (FMP) has created a **Collaborative Action Plan between APEC Member Economies and the Global Infrastructure Hub (GIH)**. The action plan aims to create a voluntary, non-binding and non-exclusive framework to facilitate cooperation and collaboration on regional infrastructure.²⁸⁷

The **APEC Services Competitiveness Roadmap (ASCR)**, which commits members to steps to facilitate the trade and investment of services and to enhance the competitiveness of the sector. Specifically, one of its APEC-wide actions calls for collaboration in response to the rapid developments in internet-based technology.²⁸⁸ This is expected to promote a regulatory approach that provides appropriate prudential oversight and addresses consumer and security protection concerns while enabling the flow of trade-related data in an increasingly digitalised world.

With regard to trade facilitation, the **APEC Supply-Chain Connectivity Framework Action Plan Phase II** was initiated to increase the competitiveness of businesses in the region by reducing the cost of trading across borders and improving the reliability of the supply chain. The action plan identifies five chokepoints. Improving the policy and regulatory infrastructure for e-commerce falls under Chokepoint 5. Additionally, initiatives proposed in response to other chokepoints have called for the application of digital technologies and tools. For instance, Chokepoint 1, which tackles the lack of coordination between border management and underdeveloped border clearance and procedures, has identified single window systems and global data standards as possible solutions.²⁸⁹

The **APEC Privacy Framework** provides guidance and direction to businesses and government entities on common privacy issues.²⁹⁰ The framework was updated in 2015 to reflect major shifts in business operations and consumer expectations because of technology advancements and the nature of information flows.²⁹¹

Building on the Privacy Framework, the **APEC Cross Border Privacy Rules (CBPR)** system seeks to balance the flow of information and data across borders with the need for effective protection of personal information. It is a voluntary certification scheme allowing companies to transfer personal data (inter and intra company) across APEC participants. There were eight APEC economies participating in the CBPR system in 2019: Australia; Canada; Japan; Korea; Mexico; Singapore; Chinese Taipei; and the United States.²⁹²

²⁸⁶ APEC, ‘APEC Connectivity Blueprint’ (Singapore: APEC, January 2015), https://www.apec.org/-/media/APEC/Publications/2015/1/APEC-Connectivity-Blueprint/APEC-Connectivity-Blueprint-2014_22012015.pdf.

²⁸⁷ APEC, ‘Annex C: Collaboration Action Plan between APEC Member Economies and the Global Infrastructure Hub’ (Singapore: APEC, 2016), https://www.mof.go.jp/english/international_policy/convention/apec/20161015_3.pdf.

²⁸⁸ APEC, ‘APEC Services Competitiveness Roadmap Implementation Plan (2016–2025)’ (28th APEC Ministerial Meeting, Lima, Peru, 17–18 November 2016), http://mddb.apec.org/Documents/2016/MM/AMM/16_amm_012.pdf.

²⁸⁹ APEC, ‘2018 Stocktake: The APEC Supply-Chain Connectivity Framework Action Plan (SCFAP) II 2017–2020’ (Singapore: APEC, 2018), <https://www.apec.org/-/media/APEC/Publications/2018/11/2018-CTI-Report-to-Ministers/TOC/Appendix-7---Stocktake-of-APEC-Initiatives-for-SCFAP-II.pdf>.

²⁹⁰ APEC, ‘APEC Privacy Framework’ (Singapore: APEC, December 2005), <http://publications.apec.org/Publications/2005/12/APEC-Privacy-Framework>.

²⁹¹ APEC, ‘Updates to the APEC Privacy Framework’ (2016/CSOM/012app17, Singapore: APEC, 2016), http://mddb.apec.org/Documents/2016/SOM/CSOM/16_csom_012app17.pdf.

²⁹² APEC, ‘Cross Border Privacy Rules System’, CBPRs, accessed 19 September 2019, <http://cbprs.org/>.

The CBPR is further complemented by the **Privacy Recognition for Processes (PRP)** system²⁹³ and the **APEC Cross-border Privacy Enforcement Arrangement (CPEA)**.²⁹⁴ The former is a system designed to help personal information processors assist controllers in complying with relevant privacy obligations and identify qualified and accountable processors. The latter is a multilateral arrangement providing the first APEC mechanism for privacy enforcement authorities to voluntarily share information and provide assistance for cross-border data privacy enforcement. APEC is also exploring the possibility of achieving interoperability between CBPR and the European Union General Data Protection Regulation (EU GDPR).²⁹⁵

APEC is in the midst of developing the **APEC Collaborative Framework for Online Dispute Resolution (ODR) of Cross-Border Business-to-Business (B2B) Disputes** to help businesses including MSMEs resolve B2B cross-border disputes.²⁹⁶ Many MSMEs are reluctant to engage in international trade out of fear of the high costs of litigation in case of a dispute. Current arbitration systems are also too costly and time-consuming, hence inappropriate for small value disputes. This project is an example of harnessing digital tools to help MSMEs access global opportunities, thereby promoting inclusion.

On the human capital development front, the **APEC Framework on Human Resources Development in the Digital Age** proposes a set of policy directions and measures to help economies ensure citizens are better prepared to deal with the challenges of the working world today.²⁹⁷ Additionally, the **APEC Education Strategy** has been implemented by the Human Resources Development Working Group (HRDWG) to guide its projects and initiatives. One of the objectives of the strategy is to improve the use of education and technological capabilities in learning through better use of ICT.²⁹⁸ In 2012, the APEC Finance Ministers released a policy statement on the importance of financial literacy and education.²⁹⁹ Subsequently, they introduced the **Cebu Action Plan (CAP)** to serve as a voluntary roadmap to increase prosperity, financial integration, transparency, resilience and connectedness. Under the CAP, APEC has organised activities such as the Workshop on Improving Digital Finance Literacy in APEC³⁰⁰ and the Policy Seminar on Advancing Financial Inclusion.³⁰¹

The **Action Agenda on Advancing Economic, Financial and Social Inclusion in the APEC Region**, calls on members to take measures to empower women, youth, the elderly, persons with disabilities, rural communities and other underrepresented and vulnerable groups by removing barriers to training and employment, strengthening active labour market policies, bridging the gap between market needs

²⁹³ APEC, 'APEC Privacy Recognition for Processors System' (Singapore: APEC, November 2015), [http://www.apec.org/~media/Files/Groups/ECSCG/2015/APEC PRP Rules and Guidelines.pdf](http://www.apec.org/~media/Files/Groups/ECSCG/2015/APEC_PRP_Rules_and_Guidelines.pdf).

²⁹⁴ APEC, 'APEC Cross-Border Privacy Enforcement Arrangement (CPEA)', accessed 12 June 2019, <https://www.apec.org/Groups/Committee-on-Trade-and-Investment/Electronic-Commerce-Steering-Group/Cross-border-Privacy-Enforcement-Arrangement>.

²⁹⁵ The European Union General Data Protection Regulation came into force in May 2018.

²⁹⁶ APEC, 'APEC Collaborative Framework for Online Dispute Resolution' (*APEC 2019 First Economic Committee Meeting*, Santiago, Chile, 2019), http://mddb.apec.org/Documents/2019/EC/EC1/19_ec1_012.pdf.

²⁹⁷ APEC, 'APEC Framework on Human Resources Development in the Digital Age', 15 May 2017, <https://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation/Working-Groups/Human-Resources-Development/Framework>.

²⁹⁸ APEC, 'APEC Education Strategy' (*2017 APEC Education Network Meeting*, Nha Trang, Viet Nam, 2017), http://mddb.apec.org/Documents/2017/HRDWG/EDNET/17_hrdwg_ednet_003.pdf.

²⁹⁹ APEC, 'Policy Statement – APEC Ministers of Finance', 2012, https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Finance/2012_finance/annex.

³⁰⁰ APEC, 'APEC Improving Digital Financial Literacy Workshop' (*APEC 25th Finance Ministers' Meeting*, Port Moresby, Papua New Guinea, 2018), http://mddb.apec.org/Documents/2018/MM/FMM/18_fmm_016.pdf.

³⁰¹ APEC, 'Seminar on Financial Inclusion in APEC: Financial Capability, Education and Technology, Madang, Papua New Guinea, 5-6 June 2018 – Seminar Report' (*APEC 25th Finance Ministers' Meeting*, Port Moresby, Papua New Guinea, 2018), http://mddb.apec.org/Documents/2018/MM/FMM/18_fmm_015.pdf.

and individual competencies, and strengthening human resource development policies such as efforts on re-skilling and life-long learning.³⁰²

The **Boracay Action Agenda to Globalize MSMEs** calls for ICT and e-commerce to be harnessed to promote the internationalisation of MSMEs and integrate them into global value chains. It specifically calls for APEC to: (1) cooperate with the APEC Business Advisory Council (ABAC) in identifying and promoting strategic e-commerce platforms and innovative business models for MSMEs to support buying and selling activities (business-to-consumer), business matching opportunities (B2B), and online-to-offline (O2O) commerce; (2) implement capacity building in order to promote international networking and to increase cross-border business opportunities for MSMEs by localising/customising ABAC's Cross-Border E-Commerce Training (CBET) Programme and other similar platforms; (3) encourage the availability of next-generation high-speed broadband/internet and promote its use by MSMEs; and (4) ensure that policies and regulatory frameworks do not unnecessarily constrain the ability of MSMEs to participate in e-commerce.³⁰³

³⁰² APEC, 'Annex A: APEC Action Agenda on Advancing Economic, Financial and Social Inclusion in the APEC Region', 11 November 2017, https://www.apec.org/Meeting-Papers/Leaders-Declarations/2017/2017_aelm/Annex-A.

³⁰³ APEC, 'Boracay Action Agenda to Globalize MSMEs', 2015, https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2015_trade/2015_mrt_standalone.

POLICY RECOMMENDATIONS

The digital transformation in the form of new technologies and business models will continue to impact the economy and daily lives of people across the Asia-Pacific region. Whether the digital economy will turn out to be a boon or a bane will depend on the ability of economies to implement reforms and policies that can harness its opportunities while overcoming its challenges. Based on the report's analysis, the following policy recommendations are proposed for APEC economies to consider, bearing in mind their differing circumstances and levels of development:

- 1. Progress toward agreed definition(s) and clear measurement frameworks for the digital economy.** Definitions delineate the scope of coverage and allow statisticians to develop a corresponding measurement framework. A clear, well-elaborated measurement framework, supported by reliable statistics and regularly updated data that is comparable across sectors and economies will in turn allow policymakers to plan and make more informed decisions. Without baseline measures and data that can be tracked, it will be difficult to determine if policy objectives have been met or if adjustments should be made.
- 2. Develop and agree on policy-relevant indicators.** While measuring digital flows is important, it is also important to monitor the pace of digital transformation as it allows policymakers to better understand how digitalisation is changing the economy and to devise appropriate policy responses. Moreover, the advent of the digital economy has fundamentally changed the way business is conducted and the products and services that are traded. In this environment, it is also important to be able to monitor policies and regulations that have implications on the digital economy.
- 3. Get core structural reforms right with respect to the digital economy.** Core structural reforms in areas such as competition policy and law; regulatory reform; ease of doing business (EoDB); and public sector governance can be applied to the digital economy's opportunities and challenges. For instance, up-to-date competition policies can facilitate new market entrants and the uptake of new business models, while at the same time ensuring that digital technologies and tools are not exploited to the detriment of competition. Properly implemented, regulatory reform can lead to policies that are more in tune with the needs of businesses in the digital economy. Governments can play an important role in charting the direction of the digital economy by applying digital technology and tools in their public sector governance frameworks.
- 4. Supplement core structural reforms.** While new technologies and business models have created opportunities for many, not all have benefited. The digital economy can impact inclusion through different channels including destroying jobs and disrupting entire sectors of the economy. Furthermore, if not addressed, the lack of skills and limited access to infrastructure, technology and social protection can lead to exclusion and widening disparities. With regard to efforts to promote inclusive growth, this report has recommended two approaches based on the EC's *Three Approaches* document. The first (i.e. Approach II in the *Three Approaches* document) is to make structural reforms pro-inclusive by targeting areas such as education and skills, infrastructure and social security. The second (Approach III) involves implementing supporting policies alongside core structural reforms. This approach is often necessary to address deep-seated structural barriers that prevent women, MSMEs and traditionally marginalised groups from fully participating in the digital economy. The two approaches are often applied simultaneously.
- 5. Adopt a holistic approach to structural reforms for the digital economy.** When implementing structural reforms and supporting policies, policymakers need to ensure that they are well-coordinated, coherent and that they complement one another. For the digital economy to work seamlessly, it is important for economies to approach policy issues and objectives in a holistic rather

than in a piecemeal manner. Otherwise, there are risks that policies in one area would have inadvertent negative impacts on another. As an illustration, policies by one government agency to improve the business environment for digital firms could be offset by policies of another agency due to the lack of coordination or failure to consider other factors such as the effect on MSMEs. This requires policymakers to reach across traditional policy silos as well as across different ministries and levels of government to develop an integrated, whole-of-government approach to policymaking. In such efforts, it is important to include the private sector and other sectors of society. In this regard, there is potential for greater cooperation on digital economy issues between APEC fora and the APEC Business Advisory Council (ABAC).

- 6. Monitor trends and developments in the digital economy, including policy reforms and adapt accordingly.** The digital economy is relatively new and in constant flux. Structural reforms and supporting policies that work today may no longer be appropriate one to two years down the road. Therefore, they should continuously be reviewed along with the trends and developments of the digital economy.
- 7. Leverage and contribute to regional cooperation.** In the context of the digital economy, regional organisations such as APEC and their component fora can play an important role in facilitating discussion and knowledge sharing on best practices and innovative regulatory approaches to the emerging technologies and business models. Dialogues, workshops and other capacity building activities involving academia, private sector and other international organisations (IOs) can also contribute to driving conversations and collaborations on a variety of topics such as competition enforcement. In addition, APEC is well-placed to serve as a platform to identify opportunities presented by the digital economy, and to advance particular initiatives for cross-border collaboration. These can include using digital technology to facilitate cross border trade and investment, to enhance transactions through efficient and reliable payment systems, and to increase transparency and confidence in the provider-customer relationships. To avoid duplication and reinventing the wheel, APEC's regional cooperation efforts should refer to relevant digital economy work of IOs such as the World Bank (WB), the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF), the World Economic Forum (WEF), the Asian Development Bank (ADB), the Inter-American Development Bank (IADB), and others.

Annex A:

Measuring the Digital Economy

In order to plan and make more informed decisions, policymakers need a clear, well-elaborated measurement framework supported by reliable statistics that are regularly updated with data comparable across sectors and economies. This is all the more critical in light of the growing role of the digital economy in many economies and the opportunities and challenges it presents. Achieving this goal will entail consistency in data collection and analysis, cooperation between statistical agencies, and agreement on common standards and practices at the regional and global levels, among others. Efforts to measure the digital economy must overcome fundamental disagreements on the definition and scope of the digital economy, and serious technical challenges. Even if achieving comparability is not feasible in the short term, economies can help to overcome these measurement challenge by providing details about what statistics they are measuring and how they have been derived.

The absence of consensus on a definition of the digital economy presents serious challenges for efforts to measure it, as it raises a number of important questions: (1) should the digital economy be defined narrowly as those activities facilitated by online platforms, such as online purchasing and online movie streaming?; (2) or should it instead be defined broadly as all the sectors that have incorporated data and the Internet into their production processes?; (3) the term digital sector has been mentioned frequently, but what is it exactly and is it equivalent to the digital economy?; (4) what is its relation with the ICT sector?; (5) what is its relation to e-commerce, which is arguably only one aspect of the digital economy?

Definitions aside, there are a range of challenges that pertain more to the technicalities of the measurement itself. Some of these relate to existing issues that include limitations to the current national accounts framework and challenges in measuring services, while others relate to newer issues such as measuring certain digital-related activities. Although it is important to accurately measure digital and digitally-facilitated flows,¹ monitoring the digital transformation is equally important as it allows policymakers to better understand how digitalisation is changing the economy and the society as a whole and to devise appropriate policy responses. In this regard, gaps and challenges remain, despite there having existed for some time efforts by economies and various organisations to collect and analyse indicators to monitor the digital transformation.²

Last but not least, the advent of the digital economy has brought with it new business models that have fundamentally changed the way that business is conducted and the products and services that are traded. In this environment, it is important to be able to monitor policies and regulations with implications for the digital economy. The next section will review some of these challenges in greater detail. A number of organisations have made significant efforts to measure different aspects of the digital economy, including digital flows, digital transformation and how laws and regulations can positively and negatively affect the digital economy. Where current information is available, this annex will refer to some of the ongoing work done by these organisations.

Definition and measurement

Definition and measurement go hand-in-hand. Definition provides the scope of coverage and allows statisticians to come up with a corresponding measurement framework. A review of ongoing work done by various organisations on the digital economy shows them clearly defining what they are measuring and acknowledging the limitations of the approaches taken before proceeding to collect and analyse the relevant data. For instance, the United States Bureau of Economic Analysis (BEA) published a study in 2018 to estimate the size and contributions of digital activities currently embedded in the existing national accounts, paving the way for the construction of a new digital economy satellite account. In the study, the bureau first developed a conceptual definition of the digital economy, including three

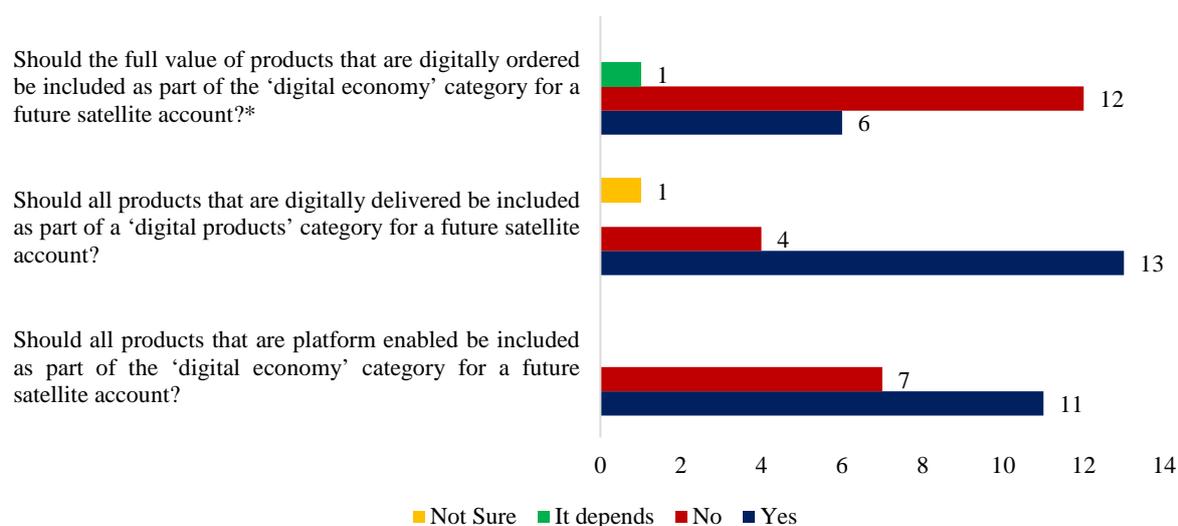
¹ For the purpose of the AEPR, ‘digital and digitally-facilitated flows’ includes, but are not limited to electronically-delivered goods or services, other types of data flows, and goods sold via e-commerce channels.

² For example, the International Telecommunication Union (ITU)’s percentage of individuals using the internet (details at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>), and the World Bank’s percentage of individuals having mobile money accounts (details at <https://globalindex.worldbank.org/>).

parts: (1) the digital-enabling infrastructure which enables the existence and operation of a computer network; (2) the digital transactions using that system; and (3) the content created and accessed by digital economy users. Using this definition, the bureau then identified the detailed goods and services that should be included in the sphere of the digital economy using its supply-use framework, and then provided its preliminary estimate of the size of the digital economy.³

However, reaching consensus among different stakeholders is not an easy endeavour. As an illustration of the varying opinions, the OECD Informal Group on Measuring GDP in Digitalized Economy conducted a survey on economies' practices and thoughts on the definition and classification of digital economic activities and the statistical challenges of creating a new satellite account.⁴ The survey received 19 responses from task force members. Mixed answers were found for the question 'what is part of the digital economy?' Twelve respondents indicated that they would not record the full value of digitally ordered products as part of the 'digital economy' (Figure A.1). On whether all digitally delivered products should be part of the digital product category, 14 member economies agreed that they should be, while 4 would not include all products. On whether platform-enabled products should be part of the 'digital economy', 11 respondents stated they would include all platform-enabled products, while 7 indicated they would not include all. Views are also divided on whether enabler products such as computers and mobile phones should be regarded as digital economy products.⁵

Figure A.1. Summary of selected OECD survey responses on measuring GDP in a digitalised economy



Note: *One member checked both yes and no

Source: Jennifer Ribarsky, 'Summary of Responses of the Advisory Group: Survey on Digital Economy Typology' (STD/CSSP/WPNA(2017)1, OECD, 22 September 2017), [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSSP/WPNA\(2017\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSSP/WPNA(2017)1&docLanguage=En).

³ Kevin Barefoot et al., 'Defining and Measuring the Digital Economy' (Suitland, MD: Bureau of Economic Analysis, 15 March 2018), <https://www.bea.gov/system/files/papers/WP2018-4.pdf>.

⁴ A satellite account is an account that is developed to measure the size of economic sectors that are not defined as industries in national accounts. One example is the tourism sector, which is a combination of industries such as transportation, accommodation, food and beverage services, recreation and entertainment, and travel agencies. Indeed, tourism is the first activity to use worldwide satellite account standards to measure its impact on national economies (see UN World Tourism Organization, 'Basic Concepts of the Tourism Satellite Account (TSA)', accessed 23 August 2019, <http://statistics.unwto.org/sites/all/files/docpdf/concepts.pdf>).

⁵ Jennifer Ribarsky, 'Summary of Responses of the Advisory Group: Survey on Digital Economy Typology' (STD/CSSP/WPNA(2017)1, OECD, 22 September 2017), [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSSP/WPNA\(2017\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=STD/CSSP/WPNA(2017)1&docLanguage=En).

Differing views on the nature and economic value of the digital economy led to variation in the survey responses. For instance, one survey respondent shared that a possible way to define digital products is to ask whether the products would continue to exist without the internet (e.g., internet advertising). In terms of contribution to the overall economy, one economy suggested that there is a need to distinguish between the direct and indirect contribution of digitisation to the economy. Indirect contribution is when an activity is simply facilitated by a digital intermediary while the product or service is produced and traded physically. As an illustration, when booking a flight ticket online, the component of the ticket price should therefore be broken down into direct contribution (e.g., cost of intermediary service) and indirect contribution (e.g., cost of fuel, in-flight service, etc.) to the digital economy. In a similar vein, another economy suggested that two different layers should be measured in any conceptual framework used to estimate the digital economy, each with different statistical interpretations. One layer includes core digital products/industries and the other one includes activities that are facilitated by digitalisation.⁶

The lack of an agreed definition leads to divergence in the measurement frameworks, and affects the comparability of statistics between economies and across years. Based on a broad definition of the digital economy, the China Academy of Information and Communications Technology (CAICT) estimates the size of China's digital economy to be RMB 31.3 trillion (around USD 4.5 trillion) in 2018. This accounted for 34.8 percent of China's GDP, up from 32.9 percent in 2017.⁷ Using a narrower definition, the US BEA estimates the size of the digital economy in the US to be USD 1.35 trillion in 2017, making up 6.9 percent of its nominal GDP.⁸ Due to the use of very different methodologies, it would be premature to conclude that China's digital economy is more than three times the size of the US digital economy. For frameworks to be comparable, it is important to look at what industries and products are included as well as the measurement methodology.

Recognising that there is currently no clear and agreed definition of the digital economy and coming up with one may take some time, an approach taken by several economies and organisations is to limit the scope to certain technology-intensive sectors (e.g., ICT), e-commerce, or digital trade. The idea is two-fold: (1) narrowing the scope simplifies the measurement issue; and (2) since statistics pertaining to some sectors are more widely available, they can serve as a proxy and therefore can be indicative of the broader digital economy. For example, a recent study by the IMF on measuring the digital economy focuses on the digital sector, defined as comprising online platforms, platform-enabled services, and suppliers of ICT goods and services.⁹ E-commerce can also be used as a proxy to estimate the size of the digital economy. It is defined by the OECD as the 'sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders'. The products or services are digitally ordered but can be paid for or delivered either digitally or physically.¹⁰

Using narrower terms and sectors as proxies to measure the digital economy is, however, less than ideal for several reasons. First, some proxies such as digital trade suffer from the same lack of an agreed definition as the digital economy itself.¹¹ Second, there is a serious question as to whether well-defined sectors such as the ICT sector are a good proxy for the digital economy. For example, the definition of ICT hardware manufacturing includes products such as rabbit antennae and video cassette recorders

⁶ Ribarsky.

⁷ Sohu News, '数字经济, 7本白皮书, 10大亮点 | CAICT核心成果分享' [Digital Economy, 7 White books, 10 Highlights | Core Findings Shared by CAICT], 6 May 2019, www.sohu.com/a/312039707_735021.

⁸ US Bureau of Economic Analysis, 'Measuring the Digital Economy: An Update Incorporating Data from the 2018 Comprehensive Update of the Industry Economic Accounts' (Suitland, MD: Bureau of Economic Analysis, April 2019), https://www.bea.gov/system/files/2019-04/digital-economy-report-update-april-2019_1.pdf.

⁹ Marshall Reinsdorf and Gabriel Quirós, 'Measuring the Digital Economy' (Washington, DC: IMF, 28 February 2018), <https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/04/03/022818-measuring-the-digital-economy>.

¹⁰ OECD, 'OECD Glossary of Statistical Terms: Electronic Commerce', updated 17 January 2013, <https://stats.oecd.org/glossary/detail.asp?ID=4721>.

¹¹ Peter Lovelock and Australian APEC Study Centre, 'Digital Economy: Measurement, Regulation and Inclusion' (Workshop on the Digital Economy: Measurement, Regulation and Inclusion, Santiago, Chile, 6 March 2019), http://mddb.apec.org/Documents/2019/EC/WKSP2/19_ec_wksp2_002.pdf.

(from the analogue world), as well as routers and servers.¹² Furthermore, by narrowing the definition of the digital economy, we are at risk of excluding aspects of the digital economy that are gaining importance, such as e-commerce platforms.

Challenges beyond defining the digital economy

There are various challenges related to the technicalities of measurement itself which further complicate the process of establishing a feasible measurement framework. These challenges include: limitations of the current national accounts framework; suitability of existing measures such as GDP; difficulties in separating digital and non-digital activities; overestimation and underestimation pitfalls; measuring services; and barriers on data sharing between organisations for various reasons including data privacy and security. This section reviews some of the challenges identified in the existing literature.

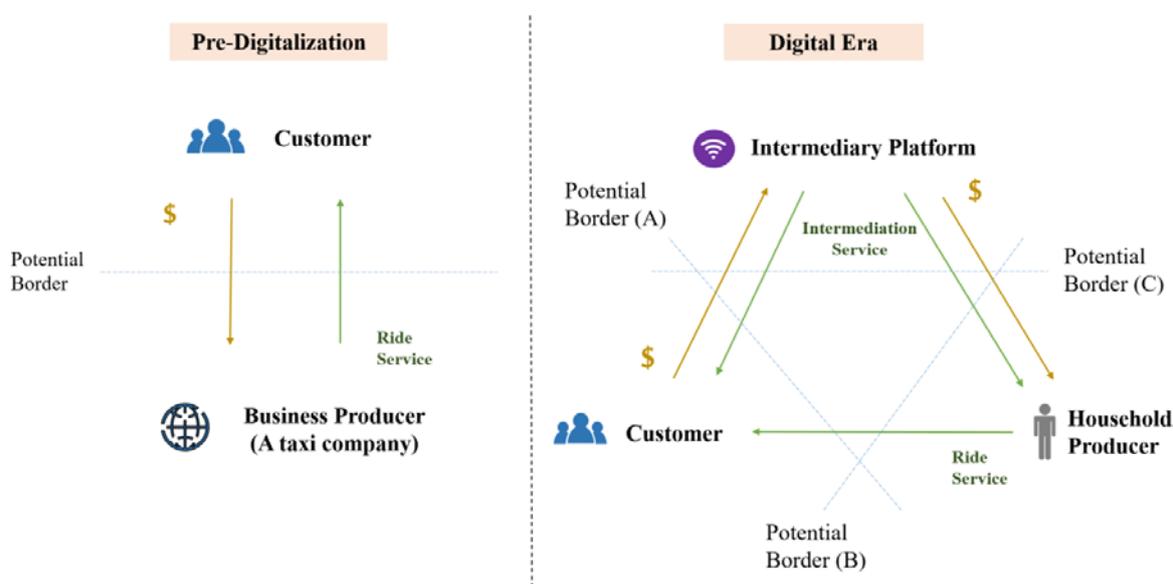
1. *Measuring digital and digitally-facilitated flows*

(In) congruency of the System of National Accounts (SNA) in the digital economy

The current framework used by economies was developed in the 1950s to 1960s and assigned clearly defined roles to all economic actors (i.e. producers, distributors, or consumers). It relies on customs and tax data, as well as high response rates to mandatory statistical surveys. The advent of the digital economy has affected some of these fundamental assumptions and methods.

Firstly, the digital transformation has changed the way economic actors interact and transact with one another (Figure A.2). For example, the entry of ride sharing providers such as Uber has disrupted the established relationship between taxi service providers and their customers, hence affecting statistical agencies' ability to accurately measure the contribution of the transport service sector to the economy through tax data and surveys of the taxi industry. Similarly, by turning consumers into service providers, Airbnb has made it challenging to measure the true contribution of the hospitality services sector to the economy. Measurement challenges are aggravated by the fact that many of these consumers-turned-service providers are operating beyond the current production frontier, are not registered businesses and/or do not report all taxes. While economies can mitigate this by employing surveys to collect additional information, it is generally more difficult to survey household producers (as compared to registered businesses), and the intermediary platforms themselves may be located in another economy, hence out of reach of the relevant statistical agencies.

¹² United Nations, ed., *International Standard Industrial Classification of All Economic Activities (ISIC)*, Rev. 4 (New York: United Nations, 2008), https://unstats.un.org/unsd/publication/seriesM/seriesm_4rev4e.pdf.

Figure A.2. An illustration of changing interaction and transaction between economic actors

Source: Adapted from Tuan Tran, 'Approach to Measuring the Digital Economy – Global Affairs Canada' (presented to the APEC Workshop on the Digital Economy: Measurement, Regulation and Inclusion, Santiago, Chile, 6 March 2019), http://mddb.apec.org/Documents/2019/EC/WKSP2/19_ec_wksp2_006.pdf.

Secondly, profit shifting, whereby related party firms move profit generated in one jurisdiction to a subsidiary in a lower-tax one, has been facilitated by digitalisation. This is particularly the case for certain transactions, where the common approach of using legal ownership to claim rights to related party profits could lead to distortions and asymmetries in national accounts to the extent that intercompany transactions are priced inappropriately. As a result, economic indicators based on those accounts may be inaccurate as well. For instance, despite relying on advertising revenue arising from and professional support services provided in one economy, much of the value associated with the revenue generated in that economy or activities performed there may actually end up on the balance sheets of the firm's subsidiary in another location (usually a low-tax location). This is because the firm providing the advertising services pays for intermediate services, which is provided by its subsidiary to generate the advertising services. For example, Facebook Australia recorded sales of USD 420 million in 2018, mostly from advertising, but attributed significantly lower net revenue and profit before taxes to its Australian related party since that related party made an intercompany payment of USD 320 million to overseas subsidiaries to purchase 'advertising inventory'. Consequently, the company paid an overall tax of USD 8.3 million, or about 2 percent of the recorded sales.¹³ Such profit shifting may not violate current international tax laws regarding taxable nexus and profit attribution, which uses the widely-adopted "arm's length standard," but efforts are being made to better attribute profits to the jurisdiction where "value" is created (e.g., the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS) (see Box A.1) and the UN System of National Accounts (SNA-2008)).¹⁴ Many statistical agencies have yet to revise their methodologies to close this gap and reflect on these challenges.¹⁵

¹³ Rosie Perper, 'Facebook Pulled in over \$420 Million from Sales in Australia in 2018, but Paid Roughly 2% of That in Taxes', *Business Insider US*, 30 April 2019, <https://www.businessinsider.sg/facebook-paid-aud-12-million-tax-for-aud-598-million-sales-in-australia-2019-4/>.

¹⁴ Nadim Ahmad and Peter van de Ven, 'Measuring GDP in a Globalized World' (16 May 2018), <https://www.escoe.ac.uk/wp-content/uploads/2018/06/EM2018-Ahmad-and-van-de-Ven.pdf>.

¹⁵ Henry Lotin, 'Measurement of the Digital Economy - Integrative Trade and Economics' (6 March 2019), http://mddb.apec.org/Documents/2019/EC/WKSP2/19_ec_wksp2_005.pdf.

Box A.1. The tax challenges arising from digitalisation and the OECD/G20 BEPS Project

Digitalisation has driven considerable changes in the way business operates and led to the emergence of new business models. These changes have placed heavy pressure on the international tax system, including both direct and indirect taxes.

On direct tax, already in 2015, the Base Erosion and Profit Shifting (BEPS) Action 1 Report concluded that (1) “the whole economy was digitalising such that it would be difficult, if not impossible to ring-fence the digital economy” and (2) the digitalisation of the economy raises broader tax challenges for policy makers that go beyond BEPS, and relate primarily to the allocation of taxing rights among different jurisdictions.

With many economies starting to act unilaterally, there is an urgent need to reach an agreement on a consensus solution to the direct tax challenges. The G20 mandated the OECD/G20 Inclusive Framework on BEPS, which brings together 134 economies to deliver a consensus-based solution to address the direct tax challenges of the digitalisation of the economy by 2020.

In response to the mandate given by G20 Leaders, the Inclusive Framework agreed on 28 May 2019 the Programme of Work *to Develop a Consensus Solution to the Tax Challenges Arising from the Digitalisation of the Economy* (hereafter Programme of Work), which was endorsed by the G20 Finance Ministers and Leaders in June 2019. The Programme of Work provides a roadmap to develop a consensus-based long-term solution based on two pillars to reach a global agreement by the end of 2020.

The first pillar focuses on the allocation of taxing rights, and seeks to undertake a coherent and concurrent review of the profit allocation and nexus rules. The second pillar focuses on the remaining BEPS issues and seeks to develop rules that would provide jurisdictions with a right to “tax back” where other jurisdictions have not exercised their primary taxing rights or the payment is otherwise subject to effective taxation at a rate lower than a minimum rate.

The work on the tax challenges arising from the digitalisation of the economy is one action from the BEPS package adopted in 2015, which comprises 15 actions that equip governments with the domestic and international instruments needed to tackle tax avoidance. The monitoring and further development of standards in the BEPS Project is carried out by the members of the Inclusive Framework on BEPS.

On indirect tax, new guidelines and possible VAT collection mechanisms were discussed to address the challenges of collecting the VAT on online sales of services and intangibles by foreign vendors. The report concerning online sales suggested one approach to collecting VAT on goods imported by consumers is to have digital platforms collect the VAT to facilitate compliance and administration.

Adapted in full or part from:

- OECD, ‘BEPS’, <https://www.oecd.org/tax/beps/>
- OECD, ‘Addressing the Tax Challenges of the Digital Economy, Action 1 – 2015 Final Report’ (Paris: OECD, 2015), <https://doi.org/10.1787/9789264241046-en>.
- OECD, ‘OECD/G20 Inclusive Framework on BEPS: Programme of Work To Develop a Consensus Solution to the Tax Challenges Arising from the Digitalisation of the Economy’ (Paris: OECD, 2019), <https://www.oecd.org/tax/beps/programme-of-work-to-develop-a-consensus-solution-to-the-tax-challenges-arising-from-the-digitalisation-of-the-economy.pdf>
- OECD, ‘OECD/G20 Inclusive Framework on BEPS: Progress Report July 2018–May 2019’ (Paris: OECD, 2019) <https://www.oecd.org/tax/beps/inclusive-framework-on-beps-progress-report-july-2018-may-2019.htm>.

Indicators beyond GDP

Due to the limitations of the current SNA framework, standard measures such as GDP either do not capture or misallocate important aspects of the digital economy. For example, a report by Credit Suisse indicates that there are at least three categories of products and services not included in the GDP.¹⁶

Firstly, despite replacing the traditional high street stores, the services and products provided by digital intermediaries which includes online booking websites and online insurance or bank brokers based either locally or overseas have not been fully included.

Secondly, the digital economy has expanded the production boundary in ways that are not captured by traditional GDP measures. The rise of the sharing/gig economy has enabled individuals to borrow or lend a variety of assets from bicycles to houses, as opposed to leaving them idle. Individuals could also provide labour and services to others such as cleaning and repairs and earn income on a part-time or on-call basis. In addition, the reduced price paid by consumers has increased customer surplus and is yet to be reflected in the price indices used to calculate GDP.

The sharing economy connects individual sellers and customers through third-party websites or apps, while payment and transactions can be made offline in the form of cash, cheques or bank transactions. In some cases, these will no longer be recorded or traced by the original platforms, causing challenges in terms of accurate record-keeping and visibility by relevant tax authorities of income earned by sellers. Business or household questionnaires and surveys can be used to obtain information pertaining to these transactions but may not fully capture them. The results can be biased or unreliable when the sample is not representative, large enough or simply due to respondents' reluctance to give true answers.

Thirdly, 'free' digital products produced by households including blogs, videos, and open source software and computer services are not recorded within price indices and are therefore not reflected in GDP. Moreover, 'free' digital products/services offered by platforms and funded either by advertising (which may not be attributed to the correct economy) or through collection of user data is another category underrepresented within GDP measurements.¹⁷ For instance, while platforms such as Facebook, Rakuten Viber and Sina Weibo appear to be providing access for free, they generate profits through targeted advertisements based on the user information collected. This has led to considerable debate on how to measure the value of user information and attribute a value to 'free' digital products and services, in a way that captures their growing economic importance.

In summary, while critics have pointed before to the limitations of GDP, the advent of the digital economy brings additional measurement challenges.

Classification challenges, underestimation and overestimation

While some aspects of digital activities have been captured within current national accounts, identifying them separately may be difficult as they are often lumped together with other traditional (i.e. non-digital) activities.¹⁸ Efforts have been made by some economies (e.g., Australia; Canada; and the United States) to identify data sources for these activities in the current industrial accounts using supply-use tables, and will be elaborated further in the next section. However, such attempts remain in early stages, are limited in scope and could have been developed as a pure academic exercise.

Online platforms and social networks enable individuals to exchange and sell products to one another and create their own Facebook page, YouTube channel or Instagram account to market their products, which are either self-produced or sourced from somewhere else. Once there is a match, the buyer and

¹⁶ Credit Suisse Research Institute, 'The Future of GDP' (Zurich: Credit Suisse, May 2018), <https://www.credit-suisse.com/media/assets/private-banking/docs/mx/the-future-of-gdp-en.pdf>.

¹⁷ Reinsdorf and Quirós, 'Measuring the Digital Economy'.

¹⁸ Australian Bureau of Statistics, 'Measuring Digital Activities in the Australian Economy', updated 1 March 2019, <https://www.abs.gov.au/websitedbs/D3310114.nsf/home/ABS+Chief+Economist+-+Full+Paper+of+Measuring+Digital+Activities+in+the+Australian+Economy>.

seller may exchange private messages and agree on a payment method (e.g., PayPal, bank transfer). Such online ‘stores’ do not typically have a physical presence and may not be treated as business entities. As these products are shipped as personal parcels, they are often not taxed or recorded. For statisticians, while such ‘exchange’ or ‘trade’ between individuals can be facilitated by digital platforms, tracking and measuring such transactions would be challenging and resource intensive. In this case, limitations in the SNA used to calculate GDP can lead to an underestimation of the size and potential of the digital economy.

Alternatives to estimating the size of the digital economy includes monitoring cross-border data flows, but these may lead to issues such as overestimation, which have affected traditional metrics as well. As pointed out by Lund and Manyika, data may be routed across many borders to connect two endpoints, and exchanges involving the streaming of video use more bandwidth than other simpler forms/cross-border data flows. Furthermore data-intensive flows such as Youtube videos cannot easily be mapped to value due to the challenges mentioned above. As a result, neither bandwidth nor total data flows are an accurate proxy for the value of the digital economy.¹⁹

Measuring services

The international community has long been plagued by statistical problems associated with services. For example, variations in compilation methods and different thresholds used by surveys have caused the estimated value of services trade data to vary significantly between economies.²⁰ While digital technologies have allowed services to be traded freely, easily and on a broader scale, they have aggravated the measurement issue, for several reasons.

First, traditional services such as education services that need to be conducted in person in the past, can now be provided digitally in many cases and sometimes for free. **Second**, the digital economy has led to further blurring of geographical boundaries, even beyond the fragmentation of production by global value chains. Unlike traditional trade, digital services may consist only of the transfer of data. The constant data flows between different activities (e.g., R&D, sales and advertising) with various actors across numerous locations make it challenging to trace such flows and attribute the value of a particular service to a specific geographical location.²¹ This makes it more difficult for statisticians to record the services and include them within their accounts.

Third, as pointed out by a 2018 IMF report on measuring the digital economy, digitally delivered services can be under-reported in SNA accounts that do not capture transactions on platforms, especially on the import side. Inconsistencies and discrepancies are sometimes found in the services statistics of two trading partners due to differing statistical and data collection methods. Luxembourg’s service exports to European Union (EU) economies, for example, are substantially higher than the imports recorded by its trading partners. This is due to the fact that some digitally delivered services (e.g., digital music provided by Spotify) are captured in Luxembourg’s export data, but not in the data of the importing economies.²²

A **fourth** challenge arises from the increasing vagueness and difficulty in distinguishing the value of products and the accompanying services.²³ For instance, the cost of regular system and software updates that keep mobile phones useful may have been included by producers when pricing the product instead

¹⁹ Susan Lund and James Manyika, ‘How Digital Trade Is Transforming Globalisation’ (International Centre for Trade and Sustainable Development, and World Economic Forum, September 2015), <http://e15initiative.org/wp-content/uploads/2015/09/E15-Digital-Lund-and-Manyika.pdf>.

²⁰ Eurostat, ‘International Trade in Services Statistics – Background’, 28 March 2019, https://ec.europa.eu/eurostat/statistics-explained/index.php/International_Trade_in_Services_statistics_-_background#Asymmetries_in_international_trade_in_services_statistics.

²¹ Credit Suisse Research Institute, ‘The Future of GDP’.

²² Reinsdorf and Quirós, ‘Measuring the Digital Economy’.

²³ Tuan Tran, ‘Approach to Measuring the Digital Economy – Global Affairs Canada’ (presented to the *APEC Workshop on the Digital Economy: Measurement, Regulation and Inclusion*, Santiago, Chile, 6 March 2019), http://mddb.apec.org/Documents/2019/EC/WKSP2/19_ec_wksp2_006.pdf.

of as a separate line item. **Finally**, little progress has been made across the globe on measuring micro-services (e.g., door to door cleaning and repairing services) or free digital services (e.g., online knowledge sharing, medical consultation, and open source software and computer services) produced by households. In this regard, there may be a need to update household and labour force surveys and improve data collection from tax systems.

Data sharing and development state of economies

One of the ironies of the digital age is that data and statistics that could provide policymakers a better overview of the digital economy are available but not shared. According to a Domo report, more than 2.5 quintillion bytes of data were created every single day in 2018. By 2020, the report estimates that each individual will generate 1.7MB of data every second.²⁴ Theoretically, every order and transaction made online is recorded somewhere and it is possible to analyse such data for statistical purposes. This is particularly relevant for digital platforms whose main business is to collect, analyse and create value from the data. However, in practice, data collected and stored by different entities are fragmented and not shared. While individuals and private companies, especially digital platforms have significant amount of data, they are usually reluctant to share it with governments, arguing that it is proprietary and that sharing it would affect their competitiveness and breach their privacy commitments. To further complicate matters, multinational companies (MNCs) often hold data in various jurisdictions whose differing data privacy laws and regulations would impact their data policies. This limits the ability of statistical agencies to accurately measure the size of certain digital economic activities.

A universal measurement framework for the digital economy also needs to take into consideration the development gaps between economies, in order to ensure the feasibility of data collection and comparability of statistics across economies. Developing economies may possess inadequate resources or may require capacity building to bring their statistical collection up to international standards and to ensure comparability and coordination with other economies.²⁵ Lack of sustainable funding, inadequate public ICT infrastructure and poor digital literacy among statistical staff are some of the barriers to a comprehensive and accurate statistical system for the digital economy. Some economies are struggling to maintain their existing SNA database, let alone put extra effort into creating a new one. According to the UN Statistics Division, in some economies, entire statistics programmes are supported by only two or three people.²⁶

2. *Measuring digital transformation*

Measuring digital flows is important. Equally important is measuring digital transformation because it allows us to better understand how digitalisation is changing the economy and society as a whole and to adjust policies as required. Economies and various organisations have been collecting and analysing indicators to monitor digital transformation and compare economies over time. With regard to internet access, organisations such as the International Telecommunication Union (ITU) have developed indicators such as the percentage of individuals using the internet, fixed broadband subscriptions per 100 inhabitants, the proportion of households with a computer and the percentage of households with internet connections. In terms of the ability to use digital technologies and tools, the United Nations Educational, Scientific and Cultural Organization (UNESCO) collects indicators such as enrolment in tertiary education and percentage of tertiary graduates in the natural sciences, engineering and ICT. The OECD conducts surveys under various programmes including the Programme for International Student Assessment (PISA), the Teaching and Learning International Survey (TALIS) and the Programme for the International Assessment of Adult Competencies (PIAAC) to provide international comparable data

²⁴ Domo, 'Data Never Sleeps 6.0', 2018, <https://www.domo.com/solution/data-never-sleeps-6>.

²⁵ World Bank, 'Building Statistical Capacity To Monitor Development Progress' (Washington, DC: World Bank, 2006), <http://documents.worldbank.org/curated/en/795451468314360987/Building-statistical-capacity-to-monitor-development-progress>.

²⁶ Lisa Cornish, 'At UN World Data Forum, a Focus on Data Capacity', Devex, 22 October 2018, <https://www.devex.com/news/sponsored/at-un-world-data-forum-a-focus-on-data-capacity-93717>.

on a variety of indicators, many of which describe the relationship between digital technology and education and skills.²⁷

While they are useful and informative, existing indicators are not without gaps and challenges. **First**, these indicators may not cover all economies. In some cases, the data may be patchy (available only for certain years), and the timeliness of the data (how recently it is produced) could also be a concern. For example, data on enrolment in tertiary education from UNESCO is only available as of 2017, and only covers some APEC economies. Moreover, indicators provided by economies may be derived from varying data sources as well as through the use of different collection methodologies and approaches (e.g., household surveys versus business surveys), which means that the data may not be comparable.

Second, some existing indicators need to be fine-tuned to ensure their continued relevance in the digital era. For example, indicators on access which includes the percentage of individuals using the internet, would be more informative if supplemented with additional information on how individuals use the internet (e.g., online education, online sales/purchases, cloud storage, content creation, social network, etc.), information which may not be collected by all economies. Likewise, indicators such as the use of robots as well as other technologies and tools including AI, 3D printing and blockchain should not only indicate whether firms use them or not, but rather be complemented with information on how utilisation has impacted firms in areas such as costs and contribution to profit and value creation. Such indicators would give a better picture of the extent to which sectors and economies are being transformed.

Similarly, indicators on skills, abilities and competencies to thrive in the digital economy should go beyond measures such as enrolment in tertiary education to include information on whether individuals have the specific technical and cognitive skills. This is particularly so considering that getting a post-secondary degree no longer guarantees one a job. In fact, many question whether the current education system adequately prepares an individual for the future of work, and asks if it requires a major overhaul.²⁸ In terms of job creation, new business models introduced by platforms focusing on the gig economy (i.e., ride-sharing and food delivery services) have led to a significant increase in the number of independent contractors (as opposed to employees). With the continuous transformation of the economy and the advent of newer business models, different types of independent and freelance work are likely to become common while full-time employment becomes scarcer. Yet, current definitions and indicators still group these jobs collectively as ‘alternate work arrangements’, implicitly treating them as a homogeneous and insignificant category. If participation in the sharing/gig economy becomes the norm for a significant proportion of the population, then commensurate indicators to better monitor them would be needed.

Furthermore, it should be noted that existing indicators do not always provide breakdowns by criteria such as regional (e.g., rural (including remote) and urban), industry (e.g., manufacturing and services), gender and age groups. The push for inclusivity at a time of widening disparity calls for indicators to be disaggregated based on these criteria so that policymakers can make more focused, evidence-based interventions.

Finally, even as the existing indicators can be improved upon, it should be acknowledged that there are aspects of the digital economy that cannot be captured by existing indicators and therefore, have to be complemented by new indicators. While digital technologies and tools have made data collection more efficient, the use of this data including administrative records have ironically been limited, at least by official statistical agencies.

²⁷ OECD, ‘Computers, Education & Skills’, Education GPS, accessed 19 September 2019, <https://gpseducation.oecd.org>.

²⁸ For examples of changes in some economies, see World Bank, ed., *World Development Report 2019: The Changing Nature of Work* (Washington, DC: World Bank, 2019).

3. *Measuring how laws and regulations affect various aspects of the digital economy*

As discussed earlier, the advent of the digital economy has brought with it new business models. In turn, they have changed how businesses including trade, are conducted and what products are being traded. In this environment, policies and regulations with implications for the digital economy can generally be categorised into two main groups. The first group comprises existing or older measures that arguably were not robust enough to tackle the new challenges posed by the digital economy, and have since become problematic as the wider economy is transformed by new technologies and business models. The second group is made up of newer measures enacted in response to the ongoing transformation for various reasons including legitimate public policy objectives such as ensuring better data privacy, protection and security; aiding law-enforcement agencies and addressing other domestic security concerns. This group also includes policies that seek to capitalise on potential digital economy benefits in terms of employment, innovation/technology know-how, etc.

To ensure that economies are able to reap the benefits of the digital economy while addressing its challenges, it is important that the policies and regulations and their corresponding implications be analysed. This is particularly so considering that the laws and regulations have to balance different objectives. For example, while improving data privacy is a legitimate public policy objective, adherence to privacy laws have been used by firms to justify restricting access to data even when there are valid reasons to make the data available, such as the need to better measure the digital economy. To perform the needed analyses, economies and organisations would have to have comprehensive policy databases that are updated and reviewed at regular intervals.

Ongoing work on measurement

1. *Measuring digital and digitally-facilitated flows*

Tackling the measurement issues requires a more consistent and transparent method of measurement and data collection. Coordination between different organisations and economies is needed to improve data quality and comparability. Work is underway by governments and international organisations to develop widely accepted measurement criteria capturing different aspects of the digital economy. In 2017, the OECD created an advisory group on measuring GDP in a digitalised economy in order to develop new classifications and accounting tools. The group proposed a conceptual framework for the digital economy based on extensive literature research. At the same time, a survey was conducted to obtain economies' perspectives on issues such as the definitions of various terms, data availability and product classifications. The survey responses revealed areas of agreement and disagreement²⁹ and the advisory group continues to undertake activities including workshops.³⁰

Based on the OECD's work, several APEC economies have attempted to estimate the size and contribution of their digital economies. Their efforts have benefited from collaboration and the ability to learn from one another's efforts. The US BEA published a study in 2018 to estimate the size and contribution of digital activities currently embedded in the existing accounts. This study developed a conceptual definition of the digital economy, with reference to the work done by the OECD. The bureau further updated the estimate in April 2019 to extend the coverage to year 2017.³¹

²⁹ Ribarsky, 'Summary of Responses of the Advisory Group: Survey on Digital Economy Typology'.

³⁰ For examples, see John Mitchell, 'A Proposed Framework for Digital Supply-Use Tables' (SDD/CSSP/WPNA(2018), Paris: OECD, 2018),

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPNA\(2018\)3&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPNA(2018)3&docLanguage=En); and Peter van de Ven, Jorrit Zwijnenburg and John Mitchell, 'Informal Advisory Group on Measuring GDP in the Digital Economy' (SDD/CSSP/WPNA/A(2019)1, Paris: OECD, 2019),

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPNA/A\(2019\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=SDD/CSSP/WPNA/A(2019)1&docLanguage=En).

³¹ US Bureau of Economic Analysis, 'Measuring the Digital Economy: An Update Incorporating Data from the 2018 Comprehensive Update of the Industry Economic Accounts'.

Canada and Australia published their first estimates of the digital economy in early 2019, using the OECD framework³² and BEA approach as starting points. Digital products were selected from the national supply-use tables, and their employment statistics and value added to GDP were calculated.³³ Canada then built on the work by the US BEA by identifying ‘full’ and ‘partial’ digital products. All of the output of the ‘full’ digital products is included in the estimates, while only part of the output for the ‘partial’ ones is included.³⁴ This approach is a good first step that will increase the visibility of key digital economy sectors.

However, one of the limitations of the approach of all three economies is the reliance on traditional data sources and the existing industrial classification framework including the current SNA, which as discussed previously, come with their own limitations. Alternate data sources, such as crowdsourcing, web scraping and machine learning have been proposed for further study.³⁵ However, these can at best be a partial substitute for government data sources (census and tax-based data).

New avenues for data collection are being explored to measure the ‘invisible’ services or products in the digital economy. For example, the UK Office for National Statistics is working on adding new questions into the economy’s Labour Force Survey (LFS) to measure activities pertaining to the sharing economy. The intent is to investigate whether digital platforms have been used by respondents to find work and whether it is the main source of income. The questions have been tested in the annual pilot of the LFS, and are in the process of being further improved.³⁶

On sharing data, many economies such as Japan; Korea; New Zealand; Chinese Taipei; and the EU require foreign enterprises that do not have a local physical presence but sell digital goods and services in the economy to report and pay value-added tax (VAT).³⁷ Members of the OECD Forum on Tax Administration (FTA) are working collaboratively to develop a model framework for standardised reporting by platforms to enable effective collection and exchange of identification and transaction information for sellers between jurisdictions in appropriate circumstances.³⁸ This will likely improve an economy’s ability to capture aspects of digital activities and better estimate the size of the digital economy.

2. Measuring digital transformation

In response to the demand for more systematic and organised indicators to track the digital transformation, the G20 during Argentina’s 2018 presidency produced a toolkit consisting of 35 indicators that cover four dimensions of the digital economy: infrastructure; innovation and technology adoption; jobs and growth; and society (see Box A.2).³⁹

³² Nadim Ahmad and Jennifer Ribarsky, ‘Towards a Framework for Measuring the Digital Economy’ (paper prepared for the 16th Conference of IAOS/OECD Headquarters, Paris, France, 19–21 September 2018), http://www.oecd.org/iaos2018/programme/IAOS-OECD2018_Ahmad-Ribarsky.pdf.

³³ Australian Bureau of Statistics, ‘Measuring Digital Activities in the Australian Economy’.

³⁴ Statistics Canada, ‘Measuring Digital Economic Activities in Canada: Initial Estimates’, updated 9 May 2019, <https://www150.statcan.gc.ca/n1/pub/13-605-x/2019001/article/00002-eng.htm>.

³⁵ Statistics Canada; Australian Bureau of Statistics, ‘Measuring Digital Activities in the Australian Economy’; US Bureau of Economic Analysis, ‘Measuring the Digital Economy: An Update Incorporating Data from the 2018 Comprehensive Update of the Industry Economic Accounts’.

³⁶ UK Office for National Statistics, ‘The Feasibility of Measuring the Sharing Economy: November 2017 Progress Update’, 9 November 2017, <https://www.ons.gov.uk/releases/thefeasibilityofmeasuringthesharingeconomynovember2017progressupdate>.

³⁷ EY, ‘Taiwan Issues Ruling on New Tax Guidelines on Cross-Border e-Commerce Transactions’, 4 May 2017, <https://www.ey.com/gl/en/services/tax/international-tax/alert--taiwan-issues-ruling-on-new-tax-guidelines-on-cross-border-e-commerce-transactions>.

³⁸ OECD, *The Sharing and Gig Economy: Effective Taxation of Platform Sellers: Forum on Tax Administration* (Paris: OECD, 2019), <https://doi.org/10.1787/574b61f8-en>.

³⁹ G20, ‘Toolkit for Measuring the Digital Economy’ (G20, November 2018), <http://www.oecd.org/g20/summits/buenos-aires/G20-Toolkit-for-measuring-digital-economy.pdf>.

New indicators that are more reflective of the digital transformation are also currently being explored. For instance, the G20 toolkit includes an indicator to measure machine-to-machine (M2M) communication, an important underlying component of the IoT. There are also plans to start developing new indicators. It is important to monitor the size and impact of digital platforms given that they often provide digital economy ‘infrastructure’ that individuals, firms and even governments depend on. In developing these new indicators, economies and organizations have to be open to such alternatives and to diverse sources of data. They should also promote the use of interoperable data formats and tools, as these could facilitate greater data access and sharing.

Box A.2. The G20 Toolkit for Measuring the Digital Economy

The G20 Toolkit for Measuring the Digital Economy brings together various methodological approaches and indicators to better monitor the digital transformation. It also highlights the challenges and gaps that economies and international organisations (IOs) may consider for further work.

As the objective is to compile standardised and comparable indicators across the G20 economies, the toolkit focuses on existing indicators and methodologies. For the most part, the toolkit relies on indicators that have been developed by IOs with expertise and active workplans related to the digital economy such as the International Labour Organization (ILO), the International Monetary Fund (IMF), the International Telecommunication Union (ITU), the Organisation for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD) and the World Bank. They are categorised into four main themes as shown below:

| Theme | Description | Examples of indicators |
|----------------------------------|--|---|
| Infrastructure | Contains indicators on the development of physical, service and security infrastructures underlying the digital economy | <ul style="list-style-type: none"> Fixed broadband subscriptions per 100 inhabitants Mobile broadband prices Percentage of households with internet connections |
| Empowering society | Contains indicators which captures the evolving role of the digital economy in daily lives | <ul style="list-style-type: none"> Percentage of internet users age 16-74 year olds Registered mobile money accounts per 1,000 adults Percentage of individuals with specific types of information and communications technology (ICT) skills among internet users |
| Innovation and technology | Contains indicators that look at innovation in digital technologies, the role of ICTs as an engine for innovation and their adoption by businesses, among others | <ul style="list-style-type: none"> Number of IP5 patent families in artificial intelligence (AI) Industrial robot stock over manufacturing value added Diffusion of selected ICT tools and activities among enterprises |
| Jobs and growth | Contains indicators that evaluate how digital technologies are contributing to economic growth and employment creation | <ul style="list-style-type: none"> Employment of different categories of ICT specialists as a percentage of total employment Percentage of different sized enterprises engaged in sales via e-commerce ICT contribution to labour productivity growth |

Source: G20, ‘Toolkit for Measuring the Digital Economy’ (G20, November 2018), <http://www.oecd.org/g20/summits/buenos-aires/G20-Toolkit-for-measuring-digital-economy.pdf>.

The toolkit identifies two types of gaps and challenges. The first, methodological gaps, pertain to what existing indicators measure and the extent they capture the digital economy. The second, availability gaps, pertains to the lack of capacity and resources by economies to implement international standards to guide their statistical collection even if they exist. The toolkit also proposes actions to address these gaps and challenges.

To improve the current data collection and survey methodologies, OECD has revised their model surveys on the adoption and use of ICT by households and businesses. The revisions extended the scope of the surveys and included new indicators and themes such as protection of children in the online world, usage of ICTs in school, businesses' ICT expenditure and acquisition, and E-Government.⁴⁰

3. *Measuring how laws and regulations affect various aspects of the digital economy*

Tools measuring restrictions that could affect the digital economy are being developed by organisations such as the OECD and World Bank. The OECD Services Trade Restrictiveness Indicators (STRI) allow policymakers to see how measures in sectors that play important roles in the digital economy (e.g., telecommunications and logistics) could restrict trade. With the accompanying policy simulator, policymakers are able to observe how proposed regulatory changes might improve the current situation or make it worse.⁴¹ The World Bank Services Trade Restrictiveness Database has the same purpose.⁴² However, it employs with a different methodology and does not include a policy simulator. The OECD Trade Facilitation Indicators (TFI) cover the full spectrum of border procedures, allowing to identify how specific trade facilitation policies may affect at-the-border costs, including for digitally enabled trade in goods.⁴³ The OECD has also developed the Digital Services Trade Restrictiveness Indicator (Digital STRI). It identifies, catalogues and quantifies cross-cutting barriers that affect the trade in digitally enabled services, and also features an online policy simulator. It covers 46 economies, including 11 APEC economies.⁴⁴ Last but not least, organisations such as the European Centre for International Political Economy (ECIPE) have created databases that compile the approaches to cross-border data flows utilised by economies.⁴⁵

⁴⁰ OECD, 'The OECD Model Survey on ICT Access and Usage by Households and Individuals – 2nd Revision' (Paris: OECD, 2015), <https://www.oecd.org/sti/ieconomy/ICT-Model-Survey-Access-Usage-Households-Individuals.pdf>; OECD, 'The OECD Model Survey on ICT Usage by Businesses – 2nd Revision' (Paris: OECD, 2015), <https://www.oecd.org/sti/ieconomy/ICT-Model-Survey-Usage-Businesses.pdf>

⁴¹ OECD, 'Services Trade', accessed 19 September 2019, <http://www.oecd.org/trade/topics/services-trade/>.

⁴² World Bank, 'Services Trade Restrictions Database', updated 26 October 2017, <https://datacatalog.worldbank.org/dataset/services-trade-restrictions-database>.

⁴³ OECD, 'Trade Facilitation', accessed 19 September 2019, <http://www.oecd.org/trade/topics/trade-facilitation/>.

⁴⁴ OECD, 'Digital Services Trade Restrictiveness Index', accessed 19 September 2019, https://stats.oecd.org/Index.aspx?DataSetCode=STRI_DIGITAL

⁴⁵ European Centre for International Political Economy (ECIPE), 'Digital Trade Estimates Database', accessed 19 September 2019, <https://ecipe.org/dte/database/>.

Annex B:

Individual Economy Reports

TABLE OF CONTENTS

| | |
|--|-----|
| Individual Economy Report Questionnaire | 113 |
| AUSTRALIA | 116 |
| BRUNEI DARUSSALAM | 123 |
| CANADA | 128 |
| CHILE | 138 |
| CHINA | 144 |
| HONG KONG, CHINA | 150 |
| INDONESIA | 155 |
| JAPAN | 166 |
| KOREA | 175 |
| MALAYSIA | 180 |
| MEXICO | 188 |
| NEW ZEALAND | 195 |
| PAPUA NEW GUINEA | 202 |
| PERU | 207 |
| THE PHILIPPINES | 211 |
| RUSSIA | 216 |
| SINGAPORE | 221 |
| CHINESE TAIPEI | 225 |
| THAILAND | 237 |
| UNITED STATES | 243 |
| VIET NAM | 249 |

AEPR 2019: Structural Reform and Digital Economy

Individual Economy Report Questionnaire

This year's AEPR aims to discuss the linkages between structural reform and the digital economy, with a focus on analyzing how structural policies can help unleash the potential of the digital economy and contribute to a balanced, inclusive, sustainable, innovative and secure growth. As an important aspect of the AEPR, the Individual Economy Reports (IERs) provide an opportunity for economies to identify ways for structural reform to enhance the contribution of the digital economy to their economic growth. The IERs will be incorporated into the report, and will contribute to developing a broader picture of the lessons, gaps, challenges, and opportunities in implementing structural reform pertaining to the digital economy in the region. It will also contribute towards identifying avenues for regional cooperation and capacity building.

For the purposes of the questionnaire, we define structural reforms for the digital economy as reforms relating to: regulatory and legal framework, competition policy, public sector governance and management, ease of doing business. Policies are included if their ultimate aim is to contribute to the development of and promote inclusive growth in the digital economy. Balanced, inclusive, sustainable, innovative and secure growth are as defined in the APEC Leaders' Growth Strategy¹.

Examples include horizontal structural reforms and regulatory sandboxes, as well as those in specific sectors such as financial (including Fintech, Regtech and Suptech) and public services sectors. Economies may also wish to refer to the EC paper on three approaches of structural reforms for inclusive growth. Where an economy plans to provide a case study that it also wishes to use in this IER, the economy may cross-refer to that case study.

¹ https://www.apec.org/Meeting-Papers/Leaders-Declarations/2010/2010_aelm/growth-strategy.aspx

Questionnaire

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: _____

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: _____

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: _____

3a. (Specific to Financial Sector) Best Practices: Of the structural reform relating to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Regulatory framework for Fintech
- Regulatory framework for cryptocurrency
- Regulatory sandboxes
- Digital Banking
- Crowdfunding platforms
- Digital payments

- International remittances
- Personal and business loans
- Robo-advisors
- Cloud computing,
- P2P lending platform
- Use of open data on financial services
- Open Banking
- Others, please specify: _____

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

AUSTRALIA

1. Barriers and Challenges: Considering your economy’s current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Other’ and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
 - Competition policy
- Public sector governance**
 - Ease of doing business
 - Others, please specify: _____

Scoping and Measurement of the Digital Economy: A key barrier to implementing structural reforms for the digital economy is in identifying and measuring the potential gains and risks from changes in the digital economy. Difficulties quantifying the benefits of digital reform make it challenging to prioritise between projects and to communicate the benefits of the digitized economy to the public, which is concerned about potential risks.

Regulatory and Legal Framework: In the rapidly evolving digital economy, getting the balance between supporting innovation and regulating effectively is harder than ever. New technologies and business models emerge quickly and are difficult to forecast, rendering existing regulations redundant. Legislation needs to be tailored to innovative digital practices, including through technology-neutral and principles-based approaches; and regulation needs to be fit-for-purpose, outcomes-focused, adaptable and prepared for rapid change. If the regulatory system unnecessarily impedes business innovation, businesses may not adopt new technologies to grow and create jobs. Inconsistent regulations and standards are also costly to Australian businesses that need to operate across multiple jurisdictions; having consistent or equivalent regulations and standards across the economy, especially where these are aligned with international standards, helps researchers and businesses to quickly apply new technologies. The cross-border nature of the digital economy requires greater international regulator coordination and cooperation. Australia is at the forefront of shaping international rules and standards through many channels. For example, Australia is working to update international trade rules on e-commerce through the WTO and Australia’s Free Trade Agreements, to ensure they keep pace with technological change. Through Standards Australia, Australia is also leading the development of international standards for blockchain, and contributing funding to the development of those standards.

Public Sector Governance: Systemic barriers to data sharing and use, including legislative, technical and cultural barriers, inhibit government agencies’ abilities to share and realise the full potential of public sector data. Addressing these barriers will enable governments to harness the full potential of public sector data, and support broader structural reforms relating to the digital economy. Building public trust and confidence in governments’ use of data is a key challenge. Media coverage of Australian Government initiatives such as *My Health Record* and the *2016 Census* increased public awareness of government data activities, and raised public concerns around use of data. The 2017 Productivity Commission’s Inquiry (PC Inquiry) into Data Availability and Use highlights gaps and barriers to better public data sharing, including over 500 secrecy provisions restricting the sharing of public sector data. The report provided approximately 42 recommendations on how to reform the Australian data system to better facilitate the sharing and release of data. On 1 May 2018, in response to the PC Inquiry, the Australian Government announced an AUD65 million investment to implement a suite of reforms to improve the way data is accessed, shared and released, and to improve safeguards in our data system. These reforms are outlined in Question 3.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: _____

Australia is taking action to target policy gaps relating to data sharing and digital identity. We also recognise international standards and digital trade rules as a significant gap in enabling the growth and effective regulation of the digital economy.

Digital Identity: Australia’s Digital Transformation Agency (DTA) is currently developing the Trusted Digital Identity Framework, to support safe and efficient (e.g. interoperable) digital identities. This framework will ensure businesses, individuals and government agencies are identifiable online, and users feel assured that they are engaging in low risk, transparent interactions with actual service providers.

Data Sharing and Management: Australia is also developing frameworks to enable consumers to access and share personal data held by government and businesses. The proposed Consumer Data Right (see Q3), an extension of Open Banking, seeks to develop a framework to empower consumers to authorise safe and secure transfer of information between businesses that hold data, and digital service providers. The proposed Data Sharing and Release Act is a framework for use between government bodies and research organisations, and will allow consumers to access and use their government-held data.

International Cooperation on Digital Rules and Standards: Australia recognises the need for the development of a framework to support international regulatory cooperation and coordination. International standards for the digital economy would help to increase certainty for digital firms operating across borders, lower barriers to entry and create an environment in which companies are more confident in making investments.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business
- Other: Data reforms, cyber security**

Reforms from the Productivity Commission’s Inquiry into Data Availability and Use: In May 2018, the Australian Government released its response to the Productivity Commission’s Inquiry (PC Inquiry) into Data Availability and Use. The Government announced a suite of reforms, which seek

to balance privacy and security concerns with the benefits of being able to share and use data more efficiently. Three key reforms under development are:

- establishing an Office of the National Data Commissioner (ONDC) and appointment of an Interim National Data Commissioner;
- developing a Consumer Data Right to give citizens greater portability over their own data; and
- developing Data Sharing and Release legislation to improve sharing, use and re-use of public sector data.

The ONDC will design and implement a new data sharing framework, underpinned by new legislation to remove barriers and build public confidence. The ONDC will work alongside existing regulators to ensure the framework encompasses strong privacy and security protections. Once the new framework is in place, the ONDC aims to monitor and review the effectiveness of the new data sharing framework through a number of mechanisms, including an annual report, public data registries, and an accreditation model for participants in the system. The ONDC will also drive cultural change across the public service and regulate the new data sharing system, by providing guidance and advocacy to promote technical best practice and ethical uses of data. The Consumer Data Right, under development, is a framework to allow individuals and businesses to access and share their personal or confidential information safely and easily. It creates a legal basis to extend the concepts behind Open Banking to other sectors such as energy and telecommunications. The intention of the Consumer Data Right is to address the policy gaps in access to data, and the competition effects that arise from control of this access.

Public Sector Governance Groups on Public Data Management: In addition to the above reforms, various senior executive governance groups in Australia monitor implementation of the Government’s data agenda: the Secretaries Data Group, Deputy Secretaries Data Group, and the Data Champions Network. These groups were established in 2015 as part of the Australian Government’s response to the Public Data Management Report. They continue to provide strategic direction to the data agenda, and promote collaboration across the federal government, ensuring a consistent approach and leveraging expertise across agencies.

Cyber Security Strategy: Cyber security is a foundational element of the digital economy, particularly in fostering trust and confidence in the online environment. In 2016, the Government released Australia’s Cyber Security Strategy to secure our prosperity in a connected world. The Strategy includes investments of more than AUD230 million across five pillars of action for the period 2016-2020: national cyber partnership; stronger cyber defences; global responsibility and influence; growth and innovation; and a ‘cyber smart’ nation. The Government’s recent review of the Cyber Security Strategy has found that between 2016-18, significant progress has been made across its five pillars, and that Australia’s comprehensive approach to cyber security has yielded economy-wide benefits. A 2017 update on the Cyber Security Strategy has also been published online.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an **effective example**? Please **select from the following categories and elaborate**. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech
- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes
- Digital Banking
- Crowdfunding platforms

X Digital payments

- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Other

New Payments Platform (NPP)

In February 2018, the Australian Government launched the New Payments Platform (NPP) to support open access, fast payments in Australia. The NPP was developed in collaboration with industry, to enable households, businesses and government agencies to make simply addressed payments, with near real-time funds availability to the recipient, on a 24/7 basis. Each payment message is capable of carrying much richer remittance information than other systems. The NPP infrastructure supports the independent development of 'overlay' services to offer innovative payment services to end-users. The effectiveness of the NPP is being assessed in terms of the relative volume of payments, the ability of payment providers to gain access to the NPP, and the functionality of the NPP. In April 2019, 16 million transactions were processed through the NPP, amounting to AUD13 billion. This is still small relative to the volumes that pass through other retail payment systems. Nevertheless, it is growing steadily, and at least as quickly as some comparable overseas fast payment services when they were first introduced. There has been broad participation by many small financial institutions. Customers of around 50 small banks, credit unions and building societies were able to make and receive fast payments from the first day of NPP's operation, and that number has since grown to nearly 70.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- X Risk management**
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)

ASIC Internal Natural Language Processing (NLP) Trials

Financial Promotions NLP Trials: The aim of the NLP Promotions Trial was to investigate the feasibility of automatic identification of risk across promotional material relating to consumer credit. A small subset of possible breaches of the National Credit Code (NCC) was examined during the trial. The rules developed perform well on the supplied samples (print and web banner advertisements) and were applicable to a broader web corpus of promotional material.

Financial Advice NLP Trials: ASIC manually reviews many financial advice files each year. In this trial, we investigated the application of NLP to Statements of Advice (SOA). Several Key Risk Indicators (KRIs) were studied, with the intention of extracting important information and aiding judgements as to the risk and compliance of the financial advice documents. Varying levels of success were achieved: simpler KRIs led to models with good accuracy while more complex and judgement-

based KRIs had lower performance. Our results suggest that, with appropriate investment, NLP has strong potential to assist staff in the financial advice review process.

Disclosure and Fundraising Document NLP Trials: ASIC investigated the application of NLP to Product Disclosure Statements (PDS) for financial products and fundraising documents for offers of securities. The aim was to investigate the potential of NLP to automatically prioritise PDS documents by level of compliance risk and extract key information from fundraising documents. This would reduce the number of documents for manual review and enable analysts to prioritise documents for review based on risk. During the trial an automated framework was developed that extracted text from PDF documents and applied NLP rules. A promising number of rules performed at high accuracy. With further development, the system could be deployed into a working platform.

Market Announcements and Financial Reporting NLP Trials: With over 100,000 market announcements made each year by publicly listed companies, it is not practical for ASIC to have complete oversight of information disclosed in all of the announcements. It is useful to be able to cluster similar types of announcements and classify them based on their content, so the analyst is then able to filter their analysis based on relevant topics. This trial focused on investigating whether document processing and NLP could be used to filter events from market announcements and extract certain financial statement line items in company financial reports.

More information on ASIC's NLP trials is available [here](#). More information on ASIC's Regtech Initiatives more broadly is available [here](#).

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Australia's Digital Economy Strategy: In December 2018, the Australian Government launched its Digital Economy Strategy, 'Australia's Tech Future'. The Strategy sets out a seven year vision (2018-2025) for how businesses, government and the community can work together to maximise the benefits and opportunities enabled by advanced digital technology. The Strategy identifies the further actions required to ensure all Australians can thrive in a global digital economy. These include:

- ensuring education and training meets current and future needs;
- facilitating investment in enabling digital infrastructure;
- improving access to, and use of, data while maintaining strong data safeguards;
- improving trust, confidence and security around digital activities;
- ensuring regulatory frameworks are flexible, adaptable and fit-for-purpose;
- delivering digital government services that are secure, fast and easy to use; and
- championing an open, free and secure cyberspace internationally.

The implementation of the Strategy includes monitoring how Australia is tracking against our stated objectives and outcomes, in order to guide future policy priorities and efforts.

Regulatory Frameworks for Data Management and Sharing: As detailed in previous questions, the Australian Government is developing frameworks to support safe and efficient access to data held by government and businesses: the Consumer Data Right will increase the ability of consumers to access data about themselves collected by businesses; and the Data Sharing and Release Act will make it easier for individuals to access government data relating to themselves. Under these frameworks, individuals will be able to request that data be provided either to themselves or to accredited third parties. These reforms are expected to increase competition and provide a better standard of service for consumers.

Digital Infrastructure: Other initiatives to support the growth of the digital economy include improving Australia's digital infrastructure. The Australian Government has committed to delivering high-speed broadband to all Australian homes and businesses over the National Broadband Network (NBN) by mid-2020. Around 80 per cent of Australian premises can now order services over the NBN. Fifty seven (57) per cent have already taken up a service via the NBN. The Government's NBN commitment will see Australia become the first continent fully connected to high-speed broadband by 2020, thus ensuring all Australians will have the opportunity to participate in the digital economy, and benefit from its growth.

E-government: Finally, through the Digital Transformation Agency the Australian Government is working to digitalise government service delivery, making services easier to engage with and better tailored to individuals' needs. This will increase the efficiency with which the government can assist citizens, as well as the effectiveness of the services provided (see [Digital Transformation Strategy](#)).

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

The Australian Government is reforming the digital economy in a way that promotes inclusivity and equality. For example, the Consumer Data Right (under development) will initially be applied to basic services, such as basic banking products, retail energy and retail telecommunications. This will help achieve better outcomes for vulnerable consumers. The Government's commitment to deliver high-speed broadband to all Australian homes and businesses over the National Broadband Network (NBN) by mid-2020 also supports inclusivity. As the NBN becomes available to more Australian homes and businesses, it will enable greater participation in the digital economy for all Australians. This is particularly important for those areas that have traditionally had poor broadband availability, such as regional and remote Australia.

However, there are significant challenges to ensuring that the benefits of reform are shared equitably, and that shifts to the digital economy do not unfairly impact disadvantaged or vulnerable groups of people. Due to the dynamic structure of the digital economy, understanding the flow of benefits to different groups is very difficult and can therefore make it hard to justify projects on equity or redistributive grounds. This can result in governments pursuing policies that are clearly beneficial to all cohorts, rather than those that particularly benefit marginalised groups. The findings from the recent OECD report 'Bridging the Digital Gender Divide' (commissioned by Australia) show that more needs to be done to address gender barriers in the digital world. These barriers sometimes relate to affordability and a lack of education, but inherent biases and socio-cultural norms represent significant barriers that obstruct women and girls from pursuing opportunities offered by the digital transformation.

The Australian Government is implementing a range of domestic policies aimed at encouraging more women to pursue STEM education and careers, and entrepreneurial opportunities. Since 2016, the Australian Government has invested significantly in boosting the participation of girls and women in Science, Technology, Engineering and Mathematics (STEM) education and careers. This includes the expansion of the Science in Australia Gender Equity (SAGE) pilot, support for the inaugural Women in STEM Ambassador, and a 'Girls in STEM' Toolkit to help school-age girls understand what a STEM career may involve and assist them to match their interests to a STEM career. The Future Female Entrepreneurs Program is supporting and enabling the development of women entrepreneurs at an early stage. Through a digital platform, in-person workshops and mentoring, young women and girls will have the opportunity to learn the skills required to start their own small business. The Government is also supporting Australian women to found startups. The initiative SheStarts is an accelerator program that is helping women to build tech start-ups; and the Boosting Female Founders Initiative will provide targeted funding to support women-led startups by enabling more women to access finance to take their ideas to the global stage.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

As a convener and coordinator for regional economic integration and incubator of new and innovative policy initiatives, APEC is well-positioned to lead regional responses to the shared challenges of the digital economy. In particular, APEC could drive collaboration to develop common approaches to standards and measurement, and cross-border regulatory frameworks. APEC could:

- Lead and coordinate the development of common definitions and measurement methodologies and standards across the region;
- Develop a regional approach to collecting data on digital services, productivity and inclusion;
- Strengthen the capacity of statistical agencies in APEC economies to measure the digital economy, by sharing best practice and expertise;
- Facilitate information-sharing on regulatory approaches to emerging technologies;
- Use sandboxes to develop and trial new approaches to regulation;
- Facilitate greater data sharing cooperation between government and the private sector (to allow for more granular measurement of the digital economy).

In many cases, APEC would work with partners to better leverage, and align with, broader international efforts and initiatives.

BRUNEI DARUSSALAM

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business
- Others, please specify: _____

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business
- Others, please specify: _____

For questions 1 & 2:

- To support the growth and development of the digital economy, it is imperative to determine the parameter of the digital economy in order to gauge the extent of it. Equally important is to also identify and implement the enablers to digital economy such as, the legislation on digital signature and digital data governance. These are now the priorities under the Digital Economy Council (DEC).
- Public sector governance is also critical to support the digital economy whereby best practices such as transparency and accountability is enabled by digital technology. This is continuously evolving by enhancing the importance of instilling the usage of digital technology in governance.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business
- Others, please specify: _____

Under the purview of the Ministry of Transport and Infocommunications (MTIC), there has been progress in institutional reforms that contribute to the growth of digital economy.

The Digital Economy Council (DEC) was recently set up and its first meeting convened in April 2019 under the co-chairmanship of the Minister at Prime Minister's Office and the Second Minister of Finance and Economy, with the Minister of Transport and Infocommunications, alongside other high level membership from relevant Ministries and representatives from the private sector. The DEC serves as a platform to give strategic leadership on initiatives for the digital economy at the economy level.

Cybersecurity is a key enabler for the growth of the digital economy. In this regard, the Minister of Transport and Infocommunications has been appointed as the Minister-in-charge of Cybersecurity in line with regional best practices. This offers an effective platform for coordination and support for the progress of digital economy in Brunei Darussalam.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech
- Cryptocurrency (digital asset that uses cryptography for security)
- Regulatory Sandboxes**
- Digital Banking
- Crowdfunding platforms**
- Digital payments**
- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform**
- Open Banking (a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify: _____

Regulatory sandbox allows innovative products or services to enter the market while the regulator develops appropriate regulations;

Crowdfunding addresses funding gaps and provides an alternative source of funding for SMEs.

Digital payments allow non brick and mortar sellers (e-commerce) to access a wider market as having a physical location becomes less of a factor for customers to make purchases.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management

- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

A major challenge in addressing the digital economy is the implications and required coordination across multiple stakeholders and sectors. In light of this, the Government of Brunei Darussalam has recently set up the Digital Economy Council. In the short term, the Council will focus on determining the key metrics for measuring progress and development of a necessary action plan to implement/support the necessary policies and/or infrastructure to support the development of the Digital Economy Landscape.

With respect to public sector governance, The Government of Brunei Darussalam has prioritized the realization of the Digital Government Strategy 2015-2020 which falls under the purview of the E-Government Leadership Forum (EGLF) and the E-Government National Centre (EGNC). EGNC is the centralized organization that oversees the development of IT personnel, centralize procurement of IT equipment and to provide common Government-wide applications and shared IT Services among all Ministries.

Initiatives for a Digital Government have been introduced to support the achievement of the Brunei Vision 2035 which will support greater efficiency and collaboration, and to improve all stakeholders' experience, Government processes and services which require transformation and continuous improvement. Information technology enables the seamless flow of information across the Government, citizens and businesses leading to greater transparency and better insights for informed decision making. Brunei Darussalam has been quick to adopt new tools in their current business processes and continuously analyses the possibilities of change brought about by these new technologies.

Six focus areas have been identified to realize the vision and mission:

1. Service Innovation: Government agencies to develop new and innovative ways to deliver services to citizens and businesses with greater transparency and accountability
2. Security: Government to maintain situational awareness of its digital assets and environmental at all times. Adequate measure will be taken to minimize risks and increase capabilities to respond to cyber-incidents effectively.
3. Capability & Mind-Set: To foster a forward-thinking mind set and collaborative culture. This will help to increase the speed of adopting new systems, rate of utilizing systems and proficiency of Government officials.
4. Enterprise Information Management: The Government manages the explosive growth of data by structuring, describing and governing information assets that can then be used to generate insights that aid decision-making.
5. Optimisation: The Government to optimise the use of these digital assets to ensure effectiveness, minimise redundancy and maximise value for money.
6. Collaboration & Integration: The Government agencies to work together to face an increasingly complex environment that requires a Whole-Of-Government approach to enhance the collaboration and integration of Government business processes.

In relation to the Digital Government Strategy, an on-going activity is to improve data sharing across government agencies. These improvements to the National Identity Management system enables better interagency support of businesses, as well as improved emphasis on data governance for policymaking.

With respect to Ease of Doing Business (EODB), the Government recently launched BusinessBN as a whole-of-government service that aims to provide businesses with essential information on government services and reforms related to doing business in Brunei Darussalam. First launched in January 2016 and revamped in the following year, it acts as a single portal that provide the business community with easy access to information on a range of government procedures, legislation, guidelines and services related to doing business. Meanwhile, OneBiz has also been introduced as a one-stop online portal to ease the starting up of businesses in Brunei Darussalam. This portal allow businesses to apply for their business online, tracking the application process status and enable with online payment once the business application has been approved. Plans are currently underway as part of the Digital Government Strategy above to further improve the OneBiz portal to house more services and increase user-friendliness.

As a member of ASEAN, Brunei Darussalam is also implementing the various work plans on digital economy such as the ASEAN Work Programme on E-Commerce which is being coordinated across the ASEAN sectoral bodies.

5. Inclusion: Describe your economy’s barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

To address the barriers and challenges, and furthermore support inclusive growth, the MTIC continues to engage key stakeholders in any policy formulation and implementation with regards to the digital economy. This is in line with the ‘Whole of Economy’ approach which emphasises the importance of coordinated and holistic approach on any cross-cutting issues.

On metrics and benchmarks, currently there are no real metrics available for inclusion/inclusive growth in the Digital Economy. The most prominent metric would be the use of internet connectivity within the economy. According to statistics from the Authority of Info-communication Technology Industry (AITI) mobile broadband penetration stands at 131.9% (penetration per 100 inhabitants), while fixed broadband penetration stands at 48.7% (penetration per household).

According to a recent E-Commerce Survey by AITI (of which respondents were roughly equal among men and women), 76% of Bruneians are already users of E-Commerce across a variety of age groups. Older age groups tend to be more reluctant to use E-Commerce due to trust issues which includes credit/debit card fraud and trust in online stores. Only 6% of total respondents avoid E-Commerce due to lack of knowledge.

We are guided by the general economic indicators set by the Department of Economic Planning and Development, Ministry of Finance and Economy.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

It is one of Brunei Darussalam’s strategic policies to leverage on our membership in regional and international organisations, including APEC. It is a platform for policy discussions, exchange of best practices and enhance networking among APEC economies and relevant stakeholders such as the APEC Business Advisory Council on issues of common interests.

Better definition and measurement of the Digital Economy would be beneficial in standardizing discussion and comparison of the Digital Economy readiness. Capacity building programmes to improve policy implementation to support and realize the benefits of the Digital Economy.

In addition to this, participation in regional organisations such as ASEAN and international trade forums like the World Trade Organization also provided Brunei Darussalam with frameworks or guidelines that could supplement domestic policies on digital economy. Such frameworks include the ASEAN E-Commerce Agreement, which was signed in 2018 that reiterated commitment to creating conducive environment for e-commerce, and the Joint Statement on E-Commerce which highlighted the intention to commence WTO negotiations on trade-related aspects of electronic commerce and seek to achieve a high standard outcome that builds on existing WTO agreements and frameworks with the participation of as many WTO members as possible.

CANADA

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: Digital Adoption**

Regulatory & Legal Framework

Economic Strategy Tables chaired by industry leaders for six high growth potential sectors were established in 2017 to identify challenges and opportunities to innovation, including in digital industries. Their report, released in September 2018, emphasized the need for regulatory agility and a modern regulatory system that fosters innovation and adoption by reducing the burden of multiple reporting requirements for the same issue and focusing on outcomes. At the same time, regulators are under increasing pressure to balance the traditional regulatory objectives of predictability and consumer protection with promoting growth and innovation.

In addition, many disruptive technologies are inherently cross-sectoral and therefore necessitate regulatory cooperation and/or harmonization, as well as interdepartmental approaches. Digitally-enabled innovations that operate across two or more traditional sectoral areas may not fit easily into the remit of regulatory departments, while dealing with multiple regulators increases complexity, and costs, for industry.

Digital Adoption

While Canada has made great strides through targeted investment to bridge the digital divide, due to its large and unique geography, there are still those who lack access to high-speed, affordable digital services, particularly in rural, remote and Indigenous communities. Small to medium-sized enterprises (SMEs) are less likely to adopt technology than larger firms: 44 percent of small firms used advanced or emerging technologies in 2017, compared with 53 percent of medium ones and 63 percent of large ones. (<https://www.statscan.gc.ca/n1/daily-quotidien/190313/dq190313b-eng.htm>).

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: Digital Literacy**

Scoping & Measurement of the Digital Economy

There is a need to develop better statistics on the size of the Canadian digital economy and the speed of digitalization by sector and region. Statistics Canada recently released the first measuring of the size of the digital economy in Canada, which provides estimates on the value, growth and nature of digital economic activities in Canada over 2010 to 2017. It is based on breaking out three categories

from the Canadian supply and use framework: digitally enabled infrastructure, digitally-ordered transactions and digitally-delivered products.

Findings show that the digital economy is increasingly important, with faster growing GDP (40%) and jobs (37%) than the overall economy. Yet statistical measurements need further improvements to capture the full extent of the digital transformation, including the economic values of digital-enabled transactions and digital-delivered transactions, the future of work, the role of digital marketplaces, the consumption of “free” products and services, the use and international trade of digital products, and the value of data and related intangible assets. There is increasing recognition that “digitalization” is a process that is spreading throughout the economy rather than a sub-sector of the economy. While efforts to identify the products and services of certain sectors as “digital” and track them is a good first step, it should not be seen as the end-point to efforts to measure the digital economy. Statistics Canada is continuing to work on this measurement issue to better estimate the size and speed of digitalization in the Canadian economy.

<https://www150.statcan.gc.ca/n1/daily-quotidien/190503/dq190503a-eng.htm>

Digital & Data Literacy

In the digital economy, Canadians must be equipped with the right competencies and be provided with the flexibility to meet the evolving demands of the workplace. To grow and scale-up, firms must be able to fill skills gaps by gaining better access to global talent and recruiting from a broader, deeper pool of Canadians with strong STEM (science, technology, engineering and math), business, creative, and digital skills. All Canadians, including youth, women, Indigenous people, and other underrepresented groups, must continually train and upskill, and have more opportunities to develop key skills. They must also be connected to high-speed internet to participate in the digital economy.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business**
- Others, please specify: Innovation Policy and targeted support for digital firms**

Regulatory and Legal Framework

In September 2018, the Government implemented the Cabinet Directive on Regulation (CDR) to create a stronger foundation for economic growth and regulatory modernization in Canada. The CDR is the set of rules that regulators must follow when developing, implementing and reviewing regulations. It ensures that decisions are based on evidence and are in the best interest of Canadians. The CDR contains new elements that reflect important evolutions in regulatory policy. One of the Directive’s core principles is that regulations should aim to support and promote inclusive economic growth, entrepreneurship and innovation for the benefit of Canadians and businesses.

<https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/guidelines-tools/cabinet-directive-regulation.html>

Ease of Doing Business

The previous suite of federal government programs for supporting innovation in Canada was difficult to navigate and a number of overlapping programs had similar mandates. Other programs were too narrowly focused for today’s economy. In addition, many Canadians simply did not know where to

go to get government support, preventing them from capitalizing on opportunities to grow and compete.

Canadian firms need a clear point of entry to a streamlined suite of relevant business innovation programs that meet their specific needs at different points along the innovation continuum — whether they are looking for funding, tax credits, expert advice, wage subsidies, or forming new partnerships. As a result, they have asked for a simple, easy to access, and coherent suite of programs that are tailored to their specific situations.

The Government took on a horizontal review of business innovation and clean technology programs across every federal department during 2017. This resulted in the launching of Canada's Innovation and Skills Plan in Budget 2017, with a significant reduction in the number of separate business innovation programs — from 92 to about 35. All government innovation support programs are now accessible through the Innovation Canada digital platform, which integrates artificial intelligence technology to enhance program matching to help firms find programs best suited to their needs. In addition, more funding are dedicated towards innovation support programs, creating four flagship platforms, each targeting support at a different critical stage of firm growth:

- 1) *National Research Council-Industrial Research Assistance Program* targets applied research and commercialization – It provides funding and consulting services to help SMEs conduct research and commercialize technologies.
- 2) *Regional Development Agencies* target scale-up and export – They offer a suite of programs to help firms adopt technologies, grow and enter new markets; to support regional growth across Canada; and to support women and Indigenous entrepreneurs, as well as clean technology companies.
- 3) *Strategic Innovation Fund* targets large-scale, later-stage funding – It supports large-scale projects that can lead to significant job creation, including R&D, technology transfer and commercialization, growth and firm expansion, attraction of large-scale foreign investment, and creation of new partnerships between researchers and industry.
- 4) *Trade Commissioner Service* targets international market linkages – It helps firms of all sizes navigate international markets by providing insights and access to international contacts that facilitate entering new markets and exporting.

Other government programs, especially those provided by the Business Development Canada (BDC) and Export Development Canada (EDC), complement the efforts of the four flagship programs in helping Canadian firms meet the scale-up challenge. The BDC's financing and advisory services help innovators transform their ideas into successful companies, and existing high-growth firms reach new heights. EDC provides the financing, insurance and loan guarantees that firms need to go global and export to new markets. Due to Canada's small domestic market, exporting is critical for Canadian firms looking to become globally competitive anchor firms that will drive Canada's innovation ecosystems.

Digital Skills and Literacy

Strengthening the digital skills and literacy of Canadians, and providing them with the tools they need, is key to maximizing economic and social benefits for all in a digital and data-driven world.

That is why Canada's Innovation and Skills Plan includes programs such as CanCode, It support the youths to learn coding at a young age to develop analytical thinking and foster problem-solving techniques important in in-demand STEM fields. This helps prepare youths for opportunities in the workplace of the future and creates a high-quality talent pool for Canadian businesses.

CanCode works through 21 not-for-profit organizations at local, regional and economy level to support school-age opportunities for coding and digital skills development. It targets underrepresented groups, such as girls and Indigenous youth. CanCode supports partner organizations in providing K-12 (kindergarten and Grade 1 through 12) students and their teachers with training to introduce digital skills, coding and related concepts into the classroom.

The first two years of CanCode proved to be a huge success—it has provided coding training to over 1.3 million students, of which approximately 43 percent are girls, 7 percent are Indigenous, and 17 percent live in rural, remote, and Northern communities. Over 61,000 teachers have participated so far in the CanCode initiatives. Not only has the program surpassed its target of reaching 500,000 by March 2019, but it has also doubled its target, providing students with the digital skills needed to succeed in today's economy.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

X Fintech

- Cryptocurrency
- Sandboxes
- Digital Banking
- Crowdfunding platforms
- Digital payments
- International remittances
- Personal and business loans
- Robo-advisors
- Cloud computing,
- P2P lending platform
- Use of open data on financial services

X Open Banking

- Others, please specify: _____

Open Banking and reforms to support Fintech and Fintech collaboration with federally-regulated financial institutions were two potential structural reforms that arose out of the Government of Canada's most recent review into its federal financial sector framework.

Owing to sunset clauses in its federal financial statutes, Canada conducts a regular renewal of the federal financial sector framework (generally targeting every five years). These regular renewals provide an opportunity to consider how corresponding legislation and regulation positions the federal financial sector framework for the future and ensures that it continues to meet the changing needs of Canadians.

During the most recent review, Finance Canada led two consultation exercises (in 2016 and 2017) to discuss considerations and potential policy approaches to supporting a more competitive and innovative financial sector. Stakeholders observed that the sector is entering a new period of innovation, with Fintechs at the leading edge. Many comments made clear that Canadians benefit through greater access, choice, and competition from the presence of new market entrants and a framework that encourages innovation in financial services. Stakeholders also noted that the sector is adapting to an evolving business environment, both at home and abroad. They urged the framework to keep pace with changes in the business models of financial institutions.

Following this stakeholder engagement, the Government proceeded with two reforms, announced in the 2018 federal budget.

The first reform is clarifying the Fintech business powers of federal-regulated financial institutions. Stakeholders noted an opportunity to modernize the current statutory limitations in order to facilitate investments by federally regulated financial institutions' ability to leverage technology and other commercial activities in-house.

Federally regulated financial institutions are generally prohibited from commercial activities and investments. This long-standing policy keeps institutions focused on their core area of expertise: financial services. Over time, flexibility has been incorporated into the federal financial sector framework to accommodate technology-driven changes in the business of financial services.

Legislative amendments were made through the *Budget Implementation Act 2018 I*, to enable federally-regulated financial institutions to invest in firms that blend financial and commercial services, and expand financial institutions' ability to undertake in-house commercial activities and corresponding investments that are related to the provision of financial services. These new flexibilities are subject to forthcoming enabling regulations.

The second reform is a review into the merits of open banking, with a view to determining whether an open banking framework would deliver positive results for Canadians. Open banking has the potential to offer Canadian consumers—including small businesses—a secure way to control the sharing of their financial transaction data with financial service providers, allowing them in turn to benefit from a broader range of financial products and services at more competitive prices. This could better serve consumers and grow businesses and markets, benefitting Canada's economy as a whole.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)**
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

Canada's federal anti-money laundering legislation, the *Proceeds of Crime (Money Laundering) and Terrorist Financing Act (PCMLTFA)* was amended in 2014 to cover businesses dealing in virtual currencies as money services businesses (MSB) or foreign MSBs, as applicable. These amendments are subject to enabling regulation and not yet in force.

Draft AML regulations creating obligations for prescribed entities facilitating specified virtual currency transactions have been pre-published for public consultation. The regulations are subject to change. Under the proposed regulations, businesses would be dealing in virtual currency (VC) when they provide virtual currency exchange or value transfer services. Businesses that offer virtual currency exchange services include those that offer the exchange of funds for virtual currency, virtual currency for funds, or one type of virtual currency for another type of virtual currency.

Businesses that offer virtual currency value transfer services include those that offer the transfer of virtual currency at the request of a client, or the receipt of a transfer of virtual currency to be disbursed to a client. This would include instances where a centralized VC administrator or hosted wallet provider (with some custodial responsibility over the VC) receives VC that is, or is to be, disbursed to a client. Financial entities that provide virtual currency exchange or value transfer services will also have specific obligations under the regulations.

All other business sectors subject to the regulations, which include accountants; Agents of the Crown; British Columbia notaries; casinos; dealers in precious metals and stones; life insurance companies, brokers and agents; real estate brokers and developers; and securities dealers, would have regulatory obligations when they receive an amount of \$10,000 CAD equivalent or more in virtual currency.

Once the legislative and regulatory amendments are in force MSBs and foreign MSBs that are engaged in the business of dealing in virtual currency will need to register with FINTRAC (Canada's financial intelligence unit). In the process of doing so, the business will be required to provide an extensive list of information to FINTRAC, including:

- Identifying information on the business and person applying on behalf of the business;
- Legal status (sole proprietorship, corporation or other corporate structure);
- Date and jurisdiction of incorporation;
- Incorporation number;
- Business number and place of issue;
- Identifying information on the chief executive officer, the president, every director, every person or entity that owns or control 20 per cent of the business;
- Where the business' banking accounts are being held (account number, etc); and
- Approximate annual value of VC activities conducted by the business.

There is no limit imposed on the business operations under the PCMLTFA. The only requirement to operate legally in Canada is to be fully registered with FINTRAC.

In terms of fitness and priority of director and senior management, the PCMLTFA requires that the directors and senior management of the MSB have not been criminally convicted of certain criminal offenses in Canada or abroad. Those offences are listed in the PCMLTFA and include serious drug offences, money laundering, terrorism, fraud-related offences, and criminal non-compliance with the PCMLTFA or its foreign equivalents.

Regulatory guidance specifying regulatory expectations for entities subject to the Act and Regulations will be published when the Act and Regulations are in force. These legislative amendments will come into force once associated regulatory amendments are published in the Canada Gazette Part II.

A consolidated version of the PCMLTFA, including amendments not yet in force can be found at the following link: <https://laws-lois.justice.gc.ca/eng/acts/P-24.501/>

Pre-published draft of the regulations can be found at the following link: <http://www.gazette.gc.ca/rp-pr/p1/2018/2018-06-09/html/reg1-eng.html>

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Regulatory and Legal Framework (incl. Sandboxes)

In Fall 2018, the Government of Canada announced the creation of the Centre for Regulatory Innovation (CRI). The CRI will work as a convener and focal point that is business-facing, helping businesses connect with relevant regulators and managing a roster of sandboxes—such as a physical space with regulators onsite while new systems are being tested—that support innovation and competitiveness, while also ensuring that Canadians’ expectations around the protection of health, safety and the environment continue to be met. The Centre will support a whole-of-government approach to regulatory experimentation in order to promote innovation and competitiveness.

To effectively implement an agile regulatory system at all levels, the Government of Canada has also introduced an annual Regulatory Modernization Bill to help eliminate barriers to innovation and to enable agile regulations that will remove outdated requirements in federal legislation. This will allow the Government to quickly clean up irritants across sectors, and will focus on facilitating innovation and allowing greater regulatory experimentation in Canada by amending legislation to confer authority for regulatory sandboxes and pilots.

Innovation and Digital Economy

Innovation is the key to competitiveness, productivity, economic growth, creating good jobs, and improving life for all Canadians. To become one of the most innovative economies in the world, Canada must build a culture of innovation, where Canadians can embrace change and have the right skill sets and tools to leverage emerging opportunities to compete in the global economy.

The multi-year Innovation and Skills Plan (ISP) is Canada's response to this new reality, redefining the innovation ecosystem. The ISP builds on Canada's innovation strengths and addresses areas of weakness along the innovation continuum: from people and skills, through to fundamental and applied research, building innovation ecosystems, commercializing ideas and starting-up companies, to exporting and scaling-up globally competitive companies across all sectors of the economy. At its very core, the ISP builds around Canada's competitive advantage: its people.

The ISP's integrated approach supports firms at all points along the innovation continuum and Canadians at every stage of their lives. Emphasizing partnerships, it brings together stakeholders from across the innovation system. It embraces inclusivity and fosters the participation of traditionally underrepresented groups in the innovation economy. It strengthens Canadian leadership in key sectors by removing barriers to growth and fostering innovation in potential high-growth areas. The ISP is firmly rooted in four interconnected and mutually reinforcing pillars:

- 1) **People and Skills:** Ensuring businesses have the right pipeline of talent to succeed and equipping Canadians with the tools, skills, and experience they need to succeed throughout their lifetimes.
- 2) **Building Ecosystems:** Science, Technology, and Superclusters through new partnerships, bridging the gap from idea, to commercialization, to growing globally-minded firms.
- 3) **Investment, Scale-up, and Growing Companies:** Attracting investment, supporting the growth of leading Canadian companies and start-ups, and exporting.
- 4) **Program Simplification and Reorganization:** Offering a timely, client-centric single window in the delivery of business innovation programs in every region.

For more details on the ISP see: https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00105.html

For performance targets see: https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00083.html

While the ISP has taken major steps and made significant progress, work must be done to maintain Canada’s competitiveness, strengthen regional ecosystems, and reinforce leadership in areas of

highgrowth. Technology is not only accelerating changes in the workplace, but also increasing the integration and convergence of industry sectors. New technologies, such as artificial intelligence, are transforming existing industries and creating new business models. They are offering new sources of growth, while presenting new challenges related to the issues of trust and privacy. These opportunities raise the risk of creating new digital divides without strong connectivity for all Canadians.

That is why Canada launched its Digital Charter in May 2019. It is a principles-based approach that relies on governments, citizens and businesses working together to ensure that privacy is protected, data is kept safe, and Canadian companies can lead the world in innovations that fully embrace the benefits of the digital economy.

The Charter also recognizes that all Canadians need to have the tools for full participation in the digital and data economy. This means moving towards an economy-wide target of 100% of Canadian homes and businesses connected to the internet with speeds of 50/10 Mbps by 2030. It also means providing work integrated learning programs to connect young Canadians with potential employers that will help them develop the digital skills they need to succeed in the future workplace.

For more info see: https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00108.html

5. Inclusion: Describe your economy’s barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

In 2018 APEC’s Economic Committee approved the policy document *Structural Reforms For Inclusive Growth: Three Approaches*. The second approach involves deepening the application of core structural reforms that have the greatest potential to support inclusion, and the third approach (the integrated approach) involves coordinating core structural reforms with supporting policies and programmes. These more holistic approaches have the potential to tackle deep-rooted structural barriers to inclusion, for example by supporting the full and equal participation of women in the economy (*Three Approaches* pp. 10, 24 and ff.)

Canada’s approach to the digital economy is anchored in core structural reforms such as ease of doing business and competition policy. However, it also includes a range of supporting policies and programs to foster an inclusive innovation culture and ensure that all Canadians are able to participate fully in the digital economy, including members of underrepresented groups, such as youth, women, Indigenous people, seniors, Canadians with disabilities, newcomers, and residents of rural and remote communities. The Innovation and Skills Plan (ISP) is implementing targeted initiatives to give these groups access to the skills, technologies, funding, and other resources that they need to seize new economic and social opportunities.

Most metrics used to measure progress and establish benchmarks are compiled and computed by Statistics Canada’s Centre for Gender, Diversity and Inclusion Statistics, which has now received permanent funding. Statistics are updated at various frequencies varying between monthly to annually to periodically (e.g. every three or five years). Additionally, Statistics Canada publishes on a regular basis a [gender-based statistical report](#) which provides an overview of women and education, including their integration into STEM fields and their entry into and exit from that field.

Some examples of programs that support inclusion under the Innovation and Skills Plan (ISP)

The [Connect to Innovate](#) program is investing CAD\$500 million in rural and remote communities across Canada, helping Canadians to fully participate in, and benefit from, the digital economy. This program is helping to build high capacity internet connection into more than 900 rural and remote communities, including 190 Indigenous communities. The [Connecting Families](#) initiative helps

Canadian families to access affordable home internet. In addition, the Accessible Technology Program provides support for the development of assistive and adaptive digital devices and technologies to help Canadians with disabilities take full advantage of technology.

CanCode equips Canadian youth, including traditionally underrepresented groups, with the skills they need to be prepared for further studies, including advanced digital skills and science, technology, engineering and math (STEM) courses, leading to the jobs of the future. CanCode has a focus on reaching girls, Indigenous youth, youth with disabilities, and youth living in rural, remote and northern communities to increase their representation in science, technology, engineering and mathematics training. Additionally, by ensuring that all CanCode programs are free to participants, CanCode helps to reduce income-based barriers to participation.

The Youth Employment and Skills Strategy (YESS) has been modernized and going forward will focus on providing supports to youth, particularly those facing barriers to employment, to gain essential skills, including digital skills and work experience. Digital Skills for Youth (DS4Y), part of YESS, connects underemployed recent post-secondary graduates with small businesses and not-for-profit organizations where they can gain meaningful work experience to help them transition to career-oriented employment. Program participants are able to use the skills acquired during their studies and apply them in a professional setting. Moreover, they will be able to upskill if required to better meet the demands of the labour market. The Computers for Schools program, also part of the YESS, has provided 7,500 refurbished computers to Syrian refugees in Canada.

The Digital Literacy Exchange program facilitates and encourages the participation of underrepresented groups in the digital economy by investing in initiatives that provide them with the necessary digital tools, access and skills development opportunities.

Innovative Solutions Canada is a new program with over \$100 million dedicated to supporting the scale up and growth of Canada's innovators and entrepreneurs by having the federal government act as a first customer. Twenty participating federal departments and agencies will set aside a portion of funding to support the creation of innovative solutions by Canadian small businesses. Encourage procurement from companies led by under-represented groups, such as women, Indigenous, youth, disabled individuals, LGBTQ+ and others.

The Strategic Innovation Fund provides support to firms of all sizes, as well as networks and consortiums made up of industry, academic institutions, research institutes and not-for-profit entities. Projects selected based on innovation, economic and public benefits. SIF includes criteria related to gender balance and diversity. The Strategic Innovation Fund also monitors how benefits accrue to different gender and demographic groups.

Women Entrepreneurship Strategy (WES) is a whole-of-government approach to helping women grow their businesses through access to financing, talent, networks and expertise. In Budget 2018, the Women Entrepreneurship Fund was allocated \$20 million. Following the call for applications held in fall 2018, over 3,000 applications were received and more than 200 projects were funded. Approximately 100 more projects will be funded with the announcement of an additional \$10 million to provide a total of \$30 million to support women-owned and -led businesses across Canada in growing their businesses and reaching new markets.

A portion of the funds made available under the Venture Capital Catalyst Initiative are dedicated to enhancing diversity and increasing women's participation in the venture capital ecosystem. One of the objectives of VCCI is to improve gender balance among Canadian VC fund managers and companies. As part of their submissions, applicants under all streams were required to submit gender balance strategies demonstrating how they will enhance diversity and increase the participation of women across the VC ecosystem. All recipients will be required to report on statistics relating to the number of women fund managers and entrepreneurs supported.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

As the digital economy is a global in nature, economies can benefit from sharing best practices and collaboration towards common goals. Canada values opportunities to engage internationally and with regional bodies on the challenges of the digital and data-driven economy and learn best practices from others. As an example, Canada is working with France and other G7 partners to create an International Panel on Artificial Intelligence. This Panel will seek to become a global point of reference for understanding and sharing research results on AI issues and best practices. Canada will continue to engage with the APEC, OECD, G7, and World Economic Forum to further advance Canada's digital and data frameworks.

In addition, advancing policy research on regulatory issues, developing case studies, and promoting good regulatory practices are important contributions from regional and international organizations. In the context of regulations for the digital economy and emerging technologies, International Regulatory Cooperation (IRC) can help to minimize the regulatory burden on businesses and play an important role in advancing regional economic integration. In that regard, organizations such as APEC provide an important vehicle for information sharing, including lessons learned and best practices, as well as exchanging information on common challenges and opportunities for cooperation with regards to digital economy standards and regulations.

CHILE

1. Barriers and Challenges: Considering your economy’s current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Other’ and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance**
- Ease of doing business
- Others, please specify: _____

Regulatory and Legal Framework: Even though Chile ranks 56 among 190 economies in the World Bank 2019 ease of doing business index, there is still a need to build a comprehensive, flexible, harmonized and modern regulatory and legal framework that fosters technological innovation and the development of new business models. This will boost investment and access to financing, benefiting entrepreneurs and MSMEs, and consequently, facilitating digital transformation and financial inclusion. The main challenge is to regulate without imposing excessive and unnecessary barriers (overregulating), favoring flexibility and the adaptability of the markets and economic agents in order to encourage new business models.

Regarding the Financial Sector, Fintech business models and services are not typified in our current regulatory and legal framework. This provides an opportunity to learn from the experience and best practices of other economies and give appropriate policy responses according to Chile’s particular circumstances. The challenge is to move towards a regulatory design that encourages innovation and greater inclusion in the provision of financial services and at the same time adequately protects investors and users of these services, as well as the financial integrity and stability, without creating unnecessary obstacles, thus fostering innovation. There is also a challenge on how to (de)regulate, among other areas, electronic payments, crowdfunding and related services, virtual assets and promote open banking. This also requires providing more effective tools and enhancing the capacities of regulatory and enforcing agencies to effectively supervise and enforce laws and regulations.

Competition Policy: It is important to assess how artificial barriers of entry for new businesses in the Fintech area might be hampering innovation. Promoting competition requires access to payment infrastructure, opening to new means of payment and the reduction of artificial or unnecessary costs to stimulate local markets. In particular, continued efforts are being made for adapting tax policies in relation to new business models, and also, for implementing policies that ensure fair competition and tax compliance between traditional operators (incumbents) and new businesses (challengers). In some cases, startups and small businesses must meet the same requirements as large companies, which affects competition.

Public Sector Governance: To adapt the way in which the public sector is structured and operates, as well to encourage the incorporation of technologies in companies and state agencies is a big challenge. If the public sector doesn’t make a profound digital transformation of its structure, it won’t be able to take advantage of the benefits of digital economy. In addition, the absence of a modern Public Sector won’t allow public servants to benefit from the new technologies, because they won’t be encouraged to acquire new skills. If the Public Sector does not get into the digital economy by modernizing its organizational structure, improving its communication channels between the administrative bodies –and with the citizens- and transforming bureaucracy, eliminating the obstacles and taking advantage of the opportunities of the digital economy, it will be very difficult to close the access gap. Digitalizing the Public Sector will allow to collect data and information which will help to observe where the greatest gaps are, and thus identify the segment of the population that requires more training to face digital economy. Likewise, better data and statistics will help to strategically

adopt more and better public policies. Another great challenge is to enhance the basic skills of the population on the digital economy, and how to close the digital illiteracy gap, especially among elderly people and people in remote and rural areas.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business
- Others, please specify: Digital Literacy**

Regulatory and Legal Framework: Chile has identified policy gaps regarding the regulation and supervision of various alternative financial services and the transaction of virtual assets.

Public Sector Governance: There is still work to do in order to achieve a deeper and more comprehensive digitization and interconnection of the State.

Digital Literacy: Chile needs to make a better job by incentivizing inclusion, closing gaps and providing more tools and better education in order to ensure that nobody is excluded from the benefits of digital economy. This means, to modernize the school programs, adding programming classes starting from elementary school, among other things.

In summary, most of the major barriers for the development of the digital economy in Chile are simultaneously its major policy gaps.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

Scoping and Measurement of the Digital Economy: The Ministry of Economy is currently surveying companies in Chile to have data on e-commerce, digital economy, and key ICT indicators, according to OECD survey guidelines. This data will enable to have a baseline to which measure progress in the digital economy of the economy.

Public Sector Governance: a) *Digital Agenda 2020:* It is a roadmap to advance on Chile's digital development through ICTs, in an inclusive and sustainable way. Some of its characteristics are to present concrete measures, structured on the basis of the work carried out by a public-private alliance, formed by representatives of the public, business, academic and civil society sectors. It is a living agenda, which can be adjusted along the way, setting new strategic measures or addressing new

challenges. The goal is to reduce inequality through the wide-spread use of technologies, creating more and better opportunities. A work team of representatives from different Ministries elaborate the Agenda, aiming to adopt more and better policies on digital development. The Digital Agenda is structured along 5 topics that set strategic guidelines (Rights for Digital Development, Digital Connectivity, Digital Government, Digital Economy and Digital Competencies); b) In the context of its digital transformation process, the Civil Registry (Registro Civil) delivered a *Password (Clave Única)* to every resident, which constitutes the only means of digital identification in the State. This password allows residents to complete online procedures; c) In recent years, the *General Treasury of the Republic (TGR)* began to modernize its processes, providing digital services to the community and looking for technologies and tools to enhance its digital transformation.

Ease of Doing Business: a) *Law 20.659 "Your business in a day"*: Created an Electronic Registry of Companies, which established a Simplified Regime that allows people to set up, modify, transform, merge and dissolve legal entities, making possible to complete online all the procedures needed to set up a company in one day. It allows users to complete the service using the advanced digital signature, or a notary can complete the procedure on the user's behalf. This initiative has led to a significant reductions in terms of time and the cost of completing the service. The Registry is public, free, and can be found on the website www.registroempresas.cl. It is administered by the Ministry of Economy, Development and Tourism. In this Simplified Regime, it is possible to set up a company by logging on to www.registroempresas.cl and filling out a special electronic form (the website is user friendly and automatically recommends frequent clauses); b) In 2018, Chile introduced an *electronic system*, which replaced the earlier requirement to submit sealed accounting books and invoices to the Internal Revenue Service, which has helped to improve business climate. According to the World Bank Group's *Doing Business 2019: Training for Reform* report, it now takes six days to start a new business in Chile, compared with 7.5 days earlier; c) Chile has also improved contract enforcement by modernizing its judiciary, digitalizing court records (Oficina Judicial Virtual) and allowing, among other things, to *file complaints electronically*. As a result of this reform, Chile edged up several places to a global rank of 49 in the area of Enforcing Contracts.²

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

X Fintech

- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes
- Digital Banking
- Crowdfunding platforms

X Digital payments

- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs))
- Use of open data on financial services

² <https://www.worldbank.org/en/news/press-release/2018/10/31/chile-carries-out-key-business-reforms-doing-business-report>

Others, please specify: _____

Fintech: The Central Bank (BCCh) Strategic Plan for the 2018-2022 period focuses on Technology. Consequently, it has created a “Tech Observatory”, which aims to be a relevant and active player in the search and analysis of new technologies, detecting opportunities and potential impacts in the financial sector and other areas. Its Objectives are: a) To agree on common principles and contribute to the coordination, within the Bank, for the treatment of Digital Technologies; b) Agree on main topics of innovation to promote and contribute to its knowledge; c) Create networks with the community to strengthen knowledge and identify opportunities and threats. The Main Innovation Topics are: Digital Money, Digital Payments, Cryptoassets, Cybersecurity and Financial Stability, Big Data and Digital Economy, Open Banking, SupTech. The Strategic Plan 2018-2022 also contemplates experimental instances, like for example a TechLab and FinLab. The TechLab seeks to adopt emerging technologies that are relevant to maintain the quality and availability of the services provided by the Central Bank. The FinLab seeks to enhance the regulatory framework in a timely manner in order to advance in those areas that represent an opportunity to strengthen the financial system and mitigate risks should some of the new technologies become more widespread in the financial industry.

Digital Payments: Law No. 20,590 of Means of Payment (2016): Authorizes the issuance and operation of means of payment with provision of funds or any other similar system (prepaid cards ") by non-banking companies. The law also authorizes the State to issue and operate means of payments with provision of funds subject to the law. Issuers and operators are subject to the oversight of the Financial Market Commission (CMF) and are required to report to the Financial Analysis Unit (UAF), when applicable. Chapter III J1 of the Chilean Central Bank Regulation makes it possible to apply the 4 Party means of payment model in Chile. Although this Law is a progress, it still has some limitations, like for example, requirements that constitute entrance barriers for small companies or entrepreneurs that want to enter the market. This flaws should be corrected in the future.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech’s reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Public Sector Governance, and Legal and Regulatory Framework:

a) *From a Digital Agenda to Digital Transformation:* The Government is working to launch a Digital Transformation Agenda, which will continue the progress made by the Digital Agenda 2020, and

will add new measures. Its focus will be to accelerate the process of appropriation and use of technologies in every area of social and economic activity.

b) In addition, the Government contemplates the digital transformation of the State Administration. This should be achieved through the simplification of processes, the digitization of procedures and, in general, the use of technologies to optimize and improve the functioning of the government and state agencies, as well as efficiently and effectively improving public management. To this end, in 2018 a *bill on digital transformation of the public sector* was sent to Congress. The objective is to create a digital transformation of the State, through the modification of various legal bodies, in order to become an agile and efficient State which benefit itself from the advantages of electronic and digital developments. This project makes electronic support mandatory, so that all new procedures and services provided by the State are digital, except those exceptions that by their nature are required to be on paper. In addition, it reinforces the 19,880 law, in that state agencies cannot request information that is already in their hands, thus preventing people from carrying out additional steps, duplication of procedures, unnecessary rows and eliminating the requirement of certificates. Regarding notifications sent from public institutions, the project establishes the obligation to carry them out by digital means, according to a regulation issued by the Ministry General Secretariat of the Presidency and the Ministry of Finance. Additionally, it establishes that both the internal documentation management and communications between public institutions will be carried out through digital platforms, as well as that the obligation to storage and preserve documents will be complied by sending digital files.

c) Also, in 2018, the President signed and sent to Congress a *bill on Computer-related Crimes and a Guide on Cybersecurity* for all public agencies, which establishes the obligations for the different public services of the State to strengthen its cybersecurity systems. The bill will replace the current regulation – in force since 1993 - and is part of the National Cybersecurity Strategy.

d) *The General Treasury of the Republic (TGR)* inaugurated its *Blockchain Project*. This project intends to solve the quadrature problems between the TGR suppliers (municipalities and other institutions) and the means of payment (banks). It consists of an automatic quadrature system that allows having a network of multiple nodes that contain the same information, in a reliable way and in real time. Each time a transaction is made, it is stored in a block together with the information of that transaction, generating a chain of blocks (Blockchain). These blocks are transmitted to all the nodes that are participating, having exactly the same information unalterably. In summary, this project will allow TGR to have an automatic, reliable, transparent and secure quadrature among all entities. This could lower transaction and verification costs of each institution, which will benefit the citizenship.

e) *Fintech Bill of Law*: The Minister of Finance announced in April that a Fintech bill will be sent to Congress soon. This Bill seeks to regulate and supervise various alternative financial services and the transaction of virtual assets. Flexibility and financial stability are some of the key aspects of the project, which will seek to ensure that the law can meet the requirements of the rapid evolution of technologies and technological neutrality (to eliminate regulatory asymmetries between traditional financial services providers and those providers who are more technology-intensive user.) The idea is to position Chile as a Regional Financial Center. Fintech regulation will also allow the users to have adequate security and information standards, thus encouraging more users to use Fintech platforms while safeguarding the integrity, reputation and stability of the financial system.

f) In order to identify regulatory gaps and vulnerabilities in the financial system, the Central Bank asked the IMF and the World Bank for a *new Financial Stability Assessment Program for 2020*. g) The Ministry of Finance announced a working group comprised of the main representatives of the financial sector to *effectively initiate the 4-party means of payment model* in Chile.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response

should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

There are still a significant number of households that do not have access to Internet, especially in rural areas. It is imperative to improve access in those places without or with precarious quality of digital services. Investing in infrastructure will allow for better services and low costs and prices, improving the coverage not only of telecommunications, but also of access to other digital services and contents. Although having an adequate infrastructure and having high-speed internet are absolutely necessary steps to face the challenges of the Digital Revolution, it is also essential to work to develop human capital to cope with the digital transformation and automation. There is still work to do in promoting digital transformation in companies (especially in SMEs), digitization of government procedures and encourage the deployment of high-speed, robust and resilient networks. In order to do so, it is fundamental that the State is interconnected and digitalize its processes.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Joint collaboration and the sharing of best practices on the digital economy will certainly help to accelerate the development of digital economy strategies at economy level and promote the harmonization among the APEC region. Capacity building will help public officials, especially from less advantaged economies, to better understand the challenges of digital economy, thus helping to make better public policy decisions.

CHINA

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: _____

At present, the three major barriers and challenges to promoting structural reforms for a better digital economy in China are as follows:

Firstly, the measurement of the digital economy is not complete with undefined scope, posing challenges to predict its trend of development and implement targeted structural reforms. In recent years, relevant research institutions and Internet companies in China have actively studied the measurement of the digital economy and achieved some outcomes. However, due to the inconsistency of the concept definitions, analytical frameworks, measurement methods, and incomplete data or statistics, there are still many controversies over the scope and scale of the digital economy.

Secondly, the existing regulatory framework is yet to tailor to the need of the development of the digital economy. In some emerging areas of the digital economy, some are regulated by several agencies while some are not regulated. Due to the lack of a legal framework for the regulation of emerging areas, some regulations are based on the interim documents issued by authorities or industry self-discipline, which lacks certainty.

Thirdly, competition policies in the digital era are not well guided by theories. The problems, that it is difficult in identifying non-competitive activities and imposing penalties, are common. Although the Chinese government has initiated institutional reforms that greatly optimized the implementation mechanism of competition policies, traditional competition theories do not work well on the digital economy. With theoretical innovation falling behind the practice, the formulation of competition policies is still controversial, which is hard for regulators to implement.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: _____

The three major policy gaps relating to the digital economy in China are as follows:

1. Official policies on the measurement of the digital economy are absent. China has not yet issued an official measurement guide, and the state statistics bureau has not released its estimation of the size of digital economy of China.

2. The regulatory policy system of the digital economy has not yet been fully established, and some new regulatory tools have not been fully utilized. For example, in the financial sector, it is necessary to further optimize the policy system to regulate mobile payment, P2P lending and so on more effectively. Besides basic consensus on promoting the application of new tools such as regulatory sandbox in China, there is still no specific policy coordination for better implementation and regulation.

3. The rules for governing platform companies are still to be improved. China's platform economy is developing rapidly, the practices of some companies need to be reviewed to see if there are collusion, abuse of market power or even monopoly. The existing policies have not clearly defined non-competitive activities of platforms. In addition, the policy to guide the decision making as to a platform's social responsibility and related functions is missing.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

In recent years, China has vigorously pushed forward structural reforms, especially in strengthening and improving regulation, improving public sector governance and ease of doing business. It strives to make advantages of the digital economy through marketization and other legal means. Typical practices include:

1. Strengthen and improve regulation through legislation. For example, on August 31, 2018, the 5th Session of the Standing Committee of the 13th National People's Congress of the PRC voted on and adopted the *E-Commerce Law*, which came into force on January 1, 2019. The law was made based on four rounds of deliberations and three times of public consultation through five years. It is one of the few comprehensive e-commerce laws in the world, covering almost all activities related to e-commerce. The law provides for the registration of legal entities, fines, taxation, platform responsibility, prohibition of false advertising, and Intellectual Property Rights protection. Some surveys after enacting the law show that most e-commerce platforms have disciplined and rectified themselves, and their activities are further standardized.

2. Improve public sector governance through Digital Government and City Brain initiatives. Some local governments have vigorously promoted the construction of digital governments, removed barriers to information sharing among departments, and built high-quality data platforms such as City Brain to build smarter cities. Positive results have been achieved. For example, cities such as Shenzhen, Guangzhou and Hangzhou have optimized the e-government management system and infrastructure, and promoted the integration of government information resources, intelligent government services, and diversified application models to vigorously promote Cloud City, Digital Brain, and public supervision and to accelerate the implementation of mobile government, mobile services and face-recognition-based services.

3. Optimize the digital economy business environment through reforms to delegate power, streamline administration and optimize government services. In recent years, China has vigorously promoted reforms in the commercial administration and administrative approval system, which created a favorable environment for development of the digital economy. For example, China further simplified the business

start-up procedures, and reduced the time for start up a business from 20 days to 8.5 days on average. Joint inspection combining customs inspection, immigration inspection and maritime inspection, has been adopted and reduced customs clearance time in 2018 by 56.4% and 61.2% for import and export respectively compared with 2017. The reform of “separation of business licenses and operating permits” was implemented across the country, effectively solving the problem of “banned operation despite the obtaining of the license”. The latest World Bank report *Doing Business 2019* shows that the number of reforms implemented by China in the past year ranked first in the East Asia and Pacific region, jumping from the 78th to the 46th in the global rankings, which marks the first time for China to be in the world’s top 50 and the re-entry of China in the group of Economies with the Most Notable Improvement in *Doing Business 2019* after ten years.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech
- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes
- Digital Banking
- Crowdfunding platforms
- Digital payments**
- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions’ data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify: _____

China is now the world’s largest digital payment market. In 2018, financial institutions in banking industry handled a total of 60.531 billion mobile payments, with a transaction amount of 277.39 trillion yuan, a year-on-year increase of 61.19% and 36.69% respectively. Mobile payment has not only become an important junction of new consumption pattern and new technology, but also bred new types of business and consumption. It also effectively reduced institutional transaction costs, providing an effective path for the development of inclusive finance and credit-based society.

The rapid development of digital payment in China is closely related to plenty of users and developed e-commerce. With limited popularity of credit card and high institutional transaction costs, digital payment has quickly become a powerful supplement to the payment system in China. In particular, companies such as Alibaba and Tencent are highly focused on the expansion and refining of application scenarios, integrating digital payment fully into people’s lives. In the process of promoting digital payment, strengthening effective regulation is necessary for promoting the healthy development of the industry and for preventing the accumulation of potential financial risks. China has strengthened regulatory intervention by issuing business permits (such as payment business permit) and has gradually incorporated financial regulation to build an effective regulatory framework. This is a good practice worthy of reference.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech’s reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)**
- Others, please specify: _____

Financial regulation technology is a product of full integration of technology and financial regulation. In 2017, China’s regulatory authority proposed to strengthen RegTech application and practice with big data, AI, cloud computing and other technologies to enrich financial regulation tools, and improve the capacity to identify, prevent and dissolve financial risks across industries and markets. A typical case is that many entities have begun to use RegTech to deal with financial fraud.

With the rapid development of the digital economy and the widespread application of digital technology in finance, financial fraud has shown new features. It has become specialized, industrialized, hidden and trans-regional, posing great challenges to traditional anti-fraud methods. In order to prevent financial risks, many local governments and companies have begun to use RegTech to better identify potential financial fraud. China’s existing practices show that anti-fraud in digital finance should focus on data, technology and mechanism. First, it is necessary to strengthen the security of data use and strengthen information disclosure. Second, it is necessary to continuously optimize anti-fraud models and systems, and establish a mechanism that encourages share of advanced technology in the industry. Finally, to strengthen the security mechanism, it is necessary to speed up the construction of an anti-fraud alliance involving regulatory authorities, industry associations, financial institutions, and technology companies, focus on strengthening the protection of consumer rights and interests at the industry level, and improve the mechanism of industry risk mitigation and mutual assistance.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

China has put forward the goal of vigorously developing the digital economy and building a Digital China in recent years. In response to the existing policy gaps and challenges, China has proposed the following efforts and key measures:

1. Accelerate the formulation of statistical methods for the digital economy. China will fully draw on relevant experience at home and abroad and develop a evaluating and monitoring system with international comparability.
2. Accelerate the construction of high-quality new-generation information infrastructure. China will build smarter infrastructure and accelerate the commercial use of the 5G technology.

3. Vigorously develop the digital economy industry. China will better promote Internet Plus Initiative, facilitate digital technology to empower traditional industries, and speed up industrial transformation and upgrading.

4. Promote the digital transformation of public sector governance. China will actively build a digital government and improve e-government services. It will increase the investment in digital infrastructure for public services such as long-distance education and medical care.

5. Establish a more inclusive and prudent regulatory system. China will explore more effective regulatory models for new business types and models such as cross-border e-commerce, Internet finance, and sharing economy, and actively explore new tools such as regulatory sandbox.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

The key challenge to improving the inclusion of the digital economy is to eliminate the digital gap and prevent the shift from traditional poverty to digital poverty in an era of digital economy. Given China's reality, the key to narrowing the digital divide is people, with a focus on urban-rural gap. China focuses on bridging the urban-rural digital gap and enabling more people to enjoy the digital economy advantages by strengthening infrastructure construction, basic education investment, and rural e-commerce. However, in rural area, there are large lands and many poor people, the grassroots governments have limited source of fiscal revenue, the industries in rural area lack the capacity to be self-reliant, and there are overall backwardness of rural infrastructure and the scarcity of education and medical resources. To bridge the urban-rural digital gap, China still faces several problems, such as big funding gap and poor supporting infrastructure.

In order to solve these problems, China has increased the investment of funding, especially in digital education and telemedicine, targeting at filling the gaps in basic public services. For example, in terms of IT in education, China put forward the strategic plan of "building an effective mechanism to use information technology to expand the coverage of quality education resources, and gradually narrowing the gaps between regions, urban and rural areas, and schools". It promoted the development and application of online synchronous class, top teacher class and top school class, and provided special favor for schools, especially rural schools, in facilitating faster and more affordable Internet connections and network development. According to incomplete statistics, there are currently 24,000 online schools in the country, accounting for 7.7% of the total number of primary and secondary schools nationwide. Among them, 2,211 online schools are serving the whole country, accounting for 9.1%; 1,531 online schools are serving their provinces, accounting for 6.3%; more than 20,000 online schools are serving their own teachers and students, accounting for 84.6%.

At present, nearly 30,000 schools in the country are not yet connected to the Internet. Therefore, the Ministry of Education has coordinated the basic telecommunication companies to claim all the unconnected schools, and introduced a list of 24,085 schools that can be connected to the broadband network by 2020 and the schedule. The government maintained the list of the primary and secondary schools (including teaching locations) without broadband access and track its progress regularly. The further increased efforts have been made in facilitating faster and more affordable Internet connections, and basic telecommunication companies are guided to roll out special rates for schools, especially those in poor areas, to reduce the burden of the schools in accessing the broadband network. The basic telecommunication companies are required to implement the policy related to universal telecommunication services, and to ensure that the network rates in the poor areas are not higher than the average level of the surrounding areas.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

APEC may play a greater role in the following four respects. First, facilitate the exchange of statistical classification methods among member economies and improve the comparability of digital economy statistics across economies. Second, promote the active cooperation of member economies, and strengthen the connectivity of new-generation infrastructure in the region through cooperation with the Asian Infrastructure Investment Bank and other institutions. Third, promote the sharing of best practices among member economies in implementing structural reforms to boost the development of the digital economy through seminars, public consultation and other approaches. Fourth, drive the development of cross-border e-commerce, and promote trade connectivity by aligning with international digital trading rules.

HONG KONG, CHINA

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance**
- Ease of doing business
- Others, please specify:** _____

Emergence of new technologies and the sharing economy: Emerging technologies coupled with the sharing economy have led to many new products and services. HKC is no exception and, like many other jurisdictions, our established regulations are sometimes at odds with the mode of operation of such new services. It is a challenge to the government to review existing legislation and regulations to remove outdated provisions that impede the development of innovation and technology (I&T).

Relatively low investment in research and development (R&D): The advancement of digital economy is closely related to investment in R&D. Yet the overall investment in R&D in HKC was merely 0.73% of our Gross Domestic Product in 2017, partly due to the prominence of sectors such as financial and professional services in our economy.

Complexity of the digital economy: The digital economy spans many policy areas, including transportation, healthcare, environmental protection, etc., thus requires cross bureaux and even cross government coordination to regulate and nurture its development.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: Talent**

Government procurement arrangements: To embrace digital advancements and encourage local technological innovation, there is a need to recognise I&T as a tender requirement and avoid awarding contracts mainly by reference to the lowest bid.

Government data: It is important to expedite the opening up of government data for free use by the public as raw materials in technological research, innovation and smart city development.

Technology talent: With our blend of Chinese and Western cultures, top-notch tertiary institutions and outstanding scientific research achievements, HKC is the prime location for establishing an international hub of scientific research talent. It is important to develop policies to support the attraction of international technology talents and cultivation of local talents.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from

the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: Smart city development**

Smart City Blueprint for HKC: HKC published the Smart City Blueprint for Hong Kong in December 2017, covering 76 smart city initiatives. HK\$900 million have been invested to take forward three notable digital infrastructure projects: (i) provision of electronic identity to all residents by mid-2020, to bring ease in using e-services and transactions; (ii) installing smart lampposts with sensors to collect real-time city data and small cells to support 5G telecoms development; and (iii) building the Government’s Next Generation cloud infrastructure and a big data analytics platform.

Smart Government Innovation Lab: HKC set up in April 2019 a Smart Government Innovation Lab to facilitate wider application of information technology (IT) solutions and products in public services, e.g. municipal and environmental issues, crowd control, etc.

Open data policy: A new open data policy promulgated in 2018 mandated all government departments to release government data, including real-time city data, in machine-readable formats (via data.gov.hk) for free use by the public. The portal currently provides over 3 490 unique datasets and 1 270 APIs. About 700 new datasets will be released in 2019.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech**
- Cryptocurrency (digital asset that uses cryptography for security)
- Fintech
- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes**
- Digital Banking
- Crowdfunding platforms
- Digital payments**
- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions’ data through the use of application programming interfaces (APIs))
- Use of open data on financial services

X Others, please specify: Virtual banking and Banking Made Easy

Fintech: The Hong Kong Monetary Authority (HKMA) established the Fintech Facilitation Office (FFO) in March 2016 to facilitate the healthy development of the Fintech ecosystem in HKC and to promote the city as a Fintech hub in Asia. Among other things, the FFO acts as:

- i. a platform for exchanging ideas and conducting outreaching activities;
- ii. an interface between market participants and regulators within the HKMA to help improve the industry's understanding about the parts of the regulatory landscape which are relevant to them;
- iii. an initiator of industry research in potential application and risks of Fintech solutions; and
- iv. a facilitator to nurture talents to meet the growing needs of Fintech in HKC.

Fintech Supervisory Sandbox (Sandbox): The Sandbox was launched in September 2016, allowing banks and their partnering technology firms to conduct pilot trials of Fintech initiatives in a controlled environment without the need to achieve full compliance with the HKMA's supervisory requirements. Until the end of April 2019, 49 Fintech or technology products have been allowed in the Sandbox.

Digital Payments: The Payment Systems and Stored Value Facilities Ordinance commenced operation in 2015. 15 Stored Value Facilities (SVF) licences (3 licensed banks also have SVF operations) have been issued as of mid-May 2019. SVFs are facilities (both device-based and non-device-based) for (i) storing the value of an amount of money and (ii) use such value stored to make payment for goods or services or to another person.

The Faster Payment System (FPS), launched in September 2018, supports instant payments in both the Hong Kong dollar and the renminbi on a round-the-clock basis. FPS provides full connectivity between banks and SVFs, and the use of a mobile number or an email address as an account proxy for receiving payments.

Virtual Banking: The HKMA issued a revised Guideline on Authorization of Virtual Banks in May 2018. By early May 2019, the HKMA has granted banking licences to all eight shortlisted applicants for them to operate in the form of a virtual bank.

Banking Made Easy: The HKMA launched a Banking Made Easy initiative in 2017 to identify and minimise regulatory frictions with the aim of further improving customers' experience in using Fintech and digital banking services. Under this initiative, the HKMA streamlined regulatory requirements in relation to remote onboarding, online finance, and online wealth management in 2018.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

X Compliance

- Identity management and control

X Risk management

- Regulatory reporting
- Transaction monitoring
- Trading in financial markets

X AML/CFT (anti-money laundering/ combating the financing of terrorism)

- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)

X Others, please specify: Machine-readable regulations

Regtech: The HKMA announced in 2018 initiatives to facilitate Regtech adoption and ecosystem development, including expanding the scope of the Banking Made Easy initiative to facilitate the adoption of Regtech by banks, focusing on surveillance for anti-money laundering and counter-financing of terrorism, prudential risk management and compliance, and machine-readable regulations.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

The HKC Government established the Innovation and Technology Bureau in November 2015 to focus on formulation of holistic policies related to I&T and the digital economy, coordination of the use of technology both internally and externally, and expediting the development of the local I&T industry.

Furthermore, in her 2017 Policy Address, the Chief Executive (CE) identified eight major areas to develop HKC’s I&T sectors, which included: increasing resources for R&D; pooling technology talent; providing investment funding; providing technological research infrastructure; reviewing existing legislation and regulations; opening up government data; leading changes to government procurement arrangements; and promoting popular science education. HKC has set a goal to double the Gross Domestic Expenditure on R&D as a percentage of the GDP to about HK\$45 billion a year (i.e. from 0.73% of GDP to 1.5%) by the end of the current government’s five-year term of office. Some of HKC’s new initiatives to boost our I&T ecosystem include:

Reviewing existing legislation and regulations: The Policy Innovation and Co-ordination Unit reporting directly to the CE has been established to work with all policy bureaux to proactively review the policies and legislation within their policy purview to bring them up to date and remove red tape in order to foster the development of a new digital economy.

Pro-innovation government procurement policy: HKC has introduced a pro-innovation government procurement policy in April 2019 by raising the technical weighting in tender assessment. We also enhanced exchange with the sector and dissemination of procurement information to facilitate the participation of I&T start-ups and SMEs in government procurement.

Pooling technology talent: HKC has progressively introduced various initiatives, such as the Postgraduate Programme Finance Scheme for Local Students, the Technology Talent Admission Scheme, the Technology Talent Scheme and the enhanced Internship Programme, to proactively attract and nurture scientific research talent.

5. Inclusion: Describe your economy’s barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

HKC has implemented a number of measures to help students, workers and elderly adapt to the digital economy through education and training, and to enhance SMEs’ business opportunities.

Students: HKC has implemented initiatives targeted at students such as launching the eight-year “Enriched IT Programme in Secondary Schools” in the 2015/16 school year to provide funding support for secondary schools to organise various types of IT activities. HKC will also extend this programme to include an “IT Innovation Lab in Secondary Schools” initiative by providing each

publicly-funded secondary school in HKC with up to HK\$1 million to procure IT equipment and organise IT-related extra-curricular activities in the three school years from 2019/20 to 2021/22.

Elderly: The ICT Outreach Programme for the Elderly started in 2014 aims to help institutionalised and hidden elderly, and those receiving day care / home care services experience how ICT can facilitate active and healthy ageing. An Enriched ICT Training Programme for the Elderly was introduced in early 2019 for elderly persons with basic ICT knowledge to learn about using digital technology in their daily living and serve as trainers to help more elderly people acquire technology knowledge.

SMEs: To promote the use of new technologies among SMEs, HKC has implemented a number of funding schemes, such as Retail Technology Adoption Assistance Scheme and Trade and Industrial Organisation Support Fund. HKC also provides financial support to facilitate enterprises of all sizes to invest in I&T to improve productivity and operational efficiency, such as the Technology Voucher Programme for local non-listed enterprises.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Regional bodies such as APEC supplies a platform of knowledge sharing and cooperation that is conducive to the development of digital economies in the region. Through such platform, economies may learn from the experiences of each other and formulate measures to overcome the many policy gaps, barriers and challenges in their respective contexts. Regional cooperation may also give rise to inter-governmental projects to collectively advance our digital economies, including HKC.

INDONESIA

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
 - Competition policy
 - Public sector governance
 - Ease of doing business
- Others, please specify: Financial and digital literacy and infrastructure.**

Scoping and measurement of the digital economy:

Up to now, Indonesia is yet to have a single definition or a general agreed definition on digital economy. The available references are using different scope to define the digital economy. This is important and pose a challenge to fully understand the digital economy ecosystem.

Data is a crucial element for authorities to formulate policies that will boost digital economy while mitigating the risks. Despite fast development of digital economy in Indonesia, data collection (both primary and secondary data) remains a challenge. To overcome this challenge, the authorities continue to develop clear methods and measures / policies related to the data collection, and continue to improve data security.

Fintech growth very fast, and need to be regulated because of:

1. The interest of Society, whereas in line with the development of technology, digital financial innovation cannot be ignored and needs to be managed to provide maximum for the interest of the society
2. The responsible Innovation, Digital financial innovation needs to be directed in order to produce digital financial innovation that is responsible, secured, prioritizing customer protection and have well-managed risks;
3. Prevent Disruptive, Considering the huge impact of FinTech in the financial industry throughout all the products, services, intermediaries and regulators.
4. Ecosystem Digital Finance, Encouraging the synergy in the ecosystem of digital financial services.

Regulatory and legal framework (incl. sandboxes):

Indonesia is yet to have an integrated economy-wide strategy on digital economy as a framework and reference used for the sectoral regulation. The absence of said economy-wide strategy would lead to partial sectoral policies.

Some innovations bring multi sectors business into a single business entity (re: the super-apps) that would be problematic to regulate. For instance, Indonesian Go-Jek application is a transport service provider while also provides a payment service, and other services such as cleaning service and beauty care. Another example of this type of application is Tokopedia, an Indonesian e-commerce platform that also plays a role of a travel agent by selling airline and train tickets. Further, Tokopedia also offers financial products such as gold and mutual funds.

Balancing between promoting innovation to reap benefits from digital economy and mitigating unintended risks.

The guiding principles for fintech regulation and supervision:

1. Balanced strategy in order to conduct financial stability & provide customer protection and support innovation.
2. Institutional & functional or activity based regulation.
3. Clear mandate and scope/perimeter of fintech regulation. For an example payment system in Indonesia is under supervised The Central Bank and P2P lending is under Financial Services Authority
4. Experimentation and testing of innovation through Regulatory sandbox, Regulatory Sandbox shall be the examination mechanism carried out by authorities to assess the reliability of business process, business model, financial instrument, and governance of the Financial Innovator.
5. Cross border cooperation between authorities specifically regionally to protect data sharing and customer protection around the world.
6. Proactive and agile regulation and supervision. Regulation on fintech firms and their activities to avoid regulatory arbitrage and unsound fintech practice such as shadow banking, etc.
7. Enhancement of market conduct supervision for fintech by design and implement reporting and surveillance system. In addition, fintech association is empowered to perform surveillance to its member and fintech industry development, as well as develop industry standards, code of conducts, etc.
8. Law enforcement for illegal fintech activities to ensure market discipline and customer protection.

Others - financial and digital literacy and infrastructure:

Recent technological advancement has changed people's life. The emergence of financial technology allows more effective and efficient financial transactions. To take advantage of fast development of digital economic, digital financial literacy is one of pre-requisites.

Indonesian authorities have taken various efforts to improve digital and financial literacy. These efforts have shown positive results: National Financial Literacy and Inclusion Survey conducted by the Indonesia Financial Services Authority (OJK) showed that Indonesia's financial literacy index has risen up to 29.66% in 2016, up from 21.86% in 2013.

Indonesian authorities are also aware of the importance of required infrastructures put in place to boost digital economy. In this regard, Indonesia develops the Palapa Ring which connects telecommunication and communication networks throughout Indonesia. As of December 2018, this project has achieved 100% progress for the western and central parts.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: Coordination among authorities and consumer protection (incl. data protection)**

Scoping and measurement of the digital economy:

Indonesian authorities are keen to gain optimal benefits from digital economy and finance to support economic growth by encouraging digital transformation across all sectors of economy. To achieve this objective, the authorities are aware of the need to have effective policies put in place. Therefore, the authorities are formulating policies to enhance data collection and measurement. From macroeconomic perspective, this challenge is important to be addressed thus Indonesia can gain

benefit from digital economy and finance for example, on how to measure tax for the digital economy. From the financial authorities perspective, the availability of data related to digital economy is important to prevent the risk of rapid development of digital economy and finance to financial stability.

Regulatory and legal framework:

There are several institutions in Indonesia that have authority to regulate and supervise fintech. This condition could lead to regulatory overlap or policy gaps. To respond to this risk, the Indonesian government will periodically analyze the regulatory and legal framework of digital economy to see whether there is a policy / regulatory gap in the framework.

Furthermore, there are also issues regarding different business model and risk of incumbent fintech which required different regulatory and supervisory approaches. Several financial institutions are heavily regulated while, to a large extent, fintech is unregulated. Thus, this create regulatory blindspot or arbitrage.

OJK proposes several initiatives to deal with the issue, which are: (1) mandatory registration for financial technology innovators, (2) proper risks identification in association with Fintech business model, and (3) issuing the multi-tiers licensing started from being recorded, registered, to licensed as the highest status. The multi-tiers licensing will create a system which require Fintech with greater innovation impact to obtain higher license, with more prudent regulation clarity and established in a higher legal status (licensed fintech should register as the financial institution).

Competition policy:

Indonesia has yet to have a specific policy pertaining to competition on digital economy. This is important because the digital economy brings a lot of transformation on business process and therefore affect the competition nature. Any dispute related to competition policy on digital economy, will be resolved by referring to existing laws and regulation. There is an urgency to review the relevance of the existing laws and regulation in relation to the nature of transformed business process and competition in digital era. Currently, the revised version of the prohibition of monopoly practice and unhealthy business competition law (Law No. 5/1999) is being discussed by the Business Competition Supervisory Commission and the Parliament.

Coordination among authorities:

In response to the digitalisation challenges, there are several initiatives that have been outlined or implemented by the Indonesian authorities, such as the Road Map of E-Commerce, the Strategy of Making Indonesia 4.0, and initiatives for Indonesian Payment System Blueprint 2025. In this regard Indonesian authorities continuously strengthen cooperation among authorities to support the initiatives in an integrated way.

To these critical issues, Indonesia views that well-coordinated policies and regulations are needed to ensure that the financial market is becoming more efficient and stable while technological innovation in the financial industry keeps developing at all levels.

Consumer protection (incl. data protection):

Consumer protection policy plays as an important instrument. Particularly in the digital era, one of consumer's asset that need to be protected is their data. Albeit the importance of a data protection law, data protection that taken place in Indonesia is only regulated by the regulation on ministerial level. The relevant law of data protection is still yet to be discussed within the Parliament

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please

select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business**
- Others, please specify: Non-cash social assistance and digital channel/distribution**

Regulatory and legal framework:

Indonesia has issued laws and regulations to support digital economy, as follows:

1. Law Number 11 of 2008 on Electronic Information and Transaction
2. Presidential Regulation Number 74 of 2017 on Road Map E-commerce
3. Minister of Communications and Informatics Regulation Number 11 of 2018 on Electronic Certification
4. Bank Indonesia Regulation Number 20/6/PBI/2018 on Electronic Money
5. Indonesia Financial Service Authority Regulation Number 77/POJK.01/2016 on Fintech Lending
6. Bank Indonesia Regulation Number 19/12/PBI/2017 on Fintech
7. Bank Indonesia Regulation Number 19/8/PBI/2017 on National Payment Gateway
8. Bank Indonesia Regulation Number 21/18/PADG/2019 on the National Implementation Standards of the Quick Response Code for Payments
9. Indonesia Financial Service Authority Regulation Number 13/POJK.02/2018 on Digital Financial Innovation in the Financial Services Sector
10. Indonesia Financial Service Authority Regulation Number 37/POJK.04/2018 on Fund Contribution Services through Share Offers Based on Information Technology (Equity Crowdfunding)

Ease of doing business:

Indonesia is striving to improve the ease of doing business in recent years. In 2018, government issued the Government Regulation No. 24/2018 concerning electronically integrated business licensing services, to simplify the licensing process. In such case, there is one single submission system for all types of business licenses. As an indicator, Indonesia Ease of Doing Business rank has improved from 106th in 2016, 91st in 2017, and to 78th in 2018 respectively.

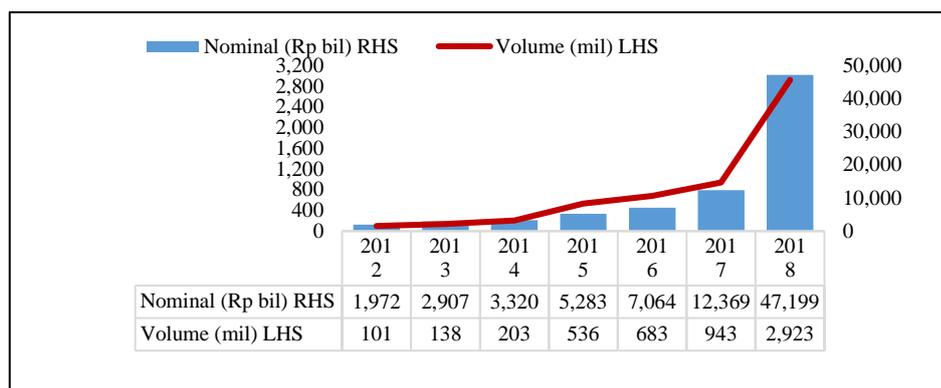
Others – non cash social assistance:

The Indonesian government has transformed the social assistance program from direct distribution (cash disbursement) to non-cash disbursement (transfer to bank account) as stated in Presidential Regulation Number 63 of 2017 on Non-Cash Social Assistance Disbursement. This initiative is aimed at encouraging a cashless society and increasing access to finance that would in turn support authorities’ effort to accelerate financial inclusion.

Others - digital channel/distribution:

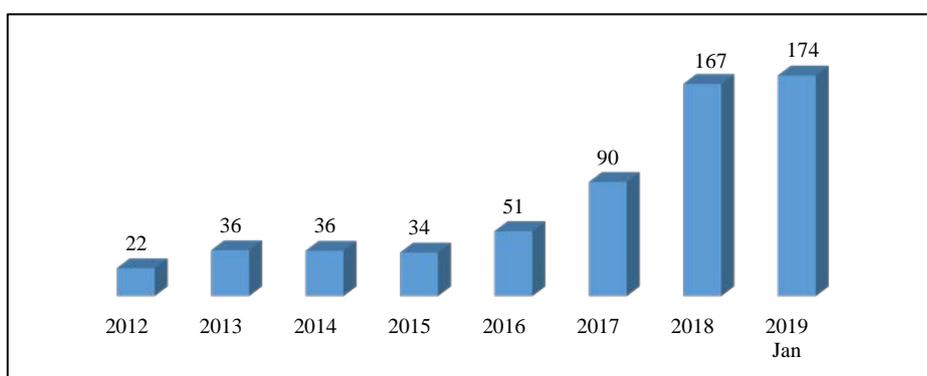
The Indonesian government has effectively improve digital channel/distribution which reflected on the data of electronic money that shows an increasing growth. The number of agent banking has also risen over time although most of them are located in Java Island.

Number of Electronic Money Transaction



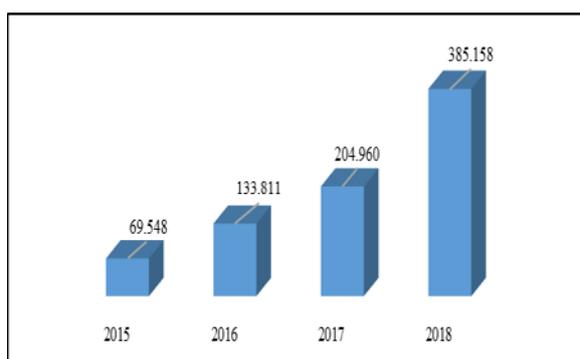
Source: Bank Indonesia

Amount of Outstanding Electronic Money (in Million)



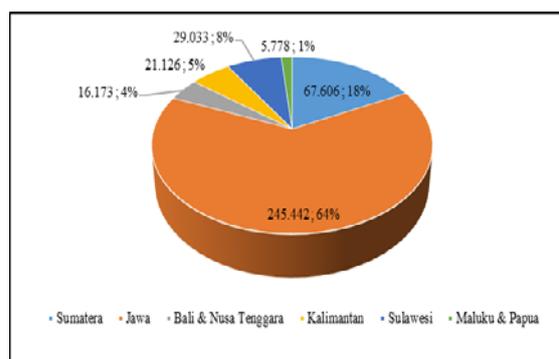
Source: Bank Indonesia

Number of LKD Agents (Banking Agent)



Source: Bank Indonesia

LKD Agents Distribution as of 2018



Source: Bank Indonesia

Branchless Banking Information as of March 2019

| | 2018 | March 2019 |
|--|-------------------|-------------------|
| Number of Participating Banks | 29 | 30 |
| Number of Agents | 1.004.547 | 1.073.134 |
| Number of Basic Saving Account (BSA) Customers | 22.832.105 | 23.340.281 |
| Amount of outstanding BSA | IDR 1,57 Trillion | IDR 2.51 Trillion |
| Number of province of agent location | 34 | 34 |
| Number of districts/ cities of agent location | 509 | 510 |

Source: Indonesia Financial Services Authority (OJK)

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Regulatory framework for Fintech**
- Regulatory framework for cryptocurrency
- Regulatory sandboxes**
- Digital Banking**
- Electronic Means of Payment
- Crowdfunding platform**
- Digital Retail payments,
- Digital payments and e-money**
- International remittances
- Personal and business loans
- Robo-advisors
- Cloud computing,
- P2P lending platform**
- Use of open data on financial services
- Others, please specify: _____

In the past 5 years, fintech, sandboxes, crowdfunding, digital payments and e-money as well as P2P lending have grown vastly in Indonesia. The development of digital economy has been supported by several laws and regulations:

1. Law Number 11 of 2008 on Electronic Information and Transaction
2. Presidential Regulation Number 74 of 2017 on Road Map E-commerce
3. Minister of Communications and Informatics Regulation Number 11 of 2018 on Electronic Certification

4. Bank Indonesia Regulation Number 20/6/PBI/2018 on Electronic Money
5. Indonesia Financial Service Authority Regulation Number 77/POJK.01/2016 on Fintech Lending
6. Bank Indonesia Regulation Number 19/12/PBI/2017 on Fintech
7. Bank Indonesia Regulation Number 19/8/PBI/2017 on National Payment Gateway
8. Bank Indonesia Regulation Number 21/18/PADG/2019 on the National Implementation Standards of the Quick Response Code for Payments
9. Indonesia Financial Service Authority Regulation Number 13/POJK.02/2018 on Digital Financial Innovation in the Financial Services Sector
10. Indonesia Financial Service Authority Regulation Number 37/POJK.04/2018 on Fund Contribution Services through Share Offers Based on Information Technology (Equity Crowdfunding)

Digital banking:

As the Central Bank of Indonesia, Bank Indonesia will continue to promote digital transformation within the financial sector to sustain banks role as a primary institution in the digital economy and finance through the implementation of standardized open API and the deployment of digital technology and granularity data on their financial product and services. This digital transformation in the financial sector will enable Indonesia to enter digital economy. Bank Indonesia will endorse banking industry to conduct appropriate digital transformation by introducing open API standards that will create a more robust payment system.

Going forward, the full-pledged implementation of digital open banking in Indonesia will be developed by standardizing the open API to allow data sharing and the interlink of bank with fintech through third party providers.

Furthermore, OJK has successfully issued Digital Financial Innovation regulation in 2018, the so called POJK number 13/2018. This innovation friendly regulation aimed to cover the dynamic of unlimited innovation sphere. This regulation also served as legal basis to promote innovation friendly ecosystem, support a robust supervisory system, give a clear message to the market and show a clear vision of the future market.

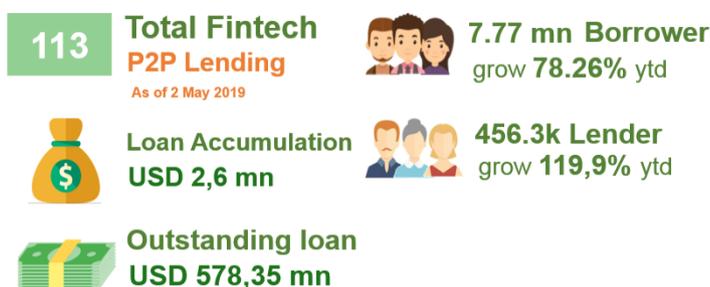
On digital payments:

In the retail value payment system, Bank Indonesia operates an economy-wide clearing system (SKNBI) and payment system industries operate payment cards and electronic money. Bank Indonesia has initiated and launched National Payment Gateway which processes economy-wide debit card transaction and operated by three industry institutions, namely Standard institution, Switching institution, and Service institution by National Electronic Transaction Settlement (PTEN). Retail payment transactions are still dominated by ATM-Debit instruments, while the Electronic Money (EM) grows the most rapid pace, driven by stronger non-bank players performance that grows more than 100% in a year.

On P2P lending platform and equity crowdfunding:

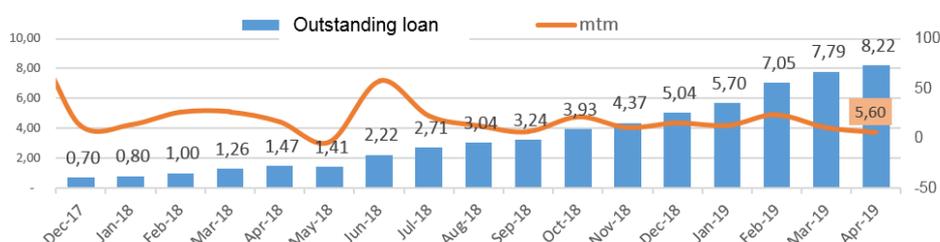
Considering the risk generated by certain use cases, or any other specific issues that needs special attention, OJK as regulatory authority in Indonesia, formulates “lex specialist” regulation. To avoid regulatory over burden, the issuance of such regulation should be very selective and based on the strong need of the market. On this regard, OJK has issued P2P Lending Platform regulation in 2016 (POJK number 77/2016) and Equity Crowdfunding regulation in 2018 (POJK Number 37/2018) in 2018. The main purpose of these regulations are to maintain the integrity and stability of the market, whilst accommodating the wish from the market.

Number of Fintech P2P Lending Development as of April 2019



Outstanding Loan Fintech Industry

Outstanding loan of peer to peer lending increase significantly as of April 2019 valued Rp 8,2 Trillion, grew 458% yoy..



Source: Indonesia Financial Services Authority (OJK)

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

Compliance

Identity management and control

Risk management

Regulatory reporting

Transaction monitoring

Trading in financial markets

AML/CFT (anti-money laundering/ combating the financing of terrorism)

Misconduct analysis (e.g. financial fraud; mis-selling, etc.)

Others, please specify:

To ensure fast fintech development to comply with Good Corporate Governance and Market Conduct, OJK sets the supervision standard in the regulation and builds the supervisory system accordingly. "Light touch and safe harbor" approach was chosen as the base of Fintech supervision. Utilization of technology is also a key success factor in applying market conduct-based approach.

Using the latest technology, OJK builds supervisory technology (SupTech) and employs big data analytics. For instance, OJK uses customer handling data to catch the problematic issues as early warning signs.

OJK requires all fintech industry to have regulatory technology in place and expects to have more RegTech services in the market to support fintech ecosystem.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Increasing financial literacy.

Indonesia has conducted many financial education activities in order to increase financial literacy. The efforts of increasing financial literacy through financial education programs will be continued and improved.

Building infrastructure to support digital economy.

As part of technological inclusion, especially for service outreach in information and communication, Indonesia has launched critical technology infrastructure, the Palapa Ring project that will cover all sections (west, central, and east). In addition, as regulatory and supervisory authority, OJK builds fintech infrastructure by conducting regulatory sandbox, ‘Fintech Center’, and RegTech framework and guideline for digital finance innovation.

Strengthening payment system to support digital economy.

Moreover, from a central bank point of view, Bank Indonesia believes that payment system becomes the key to serve as the motor of the transformation. This could lead the way to establish sound digital ecosystem that stimulate innovation while at the same time ensuring monetary and financial system stability. As a response of this reform, Bank Indonesia is developing Indonesia Payments System Blueprint 2025 which will be based on 5 visions:

- First, Bank Indonesia will focus on supporting the integration of digital economy and finance to assure proper functioning of central bank mandate on money circulation, monetary policy, and financial system stability.
- Second, Bank Indonesia will continue to promote digital transformation within the banking industry to sustain banks role as a primary institution in the digital economy and finance through the implementation of open API standard and the deployment of digital technology and granularity data on their financial product and services.
- Third, Bank Indonesia will assure the interlinkage between FinTech and Banks to contain the escalation of shadow-banking risk through the regulation of the use of digital technology (e.g API), business relation, and business ownership.
- Fourth, Bank Indonesia will indemnify the balance among innovation, consumer protection, integrity, and stability as well as fair competition through the implementation of digital KYC & AML-CFT, data/information/public business openness, and the deployment of Reg-Tech and Sup-Tech for reporting, regulatory and supervisory.
- Fifth, Bank Indonesia will maintain the economy’s interest on cross-border use of digital economy and finance through the obligation of domestic processing for all onshore transactions and domestic partnership for all foreign players under the consideration of reciprocity principle.

As the operationalization of the visions, Bank Indonesia have formed 5 initiatives in 5 Working Groups. The first initiative will set the API standards for bank and fintech that consist of standardization of data, technical, security, and contracts. The second initiative will develop mobile based retail payment infrastructure using high end technology. Furthermore, large value payment system and financial market infrastructure will also be reformed based on international best practice. The forth initiative will work on the enhancement of utilization of granular data. Finally, the last initiative will reform regulations, licensing, supervision and reporting mechanism.

Promoting the use of high end digital technology.

The use of high end digital technology such as big data analytics, cloud computing, DLT, and AI by banks and fintech will be fostered to promote efficiency. All the initiatives would be complemented by regulatory reform, integrated licensing and robust supervision to improve capability in maintaining market discipline, integrity, risk management, and consumer protection.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

Geographical barriers resulted from Indonesia's geographical features.

Indonesia is a vast and diverse economy with significant gaps among the regions. To improve inclusion through digital utilization, one of the biggest issues is the digital adoption and literacy of the internet users, in addition to infrastructure issue. Thus, access to financial services and adding cost for financial institution expansion (e.g. branch opening). Although Indonesia's internet penetration rate has reached more than 50%, the digital adoption and literacy for productive activities remains an issue.

Financial literacy and infrastructure. As part of enhancing the financial inclusion through financial literacy, Bank Indonesia, as a payment system authority, encourages the implementation of non-cash transactions to increase efficiency, security and ease of transactions. Non-cash transactions has positive impact through encouraging people to learn and access financial product, thus enhances financial inclusion and economic growth. Therefore in 2014, BI launched the National Non Cash Campaign (called Gerakan Nasional Non Tunai) through electronification programs for both government and private transactions. The efforts are made to achieve the inclusive financial targets as stated in the National Strategy for Financial Inclusion (NSFI) launched by government in 2016 targetting 75% Indonesia adult population to have an account in the formal financial inclusion at the end of 2019.

In this regard, BI took various initiatives such as:

1. Non cash social assistance program (conditional cash transfer and non cash food assistance), which targetting low income population and vulnerable groups.
2. Electronification in local government transactions
3. Operational assistance program for basic education
4. Electronification in transportation sectors and toll road payment
5. Harmonization of Digital Financial Services (LKD) and Laku Pandai (Branchless Banking) together with OJK.

To measure the progress of financial inclusion, National Council for Financial Inclusion utilize the World Bank Global Findex Data. The data shows that the number of banked people increase significantly in 3 years, from 2014 – 2017, by almost 14% and was the highest acceleration in East Asia and Pacific Region. To complete Global Findex Data, OJK has conducted Financial Literacy and Inclusion National Survey which shows that Indonesia's financial literacy index reaches 29.66% in 2016, rising from 21.86% in 2013.

Moreover, as information and communication technology infrastructure is a vital aspect for digital financial inclusion, Indonesia has been developing Palapa Ring that will build a connection throughout Indonesia. As of December 2018, the project has accomplished 100% progress for west and central section.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Indonesia views there are 4 areas regional bodies could play important roles: (i) setting benchmarks and regulations; (ii) cross border supervision; (iii) economy experiences / knowledge sharing; (iv) provide technical assistance.

- (i) Knowledge sharing: as trans-regional cooperation, APEC can play a vital role in advancing its member knowledge in addressing structural reform challenges in digital economy through capacity development (knowledge sharing) program, that involves champion economy that has successfully advanced its structural reform to address digital economic challenges.
- (ii) Technical assistance: Cooperation and collaboration with regional and international organization could also be done in the form of technical assistance as well as joint project to support fintech industry development and fintech ecosystem.

JAPAN

1. Barriers and Challenges: Considering your economy’s current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Other’ and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

Improvement of Rules for the Digital Market

Global data volume has been rapidly expanding in recent years. Digital platform companies are dramatically increasing potential access to global and other markets for SMEs, small business, ventures, and individual users.

Users, meanwhile, have expressed concerns about the difficulty of direct negotiations, one-sided rule changes, and high usage rates. These conditions highlight the need to improve legislation and guidelines for ensuring transparency and fairness in transaction practices.

Another concern is the threat of hindering competition via data monopoly in digital markets. Similar action is also needed.

Coordination of competition policy in the digital market requires high-level expert knowledge and also overcoming vertical divisions among ministries and agencies in order to facilitate timely responses amid accelerating changes. Japan intends to develop a new framework for these issues.

Fintech/Finance

Existing financial regulations use frameworks that are fundamentally divided by industry, such as banks and fund transfer service providers.

Particularly in the payments field, some observers note that the regulatory scheme divided by business categories interferes with market entry by newcomers and flexible provision of services amid diversification of services in recent years.

Furthermore, the value and number of transactions handled by fund transfer services other than Japanese banks are steadily rising with advances by the Fourth Industrial Revolution.

“Business category” laws currently regulate providers of financial transaction agent and broker services in general, not only in the payments field. There is concern about interference with market entry by newcomers in these areas too.

Enhancement of Efficiency of Administrative Procedures through Digital Government

The digitalization of administrative services will not only enable to reduce internal costs of government and private burdens of administrative procedures, but also provide the foundation of ‘Society 5.0’ which revitalizes new private business. If we get behind in the digitalization, we would see relative deterioration of administrative services and lose driving force to improve productivity and revitalize local economy. Furthermore, as the number of municipalities with less than 10,000 people is predicted to exceed a third of all the local governments in Japan in 2040, there is a concern that the quality and efficiency of administrative services would decrease in the future. While ensuring information security and properly considering protection of personal information, the central and

local government should promote promptly the digitalization of administrative services through cross-government measures.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance**
- Ease of doing business
- Others, please specify: _____

See above.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: productivity, inclusive growth**

Regulatory Sandbox

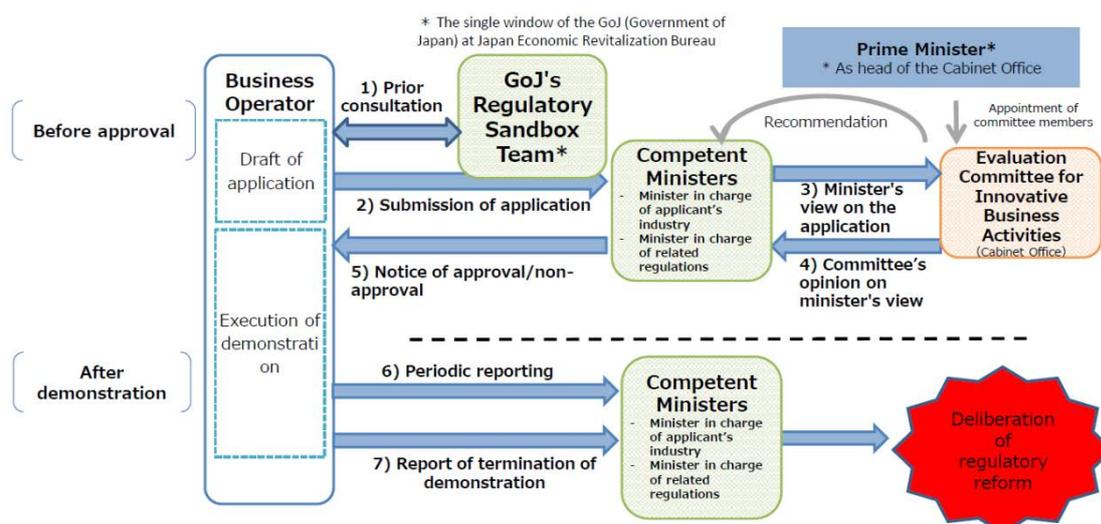
A fledgling business idea or technology needs support and understanding. In the case of government, we are introducing a sandbox approach that seeks to help new ideas develop by limiting administrative barriers and regulations on a case by case basis without being subject to existing regulations.

- Early stage business models or technologies are proposed to the government and evaluated on their merit
- Rules are relaxed to test these innovations within a certain contained “sandbox” (e.g. within an approved company or project). Businesses are able to conduct demonstration tests and pilot projects that are not envisaged under existing regulations inside of their “sandbox.”
- The testing environment allows businesses to conduct pilot projects quickly, building up data that can lead to change in regulations
- If pilot demonstrations of new technologies/business models are successful, government considers extending the same deregulation to the rest of the economy
- A dedicated office for this is set up to ease with the application process
- Law took effect in June 2018

Achievement:

- 8 testing projects in the field of IoT, online medical consultation, and Fin Tech have been certified (as of July 2019)

Process under regulatory “sandbox” is shown below.



Regional Development Using Information and Communications Infrastructure

(1) Town Development using ICT

Toward the Smart City that upgrades city functions through utilization of IoT, big data, and other technologies, Ministry of Internal Affairs and Communications (MIC) started “ICT Smart City Promotion Projects” in FY2017. The purpose is to solve various challenges facing cities by promoting “smart city based on data utilization” where an open data coordination platform for participation of diverse entities including venture companies is constructed and expanded to neighboring local governments and others to maximize ripple effects.

(2) Promoting the Development of Free Wi-Fi Environment

For developing an environment to allow tourists to more smoothly use Wi-Fi services, MIC conducted a demonstration test for realizing authentication cooperation in line with the policies, which MIC formulated in February 2016. Based on the results of the demonstration test, the Wireless LAN Certification Organization was established in September 2016 and new services adopting the certification method commercialized by this Organization were commenced in October 2016. In July 2017, seamless cross-business Wi-Fi connection was realized at more than 200,000 places.

(3) Establishing Support Systems through the Deployment of ICT Experts Directed at Regional Stimulation

MIC has been conducting initiatives to build up local economies and communities by making use of ICT since FY2007. Activities include sending Regional ICT Advisors — experts with knowledge and insight into regional ICT development — to regions motivated to revive their communities through ICT, providing assistance to build success models and propagating the results of these efforts economy-wide.

Promoting Teleworking

Teleworking enables, through the use of ICT, flexible working arrangements that make better use of time and location. Teleworking can realize flexible working styles suited to the life stage and lifestyle of every citizen, including families with small children, senior citizens and persons with disabilities. It can be an ace in the hole of working-style reform. Ministry of Internal Affairs and Communications (MIC) is carrying out various measures to address challenges in introduction of teleworking.

(1) Telework Security Guidelines

MIC has formulated and published “Telework Security Guidelines” to help private corporations wipe out anxieties about information security in implementing teleworking and introduce and utilize teleworking with security. In FY2017 the ministry revised the guidelines and published “Telework

Security Guidelines 4th Version” in the light of the recent social and technology changes (e.g. spread of cloud service and SNS) and new security threats (e.g. vulnerability of wireless LAN, appearance of ransomware and targeted attacks.)

(2) 100 Pioneers in Teleworking and MIC Minister Commendation

Since FY2015 MIC has been selecting “Pioneers in Teleworking” from among corporations introducing and utilizing telework. Proven pioneers are named publicly as “100 Pioneers in Teleworking.” In FY2016 the ministry established the “100 Pioneers in Teleworking – MIC Minister Commendation” to commend outstanding initiatives among “100 Pioneers in Teleworking.”

(3) Telework Day – a National Movement Project toward 2020

MIC, Ministry of Health, Labor and Welfare (MHLW), Ministry of Economy, Trade and Industry (METI), Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the cabinet Secretariat and the Cabinet Office in cooperation with the Tokyo Metropolitan Government and entities concerned are calling for economy-wide implementation of teleworking by corporations as “Telework Day” on July 24 every year up to 2020. July 24 is the day when the opening ceremony of Tokyo Olympic Games is scheduled. The purpose is to reduce traffic congestion through teleworking during the Olympic Games and establish teleworking across the economy.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

X Fintech

- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes
- Digital Banking
- Crowdfunding platforms
- Digital payments
- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions’ data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify:_____

Digitalization is expected to bring new players into the financial sector, give rise to innovative services, and exponentially enhance user convenience. As digital information is utilized in both financial and non-financial services, which may open the door for more sophisticated consumer-oriented financial services, existing financial institutions are required to adapt their business models in a customer-oriented way so that they can provide financial services better suited to the needs of users. The Financial Services Agency (FSA) developed the “Finance Digitalization Strategy” comprising a total of 11 measures for the improvement of financial services in light of such changes in the environment.

Furthermore, the FSA created the “FinTech Innovation Hub” under the Strategy, which will hold discussions and interact with venture companies and other experts to better understand the trends and direction of FinTech, and utilize the insights obtained to foster sound FinTech-related businesses.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech’s reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- X Regulatory reporting**
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

The FSA conducts financial monitoring by gathering, accumulating, and analyzing (using) data within Financial Institutions, so it is necessary to respond without delay to the utilization of data by FIs.

In light of these circumstances, in order to resolve the various issues surrounding the collection, accumulation, and utilization of data by FIs and the FSA, it is necessary to establish systems in cooperation between the public and private sectors in the future.

In order to realize this concept, financial institutions will solicit the needs of financial institutions for the enhancement of the sophistication and efficiency of the collection, accumulation, and analysis of data between Financial Institutions and the FSA, and conduct demonstration experiments in cooperation with the public and private sectors from areas where initiatives can be made. With regard to cases where it is deemed appropriate to promote the establishment of systems through public-private partnerships through such efforts, consideration will be started to realize them, while expanding the fields and types of business covered by the system.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Improvement of Rules for the Digital Market

- Established an expert organization for assessing competitive conditions in the digital market in the Cabinet Secretariat

Building a framework for global data distribution requires construction of a powerful and clear framework for data collection, storage, management, and distribution in Japan. Detailed issues run across many ministries and agencies, including R&D on data security, development of shared, general-use data formats, promotion of data cleansing, ensuring privacy and security for data distribution, promotion of a Society 5.0 cybersecurity framework, strategic management from the standpoint of strengthening industrial competitiveness based on data types and structure ranging

from sensitive technology to general technology information, and formulation of data portability and API disclosure policies.

The government hence plans to create an expert organization on domestic and overseas data and digital markets (Digital Market Competition Headquarters (provisional)) comprised of experts with diverse and high-level knowledge across ministries and agencies. This organization will be given authority to promote innovation through responses to a variety of issues related to above-mentioned data usage, including data portability and API disclosure, authority to obtain survey results and other reports based on the Act on Prohibition of Private Monopolization and Maintenance of Fair Trade (the Antimonopoly Act) and other related laws and regulations from the standpoint of defining and assessing the digital market where global digital platform companies compete and promoting competition and innovation, and authority, authority to plan and handle overall coordination of fundamental policies on the digital market, authority to cooperate and collaborate with competition authorities of other economies.

Specific tasks include (a) assessing the competition situation in digital markets, (b) improving rules for a variety of platform businesses and conducting surveys and making recommendations on issues related to the Antimonopoly Act, protection of personal information, and other matters, (c) issuing recommendation on stimulation of the digital market, including SMEs and venture companies, and (d) participating in rule formulation process related to competition assessment in the digital market handled by the international frameworks such as the G7, G20.

- Improvement of rules to ensure transparency and fairness in transactions between digital platform companies and users

(Mergers and Acquisitions)

Data monopoly in the digital market poses a threat of hindering competition even if a company's sales only hold a small share of the market. Japan therefore needs to prepare guidelines and/or legislation to conduct reviews of business combinations that include assessment of data value. Attention will be given to avoid interfering with innovations in this process.

(Transparency and fairness of transaction practices, etc.)

Digital platform companies dramatically improve potential access to global and other markets for SMEs, venture companies, and freelancers (Gig Economy). However, transactions between digital platform companies and users also face potential problems, such as (a) one-sided application of contract terms and rules, (b) service additions and excess cost burden, and (c) excessive restrictions on access to data.

The government hence needs to improve legislation and guidelines to ensure transparency and fairness of transaction practices and other unique relationships formed in the digital market and aims to submit a bill to the National Diet's 2020 Ordinary Session (the Act on Improving Transparency of Digital Platformer Transactions (provisional)).

Meanwhile, consideration will be given in improving rules to use of rules that respect autonomy with a “comply or explain” approach initially for the purpose of avoiding interference with digital innovation for the Fourth Industrial Revolution.

Specific consideration items will be clarification and disclosure of contract terms and transaction rejection reasons, clarification of rankings (order of presentation for product search results), disclosure in cases of digital platform companies giving preference to their own products and services, disclosure of requests for most-favored-treatment clauses (such as clauses requesting the best terms among business partners), and an obligation to arrange a complaint processing system.

- Toward 5G development and realization of a G-Spatial Society

As part of efforts for realizing Society 5.0, 5G service launches in all prefectures by the end of FY 2020 and the government intends to provide necessary assistance for economy-wide deployment of 5G base stations, optical fiber, and other information and communications infrastructure by telecom carriers and others, while also ensuring security, and accelerate the 5G development plan by FY 2024. At that time, in order to realize regional revitalization, pioneering local public organizations that have specific efforts to solve their own regional issues will be given priority for support.

Furthermore, the government plans to promote social deployment of advanced technologies using geospatial information with a goal of realizing a society with advanced utilization of geospatial information (G-Spatial Society).

Fintech/Finance

The government intends to revise the existing legal framework for financial and commercial transactions divided by business categories and to pursue realization of a function-based, cross-segment framework that applied the same rules to the same functions and risks. It hopes to promote entry by newcomers, innovations through competition among various services, and competition related to financial service quality.

(Payments)

The government plans to adopt a cross-segment framework in the payments field that has been cited as an area in which the vertical structure by business segment under current laws interferes with free selection of business models and services by service providers. This initiative aims to realize flexible, highly convenient cashless payment methods, besides existing bank fund transfers and conventional relatively high-sum credit card payments, through market entry by newcomers and competition among various services by 1) allowing seamless payments that combine prepaid and postpaid formats (note 1) and 2) creating a new fund transfer type positioned between banks and existing fund transfer firms and thereby facilitating a wide range of fund transfers (note 2) other than just bank fund transfers. In this process, the government also intends to introduce frameworks that enable smooth business deployment by fintech companies and other payment service firms, such as utilization of performance provisions in credit reviews under the Installment Sales Act. It plans to submit necessary bills for these changes to the National Diet's 2020 Ordinary Session.

(Note 1) Seamless payments combining prepaid and postpone formats:

Facilitate provision of seamless payment service using prepaid, postpaid, and other formats through adoption of a different system for small-sum, low-risk payments than the existing one for relatively high-sum payments.

(Note 2) Non-bank fund transfers with a wide value range:

In addition to existing fund transfer business that handles fund transfers up to one million yen, create a new type of fund transfer positioned between banks and existing fund transfer business and formulate a system that enables the transfer of funds exceeding one million yen with simpler regulations than applied to banks.

(Cross-segment legal framework)

The government intends to review measures for realization of a cross-segment financial services brokering legal framework that allows provision across segments of services for various functions, such as payments, fund provision, asset management, and risk transfer. It hopes that this initiative will enable provision of a highly convenient one-stop channel that meeting the needs of individual users utilizing smartphones and other devices, simplify selection of financial services that meet personal needs by users, and encourage competition for financial service quality. The government aim to prepare its fundamental approach for this initiative during 2019.

Enhancement of efficiency of administrative procedures through digital government

With respect to the information system and data of the state and local governments, we intend to integrate, standardize and communalize it so that everyone can utilize it as a public goods which create rich cash flows. Especially, regarding the information system of local governments, we aim to standardize it at the initiative of the central government, including financial support, and promote the expansion of the cloud computing system and make it possible to use the system in large scale local public bodies by restraining customizing and so forth.

Toward the purpose of enhancing convenience, simplification and optimization of the administration through the utilization of IT technology, the government aims to realize the one hundred percent digitalization of the administrative services by reviewing the work, including the abolition of the attached documents, and making the administrative procedures online thoroughly based on the 3 Digital Principles(1. Digital First, 2. Once Only, 3. Connected One Stop).

In the various fields of the local government administration, while comparing with each other, we intend to improve the work efficiency through the utilization of ICT and AI and the standardization of work process and information system. The relevant ministries aim to develop the AI which is suited for the horizontal expansion and spread it economy-wide in the association with the local governments.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

The following are policy examples, which aim to enhance inclusive growth with respect to the digital economy.

- Since digital textbook has a great potential to improve students' learning and reduce challenged students' difficulty in learning, the government plans to enhance its effective application in the field of education. While inspecting its effect and influence, the government intends to conduct a research from the perspective of international competitiveness and take necessary measures.
- Through formulating a guideline on management, the government plans to spread "the Community ICT Clubs" economy-wide as a place for bonding of new era so that children, students, working adults, handicapped children, elderly citizens and others can enjoy learning ICT skills and take a chance of social success.
- While sorting and disseminating advanced model of effective teleworking which contributes to utilization of diverse human resources such as women, challenged people and elderly people, the government intends to appoint experts such as Labor and Social Security Attorney and IT coordinator who are in charge of problem-solving of SMEs as a key carrier of spreading teleworking in order to promote teleworking consistent with regional and each company's conditions.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

To ensure reliability related to privacy, security, and intellectual property rights and facilitate unfettered flow without economy border concerns of data that is beneficial to resolving business and social issues, it is necessary to seek promotion of data free flow internationally.

In this context, Japan aims to work closely with the APEC to disseminate the concept of “Data Free Flow with Trust (DFFT)” which was agreed at the G20 Osaka Summit in June 2019.

KOREA

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business**
- Others, please specify: _____

Data, network and artificial intelligence are the three major drivers of the transition to the digital economy, which is best represented by the Fourth Industrial Revolution. The Korean government has set the diffusion of the Fourth Industrial Revolution technologies based on hyper-connected intelligence as its main goal to support the various industries.

Korea also views regulatory reform as an important task in helping new technologies and services enter the market in the digital economy because most old regulations are not suitable for the digital economy as it has different features from the existing economic systems.

In addition, various policies related to the digital economy are implemented across the government. Therefore, it is crucial to define the scope of the digital economy and measure the achievements.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

As boundaries among industries get blurry and the competition gets intense, well-balanced policies need to be put in place to protect and foster the industries, taking into consideration Digital Darwinism. Naturally, boundaries among ministries and government agencies are getting vague as well. Therefore, collaboration among different organizations is crucial more than ever. In addition, as we move towards the digital world, existing acts and legislations should be reviewed from a different point of view and revised if necessary.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**

- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

Since 2013, the Korean government has actively promoted administrative innovation to integrate government services and eliminate silos among ministries. This effort has allowed the government to provide proactive and customized services to the citizens and facilitate the disclosure of government data.

Especially, with the enactment of the Act of Promotion of the Provision and Use of Public Data, the open data policy has contributed greatly to the growth of related industries as many businesses and citizens are starting to create services using open data. Moreover, Korea has ranked top on the OECD's OUR Data Index two consecutive times.

Furthermore, the Korean government built AI infrastructure called the AI Hub in January 2018, opened up AI education data to the private sector and provided computing resources for AI products and services development. Thanks to these efforts, there have been great progress in the number of AI companies and the amount of investment for AI research and development. (The number of AI companies increased from 16 to 43 from 2016 to 2018, and R&D investment grew from 130 billion won to 270 billion won during the same period.)

3a. (Specific to Financial Sector) Best Practices: Of the structural reform relating to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Regulatory framework for Fintech
- Regulatory framework for cryptocurrency
- Regulatory sandboxes**
- Digital Banking
- Crowdfunding platforms
- Digital payments
- International remittances
- Personal and business loans
- Robo-advisors
- Cloud computing,
- P2P lending platform
- Use of open data on financial services
- Open Banking
- Others, please specify: _____

It is difficult to bring innovation to financial services because the regulations on the financial industry are strict, rigid and complex. To tackle this problem, the Korean government enacted the Special Act on Financial Innovation Support, a financial regulatory sandbox for introducing new financial services using emerging technologies such as big data or AI, in December 2018. Since then, 9 financial services* were designated as innovative financial services as of May 2, 2019.

* example : the AI credit information service using real-time accounting big data information

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting**
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

Korea's financial authority (the Financial Supervisory Service or the FSS) is working on a pilot project for machine-readable regulatory reporting. To do this, regulations must be translated into a machine-readable language and a standardized interface must be developed for financial institutions and regulators. The machine-readable regulatory reporting is expected to lower the cost of regulatory compliance for financial institutions and increase the accuracy of their data in a more complex regulatory environment.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

The Korean government introduced the Data & AI Economy Vitalization Strategy on January 16, 2019 to vitalize the lifecycle of data value chain, which will in turn innovate the economy and the society with hyper-connected intelligence, and to foster a world-class AI innovation ecosystem. The government also initiated its 5G Plus Strategy on April 8, 2019 to establish a new, 5G-based convergence service ecosystem after the launch of the world's first 5G network in Korea on April 3, 2019.

In addition, the Korean government introduced a regulatory sandbox to help products and services using emerging technologies enter the market on January 17, 2019, and the Regulatory Sandbox Committee has had three meetings and approved 49 cases as of May 10, 2019.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

[Challenges]

The spread of intelligent information technologies prompted by the Fourth Industrial Revolution will facilitate inclusion and innovation. However, there are also concerns that it may cause greater inequalities.

- 1) The ageing society will cause a rapid increase in the number of the old and the disabled, ultimately resulting in a constantly growing socially disadvantaged group.

- 2) Behind the economic, social and cultural benefits brought by ICT development lie inequalities and the exclusion of the disadvantaged. For instance, elderly people who are not capable of using the Internet pay about four times more as offline money transfer charges than Internet and mobile banking users.

[Policies and Action Plans]

As a comprehensive plan to cope with the emerging digital divide, Korea introduced a strategy called “ICT for ALL” in November 2018 with a vision for building “a human-centered intelligent information society for all”. This plan is included as a major initiative (achieving digital inclusion for all) in Korea’s key strategy No.3 — Create a human-centered intelligent information society — under the 6th Master Plan for National Informatization (2018-2022).

The Korean government also operates information villages in rural and mountainous areas to enhance digital inclusion and promote the digital economy. Information villages actively takes part in digital commerce (InVil Shopping) to provide local delicacies and tour programs to consumers in larger cities.

[Performance and Future Plans]

As a result of various inclusion policies, the socially disadvantaged people’s information access level has reached 91.1%, which is almost on par with general citizens, and their levels of capacity (59.1%) and utilization (67.7%) are also showing continuous improvement.

Digital Informatization Level of the Disadvantaged Compared to General Citizens

(Unit: %)

| Type | 2016 | 2017 | 2018 |
|-------------------------|------|------|------|
| Information Access | 84.5 | 91.0 | 91.1 |
| Information Capacity | 45.2 | 51.9 | 59.1 |
| Information Utilization | 59.0 | 65.3 | 67.7 |
| Total | 58.6 | 65.1 | 68.9 |

※ The informatization level of the socially disadvantaged group with the level of general citizens being 100.

Source: Ministry of Science and ICT of Korea, 2018 Status Survey on Digital Divide

As the information capacity and utilization levels of the disadvantaged group are still lagging behind the level of information access, the Korean government is planning to carry out more practical measures to support them. For instance, the Korean government is increasing mobile-focused education to help the disadvantaged group better adapt to changing technologies and services, helping to build their capacity to use new services in their daily lives and expand the scope of their ICT-driven economic activities so that they would not be excluded from online economic and social activities.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

As the volume of the digital economy is expanding and digital connectivity is increasing, regional cooperation has become all the more significant in advancing the digital economy. Considering the cross-cutting characteristics of the digital economy, regional cooperation plays an important role in achieving regional prosperity.

APEC can be a venue for member economies and other external bodies to share knowledge, experiences and best practices. Especially, newly emerging issues revolving around the digital economy needs further discussion between various stakeholders in the region through joint capacity-building activities, and pan-regional issues such as cyber security and personal information protection require joint responses.

To address various policy gaps, barriers and the challenges of the digital economy, APEC should propose and implement cooperative projects for promoting economic growth in the APEC region and narrowing the gap between APEC member economies. For example, implementing the APEC Internet and Digital Economy Roadmap is one of the major tasks of APEC. To facilitate the implementation of the roadmap, Korea proposed the establishment of an APEC digital innovation fund last year. The fund will support various projects for strengthening digital capabilities and regional ties by encouraging member participation.

MALAYSIA

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: Social safety net and labour law review (please refer to Q2 for further elaboration)**

FINTECH UNDER THE GOVERNANCE OF CENTRAL BANK MALAYSIA (BNM)

Rapid evolution in fintech has compelled regulators to continuously reassess its regulatory and supervisory regime to keep pace with the evolving risks to financial stability. Greater digitalisation of financial services (including those leveraging on shared platforms and algorithm-based decision making in financial transactions) can amplify herd behavior, inter-connectivity and speed to contagion risk across institutions, markets and economy boundaries. Thus, the challenge lies in balancing the trade-offs in facilitating innovation and managing risks and in determining the proportionality of regulation.

However, the subjective nature of 'innovation' in financial services makes it challenging to apply proportionality in regulation without demarcating these financial service providers at the onset. In this sense, there is a need for numerous policies to be attuned to the nature and incidence of particular innovations. The need to deliberate on 'innovation' on a case-to-case basis often leads to a lag in regulation.

As there are often significant time lags between introducing a fintech solution and being able to holistically assess its risks and impact on consumers, there is a stronger need for an ethical underpinning for fintech solutions with stronger focus on consumer well-being. This is a crucial element to maintain trust in the financial system, as financial transactions including those delivered via use of technology rely on trust. Ethical practices are necessary to build that trust. In addition, to promote greater transparency, regulations would also need to consider not just asymmetry of information, but also asymmetry of understanding of risks and rewards on the usage of fintech solutions.

One of the emerging financial stability risks from the usage of fintech is increasing reliance by financial providers on third-party service providers for data provision, cloud storage and analytics. While these may reduce operational risk at the individual institution, it could also pose new risks and challenges for the financial system as a whole. If this trend were to continue, along with a high degree of concentration among service providers, operational failures and cyber incidents could disrupt the activities of multiple financial institutions. This remains an issue for many authorities to consider.

HOME ECONOMY UNDER THE PURVIEW OF MALAYSIA PRODUCTIVITY CORPORATION (MPC)

Regulatory and legal framework is considered as one of the major barriers and challenges to implement structural reforms relating to the digital economy. For example, the rise of the home sharing economy posed challenges to the existing regulatory framework on the (1) conflict between traditional industries and newly emerging platforms, (2) managing negative externalities on nuisances, noise, traffic etc. (3) safety and security issues - inadequate building's fire protection system, theft and damages to common facilities (4) extra-jurisdictional issues, such as domestic earnings that flow overseas and by-passing local taxation authorities (3) data sharing issues for tax assessment and security reasons, and (5) consumer

protection issues – such as data protection, including the selling of user data by platforms, liability and insurance.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business
- Others, please specify: Alignment of developmental policies**

Need for improvement in dealing with cross-cutting issues on regulatory and legal frameworks for platform-based economy and Artificial Intelligence (AI) activities, ranging from compatibility of privacy regimes, cybersecurity standards and consumer welfare considerations, to the appropriate ethical and governance structure.

Policy makers and regulators faced significant challenges whether to amend existing regulations or to design new regulation to ensure a balance between fostering innovation, protecting consumers, and addressing the potential unintended consequences of disruption.

On an industry-wide level, one of the challenges is in ensuring developmental objectives are aligned across Ministries and Agencies domestically. This is to facilitate the industry to move forward cohesively and to be able to efficiently drive forward the economy’s digital and innovation agenda. Some of these challenges have been addressed via the signing of MOUs between different policy makers from various Ministries and Agencies for them to engage more closely and align initiatives collectively.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: Initiatives on an inclusive digital entrepreneurship**

DIGITAL FREE TRADE ZONE INITIATIVE

In March 2017, Malaysia formally launched the Digital Free Trade Zone initiative at the Global Transformation Forum. The DFTZ is an initiative to capitalise on the confluence and exponential growth of the internet economy and cross-border e-Commerce activities and to facilitate seamless cross-border trade and enable local businesses to export their goods with a priority for e-Commerce.

DFTZ has three components; eFulfilment Hub (To help SMEs / businesses in exporting their goods easily, with the help of leading fulfilment service providers); Satellite Services Hub (To connect SMEs / businesses with leading players who offer services like financing, last mile fulfilment, insurance and

other services which are important in cross-border trade); and eServices Platform (To efficiently manage cargo clearance and other processes needed for cross-border trade).

DIGITAL FINANCING & DIGITAL INVESTMENT FRAMEWORKS UNDER THE PURVIEW

Malaysia through Securities Commission (SC) believes that there is already a strong regulatory framework for capital market laws, which are underpinned by principles of proportionality and transparency. Malaysia is cognisant that regulation must be able to adapt and respond to market and economic events, innovation and evolving technologies. However, achieving the goals of business efficiency and investor protection would require careful balancing in the design of the regulatory framework.

In this regard, having a clear regulatory framework to facilitate digital finance would provide certainty to market players, issuers, as well as investors. To this end, SC has adopted a facilitative approach where regulation is imposed on a graduated scale in line with the growth of the market and complexity of the product. This is clearly seen through regulatory framework for equity crowdfunding (ECF), peer-to-peer (P2P) financing and digital investment management (DIM) activities, where the regulatory frameworks were socialized and obtained feedbacks via targeted focus group discussions and engagement sessions with members of the Fintech community.

Having clear strategies and objectives are key to drive effective structural reform relating to digital economy. To facilitate the adoption of digital innovations in capital market, SC has crafted a holistic digital agenda for the capital market in 2016 designed towards:

- Enhancing access to financing
- Increasing investor participation within the capital market
- Augmenting the institutional markets
- Developing synergistic ecosystem

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show

- Fintech**
- Cryptocurrency (digital asset that uses cryptography for security)**
- Sandboxes**
- Digital Banking**
- Crowdfunding platforms**
- Digital payments**
- International remittances**
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)**
- Cloud computing,**
- P2P lending platform**
- Use of open data on financial services
- Open Banking (a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs))
- Others, please specify: _____

Fintech

Fintech activities are regulated according to the areas of activity as elaborated below, under the purview of the respective regulators.

Regulatory framework for cryptocurrency (digital asset that uses cryptography for security)

Via the Capital Markets and Services (Prescription of Securities) (Digital Currency and Digital Token) Order 2019 and amendments made to the Guidelines on Recognized Markets, the SC has put in place a new regulatory framework to facilitate the trading of digital assets in January 2019. This framework forms part of the SC's ongoing efforts to promote innovation and facilitate development in the digital asset trading ecosystem while ensuring investor protection. Pursuant to the new framework, in May 2019, the SC has registered three (3) Recognized Market Operators to establish and operate digital asset exchanges in Malaysia.

Moving forward, the SC will also regulate the issuances of digital assets via initial coin offerings (ICO). In March 2019, the SC issued a public consultation paper to seek public feedback on the proposed ICO framework which among others discussed the eligibility of issuers, the need for transparent and adequate disclosures as well as utilisation of proceeds of the ICO.

Regulatory sandboxes

BNM launched the Fintech Regulatory Sandbox (Sandbox) in October 2016. The Sandbox is open to all fintech companies including those without any presence in Malaysia as well as stand-alone fintech companies.

A product/ service/ solution is deemed to be innovative if it is not already available in the Malaysian market and this will be evaluated with the value propositions that the product, service or solution may bring to the financial services industry.

Experience in the Sandbox has delivered a number of important benefits including a better approach of formulating appropriate regulations and provides an opportunity for fintechs to become more familiar with operating in a regulated environment. Among the new regulations that have been introduced following Sandbox experiments include the regulations on electronic Know Your Customer (e-KYC) and products aggregators.

Digital banking

BNM has received interests to establish digital banks via the Sandbox application and is keen to explore the potential benefits that may be derived for Malaysia. As such, BNM is in process of formulating the regulatory framework for digital banks by Q4 2019.

Digital payments

BNM continues to transform Malaysia's payments system through three waves of reforms:

- 1st wave (2013 to 2015): Accelerated cheque decline and greater adoption of electronic fund transfers through the Pricing Reform Framework and e-Payment Incentive Framework;
- 2nd wave (2015 to 2018): Payment Card Reform Framework (PCRF) spurred higher growth in point-of-sale (POS) terminals and debit card transactions; and
- 3rd wave (2018 onwards): Turning every mobile phone into a digital wallet through the Interoperable Credit Transfer Framework (ICTF).

International remittances

Promoting the provision of electronic remittance (e-remittance)

- BNM seeks to encourage the wider adoption of technology within the money services business (MSB) sector to increase the provision of more convenient and cost efficient money services. One of the key strategies is the expansion of e-remittance, which entails the delivery of digital solutions for remittance services through mobile and web-based channels. To date, BNM has approved 23 e-remittance service providers (RSPs) in Malaysia.

Introduction of e-KYC policy for remittance transactions

- BNM issued a policy document in 2017 to allow qualified RSPs to conduct Know Your Customer (KYC) through digital platforms when on-boarding a new customer. The effective use of regulatory technology to conduct e-KYC enables RSPs to authenticate identity documents and perform facial recognition of customers remotely, with the aim of achieving outcomes that are comparable or superior to face-to-face procedures. This has had a significant impact in encouraging the wider use of formal remittance channels, by reducing the costs of conducting KYC over the counter, and improving access in locations where RSPs do not have a physical presence. To date, 7 RSPs have been approved to implement e-KYC in providing remittance services.

Awareness and educational programme - “Project Greenback 2.0”

- BNM, in collaboration with the World Bank, has introduced the Project Greenback 2.0 in 2 champion cities in Malaysia which have a high population of migrant workers. Project Greenback 2.0 is aimed at increasing the efficiency and transparency of remittance products through an innovative approach to enable consumers in making informed decisions when using remittance services. Initiatives implemented under the Project Greenback 2.0 centred on educating the public on identifying formal MSB channels by leveraging on the aggregator applications, and promoting the use of e-remittance solutions among individuals and businesses on a wider scale.

The effectiveness of these initiatives has been reflected by the increase in the migration of remittance from informal to formal channels and the reduction of remittance costs in Malaysia.

Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)

In the portfolio management services domain, the launch of the digital investment management framework in 2017 is part of the SC’s on-going efforts to bring financial inclusion to the masses through the use of technology. This is in line with SC’s digital agenda to increase investor participation within the capital market, by providing a more convenient, affordable and accessible channel to help investors to grow and manage their wealth.. The framework is meant to allow for automated discretionary portfolio management services to be offered to Malaysian investors, are 2 licensed digital investment managers to date.

Cloud computing

BNM has released the Risk Management in Technology exposure draft on 4th September 2018. For cloud solutions, the exposure draft details the adoption of a consultative approach instead of prior approval i.e. financial institutions (FIs) to consult BNM prior to use of cloud. However, if the use of cloud involves material outsourcing arrangement, the requirement for prior approval remains as per Outsourcing standards. In the engagement with BNM, FIs need to demonstrate technical know-how e.g. on security requirements and controls, and adequate experience with non-core systems using clouds before considering the use of clouds for core system).

Equity crowdfunding and peer-to-peer financing

In 2015, the SC introduced regulations for equity crowdfunding (ECF) regulations to address gaps in early stage capital while peer-to-peer (P2P) financing regulations were introduced in 2016 to bridge working capital needs via the Guidelines on Recognised Markets. This is in line with SC’s digital agenda to enhance access to financing. As of March 2019, more than 900 MSMEs have successfully raised close to RM350 million (approx \$USD 84.5 million). Currently, there are 10 ECF platform operators and 11 P2P Financing platform operators who are registered with the SC.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech’s reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for

other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring**
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)**
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

Transaction monitoring

BNM assumes the role of the Financial Intelligence Unit (FIU) for Malaysia. This entails responsibilities that include receiving information from reporting institutions, analyzing, and disseminating this information to competent authorities, such as the police, for further investigation and action. A large part of this information is a result of transaction monitoring process, which is an essential part of a robust AML/CFT framework. Financial Action Task Force (FATF) Recommendations³ require banks to report all suspicious transactions, including attempted transactions, regardless of the amount of the transactions (Recommendation 20), to the FIU.

At institutional level, each reporting FIs is required to have in place an effective information management system that will allow it to comply effectively with transaction monitoring and reporting requirement. The suspicious transactions are compiled, analysed and subsequently sent to the Financial Intelligence and Enforcement Department (FIED) of BNM. The task of managing and analysing this information has become increasingly challenging with the advent of financial technology from the automated teller machine (ATM) to online banking, and now, mobile banking which has significantly increased the amount of transactions and, consequently, suspicious transactions that are reported and needed to be analysed.

In order to facilitate this process, BNM has introduced the use of information management system called Financial Intelligence System (FINS) in 2006, to ensure that the information can be transferred between the reporting institutions and BNM, and vice versa, efficiently and securely. FINS is a web-based system that allows reporting institutions to submit suspicious transactions reports (STRs) to BNM online. Compliance Officers of each of the reporting institutions are given secured access to the system in order to file the STRs. BNM can then process and manage these STRs efficiently using myriad of tools available for analysts including to search through the data, compile statistics, and obtaining record. BNM also uses FINS as a secured way to communicate important information to the reporting institutions such as typologies report, guidance, orders, and latest updates on ML/TF.

At present, BNM received between 300-500 STRs in a day from all the reporting institutions.

AML/CFT (anti-money laundering/ combating the financing of terrorism)

BNM is currently focusing its reg-tech initiatives primarily on e-KYC efforts. In view of healthy industry appetite and an absence of an economy-wide digital ID in the short term, BNM has introduced a specialised track for e-KYC solutions in the Regulatory Sandbox.

The Specialised Sandbox focuses on e-KYC processes given the potential to enable more efficient and accessible financial services through digital on-boarding. This specialised track aims to accelerate the development of e-KYC solutions in the industry while enabling more flexibility in testing parameters and data collection to inform policy-making on non-face-to-face KYC requirements.

³ FATF is an independent inter-governmental body that develops and promotes policies to protect the global financial system against ML/TF. The Recommendations are recognized as the global AML/CFT standard.

In 2016, the SC has amended its Guidelines On Prevention Of Money Laundering And Terrorism Financing for Capital Market Intermediaries to introduce new Customer Due Diligence requirements for establishing non face-to-face business relationship. This would facilitate capital market intermediaries to adopt more digital processes to enhance operational efficiencies while ensuring compliance with AMLA requirements.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Malaysia has in place several near-term economy-wide masterplans underpinning efforts for broader digital structural reforms. Among them are:

1. National eCommerce Strategic Roadmap – 6 thrust areas which will guide and enable Malaysia's stakeholders in eCommerce ecosystem to contribute to the eCommerce agenda.
2. Industry4WRD - In response to the Fourth Industrial Revolution (4IR), Malaysia launched the Industry4WRD to drive digital transformation of the manufacturing and related services sectors in Malaysia.
3. Malaysia targets to publish a regulatory framework for Digital Banks by Q4 2019.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress

DIGITAL ENTREPRENEURSHIP

Malaysia has pioneered steps to promote inclusivity through award-winning digital entrepreneurship programs such as eUsahawan and eRezeki. Such programmes focus on becoming a hub consolidating digital tasks between international and local platforms on different categories of tasks complexities - simple digital microtasks, digitally-enabled tasks, and digital work.

The next step is identifying how to match these tasks with an appropriate target community, including the lower income groups to take advantage of potential business opportunities created by the gig or sharing economy. Prior to these, individuals are provided with relevant skills training where necessary. These project have even been piloted with the Malaysian Association for the Blind to encourage their integration with digital platforms to establish or expand business activities.

Since 2015, more than 160,000 students and micro-entrepreneurs have passed through the eUsahawan program, of which approximately 30% of participants generated additional sales of more than RM 320 million (approx. \$USD 77.2 million) over a period of 3-6 months. To date, more than 2,800 participants have on-boarded various eCommerce platforms.

DIGITAL LITERACY AND IMPROVING THE INFRASTRUCTURE

There is a need for continuous efforts in social inclusion by improving the ability, opportunity and dignity of the most vulnerable groups (elderly, poor households, women, disabled communities and immigrants) through fairer policy packages. In this regard, Malaysia has ensured strategies to bridge the digital divide and accelerate digital transformation among these group:

1. Improving digital literacy by designing more curriculum for skills upgrading and partnerships with Community Based Organisation or non-governmental organisation (NGOs) for effective dissemination of digital literacy

- Support the development of an economy-wide volunteering network of digital champions and partnerships with the private sector to empower digital skills development (coding).
 - Malaysia has adopted all the standards recommended by the UNESCO's Global Digital Literacy Framework to harmonise skills development.
2. Expanding outreach of user-friendly government services for active civic participation
 - For example, the Government has enhanced and consolidated over 400 public services within Mobile Community Transformation centres to expand the outreach of digital services, which have benefited over 2.6 million users.
 3. Improving coverage, quality and affordability of digital infrastructure for the vulnerable groups
 - The Government has established an economy-wide target of 1% gross national income per capita for fixed broadband cost. By encouraging common infrastructure sharing and greater transparency in wholesale level pricing, pricing of new entry levels into fixed broadband has been reduced by more than 40%.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified

Provide platform for APEC economies to discuss emerging issues relevant to digital economy e.g. cybersecurity resilience, re-skilling and upskilling of the labour force.

Promote collaboration in the region to drive the digital economy in the areas of common interests such as micro, small and medium enterprises (MSMEs), consumer protection; security of electronic transactions; and electronic payment infrastructure.

Work on improving the current state of trade facilitation and mobility of skilled workers within the Asia Pacific region to support growth in the digital economy.

Promote innovation within capital markets, enhance the cross-pollination of Fintech concepts which will benefit financial services institutions, startups and investors alike besides foster greater understanding of different digital regulatory philosophies through information sharing. This can be achieved among others by exchange of experiences and best practices in this area.

MEXICO

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business**
- Others, please specify: _____

We consider that the three major barriers and challenges to implementing structural reforms regarding digital economy are:

i) Digital economy in Mexico is still flourishing. As of April 2019, the National Banking and Securities Commission (CNBV) has identified more than 500 fintech firms that offer several financial services using disruptive and innovative technologies in the banking, payments and insurance sectors. However, the number of Fintech firms is still growing. Fintech firms with different business models and that offer a wide range of products and services is rising by the second, thus making it hard to measure the depth of the digital economy.

ii) Mexico has a legal framework that requires Fintech firms with business models regarding certain financial activities such as lending and deposits, to be subject to authorization, regulation and supervision by financial authorities. However, there is still work to do. Currently, Mexican authorities are working on developing provisions related to key aspects for the operations of Fintech firms in order to provide the industry with appropriate rules for their operations and a broader risk mitigation framework.

iii) Mexico still has certain challenges regarding ways to enhance business activities in order to promote growth, create jobs and generate income that can be spent and invested domestically. Mexico is in the right path to have in place effective rules to ensure high quality business to realize economic gains, reduce corruption and encourage firms that enhance the digital economy in the economy.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify:** _____

We consider that three of the major policy gaps relating to the digital economy in Mexico are the following:

1) Policies to promote partnerships between financial institutions and new entrants (digital economy entrepreneurs) – collaboration between existing financial institutions and Fintech firms remain a challenging process in Mexico. Collaboration and partnerships among those institutions can help

create a more robust financial services sector that can better serve consumer's needs, whether banked or unbanked.

2) Additional policies or measures to enhance financial access to unbanked and underbanked consumers – access to financial services through new and innovative products and services outside the conventional banking system is vital for creating and accelerating sustainable economic growth, creating employment and social development, thus the need of support policies to reach these consumers with new and innovative technologies.

3) Policies that promote the benefits of digital economy innovation in the financial sector – helping create Fintech awareness by educating individuals and consumers regarding the benefits (and potential risks) of Fintech products and services, can help promote the ease of doing business in the sector, provide consumers with tools to make informed decisions, move toward a digitalized economy helping reduce fraud, tax evasion, improving account penetration and payments efficiency.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: _____

Four effective examples of structural reforms relating to the digital economy in Mexico in the past five years are:

1) FinTech Law (was enacted on March 2018). It provides legal recognition to crowdfunding and e-money entities, referred to as financial technology institutions (FTIs), setting the authorization and supervisory frameworks, and granting powers to the financial authorities to set additional requirements in secondary regulation, as well as allowing FTIs and banks to make transactions using cryptocurrencies, subject to the rules issued by the Central Bank. The existing regulatory framework has made Mexico as one of the most important emerging Fintech hub in America with worldwide recognition.

2) National Cybersecurity Strategy (November 13, 2017) Mexico presented the modifies the legal framework for banking institutions regarding cybersecurity issues that would guarantee the protection of personal data, among other relevant modifications. Currently, the amendments to credit institutions regulations (specifically Banks and FTIs) aims at strengthening security controls by establishing minimum standards of compliance such as the implementation of a Chief Information Security Officer (CISO), Cyber Intelligence, Security Master Plan and Vulnerability Management.

3) Federal Telecommunications and Broadcasting Law⁴ (July 14, 2014), was published on the Official Journal of the Federation (DOF, by its acronym in Spanish), this Law aims to regulate the use, development, and operation of the radio spectrum, the public telecommunications networks, access to active and passive infrastructure, satellite orbits, satellite communication, the provision of

⁴ Federal Telecommunications and Broadcasting Law: <http://www.ift.org.mx/sites/default/files/contenidogeneral/asuntos-internacionales/federaltelecommunicationsandbroadcastinglawmexico.pdf>

public broadcasting and telecommunications interests of a general interest, and their convergence, the rights of users and audiences, and competition processes in these sectors.

4) Federal Economic Competition Law⁵ (May 23, 2014), was published on the DOF, the purpose of this Law is to promote, protect and guarantee free market access and economic competition, as well as to prevent, investigate, combat, prosecute effectively, severely punish and eliminate monopolies, monopolistic practices, unlawful concentrations, barriers to entry and to economic competition, as well as other restrictions to the efficient operation of markets.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

X Fintech

Cryptocurrency (digital asset that uses cryptography for security)

X Sandboxes

Digital Banking

X Crowdfunding platforms

X Digital payments

International remittances

Personal and business loans

Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)

Cloud computing,

P2P lending platform

Open Banking (a system that provides a user with a network of financial institutions’ data through the use of application programming interfaces (APIs))

Use of open data on financial services

Others, please specify: _____

As a result of a long work, on March 8, 2018, the Law to Regulate Financial Technology Institutions⁶ (ITF, by its acronym in Spanish) was signed, also known as the Fintech Law, which was published in the DOF on March 9.

Likewise, the Law contemplates, as a principle, the protection of the consumer, the requirements, functions, responsibilities and prohibitions that arise when requesting and granting an authorization to organize and operate as ITF, are clearly established. Therefore, the businesspersons are certain about the way in which they should behave in order not to fall into a conduct that implies a fine or a crime.

The nature and mission of this Law is aimed at promoting financial inclusion throughout the economy, protecting the consumer, generating financial stability and competition, as well as to prevent and mitigate the risk of money laundering and financing of terrorism.

The main figure in this Law are the ITF, comprised by the collective financing institutions (IFP, by its acronym in Spanish), the electronic payment funds institutions (IFPE, by its acronym in Spanish) and the innovative models developed in the regulatory “sandbox”. Supervision and monitoring will

⁵ Federal Economic Competition Law: https://www.cofece.mx/cofece/images/Documentos_Micrositios/Federal_Economic_Competition_Law.pdf

⁶ Law to Regulate Financial Technology Institutions: http://www.diputados.gob.mx/LevesBiblio/pdf/LRITF_090318.pdf

correspond to the CNBV, the Bank of Mexico and the Ministry of Finance and Public Credit (SHCP, by its acronym in Spanish).

The Mexican fintech law also included the figure of regulatory sandbox, which we expect that it will accelerate the development of new business models in the financial services industry.

The fintech sector in Mexico started to grow up quickly since 2015, given the number of start ups which started to offer some kind of financial services and the systemic risk and fraud risk to the general public, authorities decided to take action and started to define a legal framework to regulate them. The first selected Fintech models to be regulated were crowdfunding and digital payments because these models engage in reserved activities according to the local law. In addition to mitigate the mentioned risks, the new law also gave legal certainty to these startups by recognize them as formal entities in the Mexican financial system and gives the same legal certainty to other players of the system and enable them to do business without the fear of doing an illegal activity.

In summary, the Fintech law aim to promote competition in the Mexican financial services sector by giving legal certainty, enable the doing of business and fostering the creation of new entities in the market.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting**
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)**
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

CNBV is working on the development and implementation of a Suptech platform to receive regulatory reports from the soon to be authorized Fintechs and AML/FT data from commercial banks. For CNBV this is a strategic initiative that will transform the supervision process by eliminating manual tasks in the aggregation and data collection, as a consequence, administrative and operational procedures will be streamlined.

For the financial services sector this is also a fundamental change, because it will transform the way regulated entities report information and its periodicity. The communication platform is based in APIs and the availability and granularity of information is finer than in the current way of reporting. We see this effort as the first step to transform the way to exchange information in the financial sector.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Ministry of Finance and Public Credit (SHCP, by its acronym in Spanish)

Considering the barriers, challenges and policy gaps mentioned above, and due to the emerging importance of Fintech firms which are redefining the financial services industry worldwide, Mexico is strongly working on promoting digital economy due to the benefits for financial inclusion, economic growth and generating employments, and tackling the challenges identified.

As mentioned above, Mexican authorities are currently working on the development of secondary regulation that will be issued during 2019 to provide the industry with appropriate rules for their operations. Additionally, by March 2020, financial authorities will issue the last set of secondary regulation setting the obligation to financial service providers to share financial data with other providers and third parties specialized in technology, through standard APIs (Open Banking). According to Mexican regulation, the data that will be shared through APIs will be open, aggregated or transactional data, in which the latter requires the explicit consent from the customer.

An important element that Mexico is considering in its broader Fintech agenda, is based on the fact that existing supervisory tools and resources may no longer be adequate to address the fast changing Fintech landscape. Thus, CNBV is currently working on a SupTech platform based on technological solutions to supervise the new financial participants. SupTech is a shift away from current approaches based on lengthy onsite inspections and often delayed supervisory action, towards a proactive and forward-looking supervision, based on better data collection and data analytics.

Finally, as part of the Mexican government's medium and long term plan to enhance the financial sector, digital economy will play an active role on financial inclusion bridging the gap between unbanked clients and financial services.

Federal Telecommunications Institute (IFT, by its acronym in Spanish)**FIGI**

One of the projects that Mexico, through the IFT, is carrying out is the Financial Inclusion Global Initiative (FIGI)⁷. This Initiative is a three-year program implemented in partnership by the World Bank Group (WBG), the Committee on Payments and Market Infrastructure (CPMI), and the International Telecommunications Union (ITU) funded by the Bill & Melinda Gates Foundation (BMGF) to support and accelerate the implementation of economy-led reform actions to meet financial inclusion targets, and ultimately the global 'Universal Financial Access 2020' goal.

In particular, FIGI funds economy-wide implementations in three economies– China, Egypt and Mexico; supports working groups to tackle three sets of outstanding challenges for reaching universal financial access: (1) electronic payment acceptance, (2) digital ID for financial services, and (3) security; and hosts three annual symposia to gather authorities, the private sector, and the engaged public on relevant topics and to share emerging insights from the working groups and economy programs.

FIGI economy programs will provide tailored support including: diagnostic assessments, advisory services, technical assistance, capacity building, and pilots of innovative approaches, relevant to digital financial inclusion, with a focus on improving the legal and regulatory framework and financial markets infrastructure. ITU will provide technical advice on ICT regulation and supervision, and network standards, relevant for DFS.

On the basis of the above, the ITU and the IFT signed, in February 2019, the Cooperation Agreement with the aim of collaborating with each other to execute the project for the economy-wide implementation of the ITU Global Initiative for Financial Inclusion.

⁷ Financial Inclusion Global Initiative: <https://www.worldbank.org/en/topic/financialinclusion/brief/figi>, and <https://news.itu.int/financial-inclusion-global-initiative-itu/>

BIT

The IFT developed the Telecommunications Information Bank⁸ (BIT, by its acronym in Spanish), this interactive tool enables the user to consult, analyse, explore and download, simply and rapidly, statistical data relating to Mexico's telecommunication and broadcasting sectors. It can be used to consult information pertaining to the macroeconomic environment of those sectors, such as portability, operator revenue and investment, and indicators relating to services such as fixed and mobile telephony, fixed and mobile broadband, and pay television. This initiative will serve to foster business opportunities for new operators and licensees wishing to enter the Mexican market. Furthermore, this project received in 2017 the Good Practices prize, granted by the National Evaluation Council of Social Development Policy of México.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

Ministry of Finance and Public Credit (SHCP, by its acronym in Spanish)

Financial Inclusion is one of the strategic goals for the entrant federal government and digital inclusion is a necessary condition for Financial Inclusion. In that regard, CNBV developed the National Survey for Financial Inclusion (ENIF for its acronym in Spanish), in collaboration with the National Statistics and Geography Institute (INEGI), to generate an economy-wide representative data base, that could contribute to the design of financial services access and usage indicators in order to identify potential challenges in this matter.

The higher penetration of telecom and internet services, in comparison with traditional financial services penetration, enables the offering of new financial services for the underserved and unattended population through digital channels like smartphones. Several incumbent and challenger players recognize this condition and they are working in developing financial products designed specifically to work under this context.

Federal Telecommunications Institute (IFT, by its acronym in Spanish)

In 2019, the IFT will continue to focus its efforts on actions aimed at increasing the welfare of citizens, promoting, among other things, universal digital inclusion.

In relation to the above, one of the projects established in the Annual Work Program 2019 of the IFT is to make normative recommendations for the promotion of digital inclusion and the deployment of infrastructure. With the aim of implementing cross-cutting actions and in coordination with the powers of the three levels of government in Mexico, a set of recommendations will be prepared to adapt the regulatory system that impacts the telecommunications sector, in order to increase the provision of telecommunications services in those areas where they are not available, as well as including the population in the use of information technologies for their social, cultural and economic development, among others.

As part of the benefits that are intended to be achieved with this project, it is to have a regulatory framework in the telecommunications sector that allows implementing public policies that promote the reduction of the digital divide and contribute to social welfare through accelerated regional development and more equitable, as well as greater investments.⁹

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

⁸ Telecommunications Information Bank: <https://bit.ift.org.mx/BitWebApp/>

⁹ Annual Work Program 2019: <http://www.ift.org.mx/sites/default/files/contenidogeneral/transparencia/pat2019.pdf>

Ministry of Finance and Public Credit (SHCP, by its acronym in Spanish)

Participation of regional bodies such as APEC would be very helpful. The digital economy covers a broad range of diverse technological innovations, and therefore the regulatory tasks are also becoming more complex, not only because the technological sophistication but also because the new digital models that work beyond specific jurisdictions and borders. In that sense, it is necessary to establish a collaboration across regulatory domains including between financial regulators, telco regulators and other authorities, and regional bodies can help to coordinate the efforts.

Specific actions that can be performed by APEC are:

- Knowledge repository that stores relevant material on digital economy topics.
- Regulatory guidance among APEC members.
- Coordinate systematic and focused dialogue with the private sector, development partners and other international stakeholders.
- Coordinate multiple support activities and offerings as assistance to policymakers and regulators.
- Test-and-learn approaches such as regulatory sandboxes, innovation hubs or RegLabs, which support the development of distinct digital economy models.

Federal Telecommunications Institute (IFT, by its acronym in Spanish)

Regional and international organisms serve as forums for their members, which can be economies, academia, industry, civil society, among others, to exchange experiences, find answers to common problems, identify good practices, provide and receive technical assistance, build capacities, as well as establishing synergies among their activities, through cooperation, in order to promote development.

As an example of the aforementioned, we can observe it in the activities that APEC carries out, as it is the case of the workshops that organize. APEC funding from the general project account enabled the organization by Mexico of a 3-day “APEC Workshop on Competition Policy for Regulating Online Platforms in the Asia-Pacific Region” with the participation of 13 APEC economies: Canada, Chile, Chinese Taipei, Indonesia, Malaysia, Mexico, Papua New Guinea, Peru, The Philippines, The United States, Russia, Singapore and Vietnam. Non-member participation included the European Union, the Organisation for Economic Co-operation and Development, the Latin American Internet Association, and participants from academia, legal firms and industry. The discussion benefited as well from the interventions of Mexican institutions that take part in the development of the internet and the digital economy, namely the Federal Telecommunications Institute (IFT, by its acronym in Spanish), the Ministry of Economy (SE, by its acronym in Spanish), the Office of the Federal Prosecutor for the Consumer (PROFECO, by its acronym in Spanish), the Federal Economic Competition Commission (COFECE, by its acronym in Spanish) and the Central Bank. The number of speakers and active participants that attended to the workshop amounted to 74, out of which 44 were males (59.5%) and 30 were females (40.5%).

As a result, the workshop strengthened the understanding of online platforms’ business models and competition authorities’ assessment tools for economic analysis and enforcement actions. APEC’s support was essential to bring together experiences from competition and regulation agencies, policy makers, regional and international organizations. Before the end of 2019, Mexico (IFT) will draft an electronic Report, which will be available as an APEC publication, collecting the main conclusions and providing recommendations to tackle some of the competition challenges raised by online platforms in APEC economies.

NEW ZEALAND

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Others, please specify: Firm capability**

Scoping and measurement of the digital economy: it is difficult for regulators to quantify costs and benefits of regulatory intervention. For example, it is difficult to understand the digital market as it spans across many traditional markets and hence it is difficult to assess costs and benefits to business of digital economy and costs and benefits to consumers in those markets.

Regulatory and legal framework (incl. sandboxes): the pace of digital progress proves difficult for regulation to maintain relevance. International cross-border barriers such as data localisation and shortcomings in privacy increase the regulatory challenge. New Zealand is currently reviewing its copyright law in order to ensure it remains fit for purpose in a changing digital environment. This includes looking into claims that the current law is too inflexible properly to accommodate emerging uses of technology (for example, uses of data that underpin machine learning and artificial intelligence technologies). Multiple regulatory regimes covering digital trade can also create complexity and the potential for confusion eg cryptocurrency.

Firm Capability: Low uptake of digital technology in particular sectors and overcoming behavioural barriers (such as distrust of technology) as well as cost and other barriers to increase small business uptake of ICT.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: skills development and retention for progressing the digital economy**

Scoping and measurement of the digital economy: we need to strengthen our understanding of the scope and size of New Zealand's digital economy and its various parts. This would help us understand the need for and value of regulatory intervention. We also lack solid, baseline data in relation to economic and social digital divides.

Regulatory and legal framework (incl. sandboxes): we need a clearer understanding about the regulatory frameworks that could be limiting further growth of the digital economy.

Skills development and retention for progressing the digital economy: this includes the specialised digital skills needed for the growth of the tech sector and 'Future of Work' preparedness for workers/small business owners dealing with fast-paced changes in technology.

Note: much of the focus on growing the digital economy has, to date, been non-regulatory for example, supporting the growth of the tech sector through industry studies and eco-system support in emerging areas such as Internet of Things (IoT) and interactive media.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business: see examples below on electronic invoicing and New Zealand Business Number**
- Others: investment in infrastructure to facilitate and grow the digital economy (see example below of the roll-out of ultra- fast and rural broadband).**

Electronic invoicing: The e-Invoicing Arrangement, signed in October 2018, formalised the commitment of the New Zealand and Australian Governments to work together to create and maintain a common e-invoicing approach in association with industry.

The e-Invoicing collaboration will help businesses save time and money by allowing the direct electronic exchange of invoices between suppliers’ and buyers’ financial systems. Economic benefits, which are anticipated at \$30 billion over a ten-year period.

Problems that e-Invoicing will help resolve are inefficient manual processes, misdirection of invoices and unnecessary delays in payment. With a standard format, more accurate invoicing, processes and machine-to-machine activities, much faster payments become possible. The resultant cashflow improvements would be a strong incentive for small businesses to adopt e-invoicing.

In New Zealand, e-Invoicing is just the beginning of an initiative to digitise the full procure-to-pay cycle. When that wider initiative is complete, we can have a true trans-Tasman approach that could extend to other trading partners.

New Zealand Business Number: The NZBN is a globally unique identifier, available to all New Zealand businesses in New Zealand. Each NZBN links directly to core information about a business on the NZBN Register. This is the information that businesses are most often asked to share such as business name, phone number, address and website. The New Zealand Business Number Act 2016 (the NZBN Act) refers to this information as ‘Primary Business Data’. This is the core information that is held securely on the NZBN Register about a business. The NZBN is making it faster and easier for businesses to connect and interact, which will save time and money. By providing a business’ NZBN, customers, suppliers and government agencies can quickly find the information they need about a business. This means that businesses will not have to repeat the same information when dealing with someone new or when something changes.

Business Connect is an initiative related to NZBN. Business Connect will provide government agencies with common tools, templates, data standards and business rules to enable the design and delivery of more consistent digital services. Government is currently in the process of procuring a supplier to design, deliver, manage and support the platform.

Ultra-fast and rural broadband rollouts: The Ultra-Fast Broadband (UFB) programme is one of the largest and most ambitious infrastructure projects ever undertaken in New Zealand. It will see around 87% of New Zealanders, in over 390 towns and cities, able to access fibre by the end of 2022. It is a public-private partnership of the government with four companies and a total government investment of NZ\$1.5 billion. In December 2018 the Government announced significant additional rural broadband and mobile coverage that will be deployed across the economy over the next four years as a result of the expansion of the Rural Broadband Initiative phase two (RBI2) and the Mobile Black Spot Fund (MBSF) programme.

3a. (Specific to Financial Sector) Best Practices: Of the structural reform relating to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Regulatory framework for Fintech
- Regulatory framework for cryptocurrency
- Regulatory sandboxes
- Digital Banking
- Crowdfunding platforms
- Digital payments
- International remittances
- Personal and business loans
- X Robo-advisors**
- Cloud computing,
- P2P lending platform
- Use of open data on financial services
- X Open Banking**
- Others, please specify: _____

Enabling the provision of robo-advice: In 2019, the Government overhauled the regulation of financial advice by repealing and replacing the Financial Advisers Act 2008 and amending the Financial Service Providers Act 2008. The amendments included removing regulatory barriers which were preventing the provision of some types of financial advice, including the provision of robo (or online) advice. The reforms required anyone, or any robo-advice platform, providing financial advice to be subject to active regulatory oversight and required this to be done through licensing at a firm level so as not to impose undue costs on industry or Government.

Open banking: The Government has supported Payments NZ to progress industry-led moves towards open banking with the threat of regulation should industry fail to do so. Payments NZ was formed in 2010 by industry with support from the Reserve Bank, to govern New Zealand’s core payments systems. Payments NZ has developed and tested two new Application Programming Interface (API) standards that will enable third parties to launch new financial products and services to the public. Payments NZ has completed a pilot with three banks and several third parties to develop two standardised APIs which involve payment initiation and account information. The standards will allow third parties to access customer information, with their consent, for a limited period of time and initiate payments on a customer’s behalf. For example, the standards will allow a customer to pay for goods and services by entering their mobile phone number and then approving the transaction via their mobile banking app rather than using bank cards. The development of the standards is the start of a move to the provision of more secure and accessible financial information. Banks and third parties will be able to apply to Payments NZ to become accredited users of the technology and standards it has developed. The service will go live in early 2019.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

Note: New Zealand has some workstreams underway in the RegTech area for example, on digital identity management and control (as set 'Digital Identity' programme as set out at question 4 below). It is however, in the early stages.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Short term initiatives:

Future of Work Tripartite Forum: One of the Forum's purposes is to investigate and champion initiatives to address the skills shortage and the pace at which the nature of work is changing. The Forum brings together government, business and unions to improve the use of technology, create more productive workplaces and improve the skills and training of New Zealand workers. The Forum is a partnership between the Government, Business New Zealand and the New Zealand Council of Trade Unions – as representatives of union and business groups – that aims to support New Zealand businesses and workers to meet the challenges and take the opportunities presented in a rapidly changing world of work.

Action Plan for Digital Skills: the Digital Skills Forum (a coalition of government agencies and the main bodies in the digital technology sector) has produced the Digital Skills for Digital Nation report. The report identifies a digital skills shortage and contains a number of industry backed recommendations to address this. The Forum recently hosted an economy-wide Digital Skills Hui (in early 2019) which was an opportunity for industry, government and NGOs to come together for an action-focused day that will shape priorities and next steps on digital skills. Recommendations from the hui (and from the earlier report) will be considered by relevant ministers and by the Tripartite Future of Work Forum and the Digital Economy and Digital Inclusion Ministerial Advisory Group.

Response to the Digital Domain Plan: The stocktake for the digital nation domain plan 2019 provided an overview of the currently available 'digital technologies' statistics and data to help identify gaps and overlaps. The stocktake also addressed issues with government's ability to measure progress of digital transformation across New Zealand. The recommendations list specific actions for agencies to enable information gaps to be filled such as measuring the digital economy and digital inclusion.

Small Business Council Strategy: In 2018, the Small Business Council was tasked to help government develop a strategy to drive improvement and innovation in the small business sector. It will pay particular attention to existing government priorities including the digital economy. The Small Business Council will report back to Ministers with a future-focused small business strategy in August 2019.

Education: In 2016 the Ministry of Education undertook a review of the positioning and content of digital technologies within the New Zealand Curriculum & Te Marautanga o Aotearoa. The outcome of the review led to digital technologies being strengthened in the curriculum. From 2016-2017 the Ministry of Education worked with curriculum experts and designers, teachers and industry partners to develop and publically consult on new curriculum content for the revised Technology Learning Area and Hangarau Wāhanga Ako.

This strengthened curriculum content aims to support young people to build digital technologies design thinking skills and capabilities, and computer science knowledge to participate, create, and thrive now and in the future. From 2018 the Ministry has invested in a broad professional support programme for schools and kura to implement the new learning into their local curriculum. As of 2020, digital technologies is to be fully implemented as part of learning in Technology in the New Zealand Curriculum and Hangarau in Te Marautanga o Aotearoa. This work is supported by a full evaluation programme.

Medium term initiatives:

Initiatives that will seek to address policy gaps, barriers and challenges identified, in the medium term, include:

An inquiry into Technology and the Future of Work, led by the New Zealand Productivity Commission. The inquiry will identify ways New Zealand can maximize the opportunities and manage the risks of disruptive technological change and its impact on the future of work and the workforce.

Digital Identity: In December 2018, the Government approved a two-year Digital Identity Programme to be led by the Department of Internal Affairs. The objective is to create the right environment, set the right rules and take advantage of new technologies to give New Zealand citizens secure digital identities that meet their evolving needs and expectations. Options will be presented to Cabinet at the end of 2020 on a Digital Identity Trust Framework for New Zealand and a proposed way forward for the future role of government in the provision of digital identity infrastructure and services.

Other ongoing programmes

- Business Connect: a cross-agency digital services platform that will ensure that small businesses can interact digitally across local and central government agencies more seamlessly on shared, open digital service infrastructures.
- Cross-government service transformation programmes: continued investment in programmes like Better for Business which focuses on making significant improvements to the business experience with government.
- Driving the uptake of the NZ /business Number (NZBN) and e-invoicing, which supports transformational initiatives such as e-procurement, reducing transaction costs and allowing businesses and government agencies to operate more efficiently and deliver services more effectively.
- Regional digital connectivity programmes: providing improved digital connectivity and collaborative physical workplaces for small businesses (including expanded rural broadband coverage and regional digital hubs) supported by the Provincial Growth Fund.
- Small business uptake of digital tools: Piloting new approaches to increase small business uptake of digital tools, such as provision of resources to support industry associations to

increase the digital capability of their members, and showcasing key technologies for small businesses, such as internet of things and sensor technology through an arable demonstration farm.

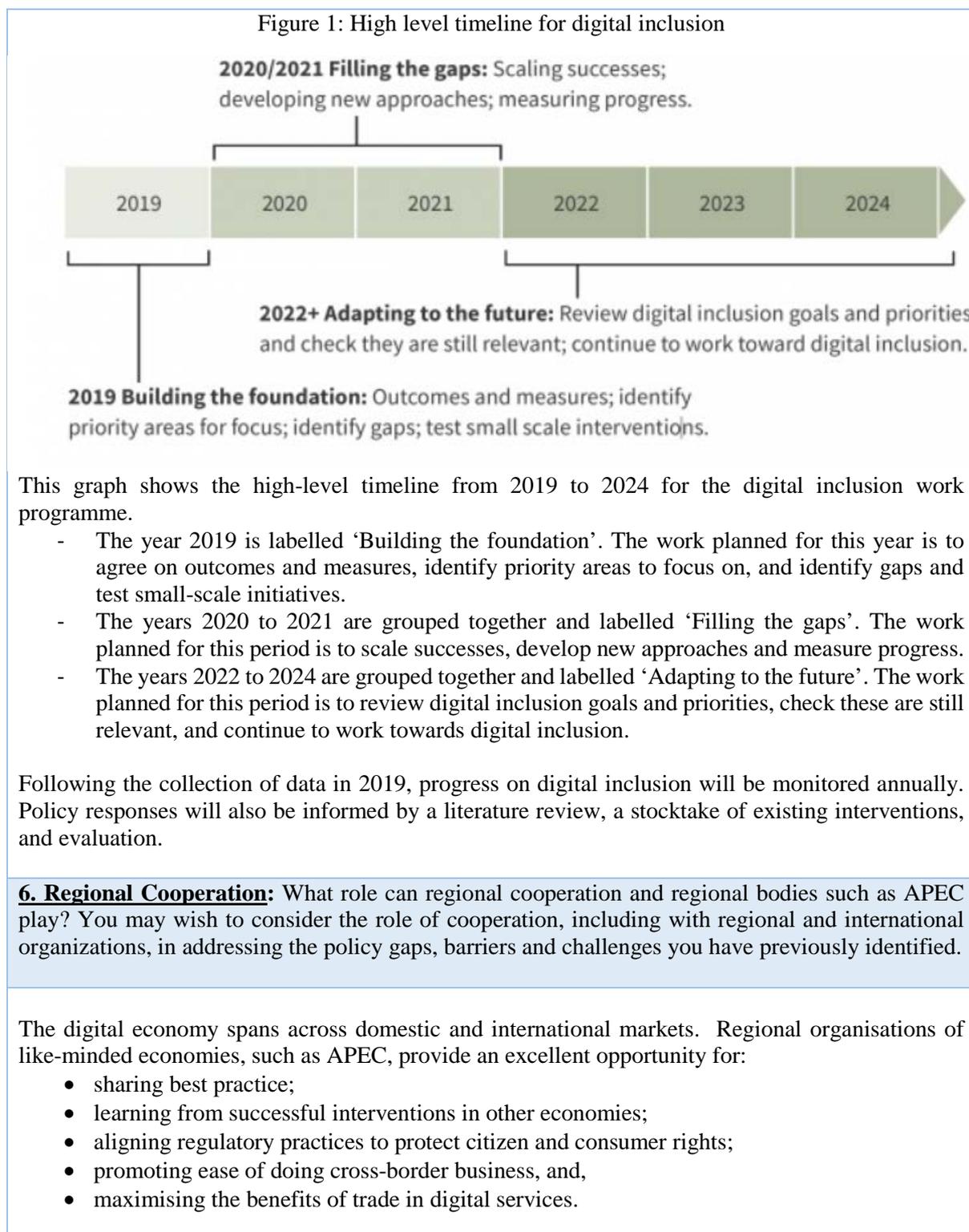
5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

In 2017, the government published the report 'Digital Skills for a Digital Nation.' The report presented results of surveys undertaken to help identify the digital skills shortage in New Zealand. It identified barriers to graduates finding their first job in the digital sector and the need to improve the gender and cultural diversity in digital roles. The survey evidence contained in the report, including on the lack of women in the digitally or technologically enabled sectors, will provide a benchmark against which to measure progress on inclusion.

New Zealand is looking at ways to address the current skills shortage through the Digital Skills Forum. The Forum is a focused coalition of industry associations and government organisations that work together to identify key skills issues and opportunities across the ICT, high-tech and digital sectors. The forum uses the insights, resources and influence of industry and government agencies to help address the ever present digital technology skills shortages. By taking a practical, information and evidence-based approach, the Forum focusses on harnessing collaborative efforts to address significant issues such as the recent Digital Skills Hui. The Hui provided an opportunity for industry, government and NGOs to come together to shape priorities and next steps for New Zealand's digital technology sector. Recommendations and outcomes from the hui will be presented to ministers and will feed into a number of workstreams including the Future of Work Forum Digital Economy and Digital Inclusion Ministerial Advisory Group.

Data to understand fully the range of issues relating to New Zealanders' digital inclusion is expected to be collected by the end of 2019 as part of the Digital Inclusion Action Plan.¹⁰ The Action Plan is the first stage in the high-level timeline outlined in the Digital Inclusion Blueprint. The timeline set out below provides the steps for how government can make strong and sustainable progress towards digital inclusion in New Zealand. The Government's vision is that all New Zealanders have what they need to participate in, contribute to, and benefit from the digital world. This defines digital inclusion as a desired end state, one in which everyone is included. The Blueprint defines being included as having convenient access to, and the ability to confidently use, the internet in the immediate term.

¹⁰ Digital inclusion refers to be basic digital skills needed by all New Zealanders, not the more complex digital skills need in the tech sector and other New Zealand industries.



PAPUA NEW GUINEA

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

Scoping and measurement of the digital economy

Regulatory and legal framework (incl. sandboxes)

Competition policy

Public sector governance

Ease of doing business

Others, please specify: _____

i) Scoping and measurement of the digital economy

The Government established the National Information and Communications Technology Authority (NICTA) to regulate and award licensing of Information Communication Technology (ICT) in Papua New Guinea. That is, NICTA regulates:

- broadcasting
- radiocommunications
- telecommunications

NICTA was established on the 29th of October, 2010, as the sole converged regulator and licensing authority of the ICT industry in PNG. This followed the adoption by the PNG Parliament in November 2009 of the National Information and Communications Technology Act 2009 (the NICT Act) a subsequent creation of the National Information and Communications Technology Authority or NICTA.

The aim of the Act is to ensure the ICT industry contributes meaningfully to the long-term economic and social development of PNG in line with economy-wide goals and directive principles and the basic social obligations of the constitution. The Act also calls for the ICT industry to be regulated in a manner that promotes consumer welfare through an equal, transparent, technology neutral, timely and non-discriminatory measures. NICTA works closely with all stakeholders while ensuring industry compliance with license conditions, codes and standards. NICTA also monitors the effects of regulations to ensure they are responsive to the wider community's needs.

NICTA has also formulated a Digital Economy Roadmap for PNG, however, there are several agencies that are under taking different programs in the digital economy to address different problem areas. In addition, MSME, SME and informal sector individuals and organisations are using digital technologies in varying ways that also gives rise to new and challenging issues. As such proper scoping and measurement of the digital economy is a challenge. It is a challenge as PNG does not fully know the extent of its digital economy activity as there is a lack of a coordinating agency to effectively collect and collate data to better understand the story of the digital landscape in PNG.

ii) Public sector governance

PNG has taken positive steps in digitising its budgetary functions of the Economy-wide, Provincial, District and Local Level Government accounting systems through the Integrated Financial Management System (IFMS) is the suitable and appropriate infrastructures that will assist the completion of the IFMS implementation to all provinces. Another challenge also with the implementation is the difficult and rugged terrains of most if the outer provinces that can pose huge cost investments to be made by Government. There is still to be fully effected and realised in terms of reporting expenditure and how this can be used to improve public sector governance. In addition, there is still a lack in other digitising of other major functions of government to improve public sector governance.

iii) Ease of doing business

While PNG has done well in a few of the five EoDB measurements/indicators identified by APEC, it has seen little to no improvement in other areas of the indicators. This can mainly be attributed not only to lack of capacity in human resourcing but also a lack of digital infrastructure to support structural reforms in these areas. With the developments of the undersea cable being undertaken, this will surely improve the digital transformation of PNG to a new level. Hopefully, this could reduce costs of ICT and improve access and reliability of the service as well as create more economic opportunities for people.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are.

Scoping and measurement of the digital economy

Regulatory and legal framework (incl. sandboxes)

Competition policy

Public sector governance

Ease of doing business

Others, please specify: _____

i) Scoping and measurement of the digital economy

In terms of policy gaps, PNG does have in place a National ICT Roadmap which looks at improving ICT infrastructure, network coverage, and internet access. The challenge is taking a whole of government in creating awareness of the roadmap to assist with the implementation as well taking a team approach towards the implementation phase.

ii) Regulatory and legal framework

PNG does have legislation in place to protect its citizens against abuse such as the Cyber Crime Act 2014 but lacks in other areas such as regulatory sandboxes to test regulations. This is a gap that exists in PNG’s regulatory framework.

iii) Ease of doing business

Also as mentioned above, the infrastructure that is needed to support the EoDB initiatives is lacking

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

Scoping and measurement of the digital economy

Regulatory and legal framework (incl. sandboxes)

Competition policy

Public sector governance

Ease of doing business

Others, please specify: National Payments System

i) Ease of doing business

As part of its EoDB reforms, PNG in 2016 has passed and launched its Personal Property Security Act and registry respectively. This has significantly improved its EoDB rankings in Getting Credit and general ranking as well. PNG is yet to do an overall assessment of the overall impacts of this reform. Also PNG company registrations are now able to be done online with a turnaround time of

less than a day. It has migrated its business registry on to the CLOUD which is now more effective and efficient.

ii) Others – National Payments System

PNG through its central bank is continuously upgrading its National Payments Systems. The Kina Automated Transfer System (KATS) over the last few years has the objective of fostering an efficient payment system for processing and settling all payments between all the banks and their customers. This includes cheque and electronic payments. This has seen a reduction in payment clearance from about 4 days to about 2 days, with further improvements expected once commercial banks further adjust to the KATS system.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech
- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes
- X Digital Banking**
- Crowdfunding platforms
- X Digital payments**
- International remittances
- X Personal and business loans**
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions’ data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify: _____

i) Digital banking

PNG has done reforms as stated above such as KATS. Also almost all public servants now receive their fortnightly wages from the government through bank accounts.

ii) Digital payments

PNG is in its final stages of launching its economy-wide switch which will see almost all financial institutions having a link to each other not only for the use of authorised direct and multilateral access payments but also to ensuring there is interoperability at significantly lower costs to consumers.

iii) Personal and business loans

The secured transaction legislation (Personal Property Securities Act) has created the opportunity for individuals as well as SMEs to access finance. The measurement is still to be carried out but there has been a lot of positive feedback in regards to this reform.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech’s reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be

relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)**
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

Because PNG is a developing economy and is still progressing a lot of reforms, some of which would only be in effect for a few years. Their effectiveness would only be confirmed after allowing some time before an assessment is done. As it is PNG is implementing a number of reforms such as the AML / CFT law which was passed in 2015 and operationalised in 2016. The AML/CFT reforms included a suite of laws which were passed and gazetted included the Anti-Money Laundering and Counter Terrorist Financing Act 2015, Criminal Code (Money Laundering and Terrorist Financing) (Amendment) 2015, Mutual Assistance in Criminal Matters (Amendment) Act 2015, Proceeds of Crime (Amendment) Act 2015 and the United Nations Financial Sanctions Act 2015. Their effectiveness would only be confirmed by the implementing agencies administering these laws. These laws were designed to meet the Financial Action Taskforce (FATF) standards and were pursued by the PNG Government as part of its efforts to meet its international obligations on combating money laundering and terrorist financing. These laws have given enforcement agencies the necessary tools to combat money laundering and terrorism financing.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

PNG currently has a few short term plans to overcome the gaps, barriers, and challenges identified above. These include:

- i) Regulators Summit* – regulators in PNG will be called to participate in a regulators summit which will be aimed at gathering views, share experiences and gather feedback from them as to the gaps and barriers that exist in PNG and how regulators will need to effectively work together in closing those gaps. The aim being that the PNG Government take a whole of government approach in developing an efficient and effective Regulatory Framework.
- ii) Financial Sector Development Strategy 2018-2030* – PNG has recently launched this strategy which is targeted at addressing a wide spectrum of areas covering four main thematic areas (Regulatory framework, Government Bond and Capital Market, National Payments System, and Financial Inclusion)
- iii) National Competition Policy* – PNG is now in its final stages of its development of a National Competition Policy. The main aim of the policy would set out the key elements of the Government's approach to competition, the total welfare and other impacts sought to be achieved, the means to be used to achieve those impacts, and guidance on the resolution of tensions that may arise between competition, efficiency, and other goals including social equity and social

inclusion. It is expected that by the end of 2019 PNG will have this policy endorsed with implementation commencing soon after.

iv) Financial Inclusion Policy and Strategy – PNG has only recently endorsed its FI policy. This has complement well its FI Strategy which is now its second phase. The aim of the policy is to ensure that all Papua New Guineans are financially competent and have access to a wide range of affordable financial services that address their needs and a provided in a sustainable and responsible manner.

5. Inclusion: Describe your economy’s barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

In relation to the above, the Financial Inclusion Policy is not only aimed at closing this gap but also has aspects in relation to the global financial inclusion agenda and the Sustainable Development Goals. PNG in its FI policy has used data from formally banked adults, adults with credit at regulated financial institutions and points of service, and G20 indicators for PNG in its measurement.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

APEC has played a significant role in PNG’s recent development with the lead up years, the host year, and now post 2018. Through the sharing of experiences, best practices, professional expertise, studies and reviews, capacity building exercises, networking and partnerships and cooperation and collaboration, PNG has identified not only the gaps and barriers, but has also better equipped itself in directing efforts in closing those gaps.

PERU

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business**
- Others, please specify: _____

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: Telecommunications Infrastructure and Internet**

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy**
- Public sector governance
- Ease of doing business**
- Others, please specify: _____

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech
- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes**
- Digital Banking
- Crowdfunding platforms
- Digital payments**

- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify: _____

To date, the Securities Market Superintendent (SMV), together with the Central Reserve Bank and the Superintendency of Bank and Insurance, as financial market authorities, and the Ministry of Economy and Finance, have been working on a draft law to regulate the activity of financial crowdfunding (equity and lending crowdfunding), as well as to determine the legal framework that will govern its actions and the SMV as the entity responsible for its regulation and supervision. In addition, the draft law is considering the implementation of a regulatory sandbox as a tool for the development of crowdfunding. The objective of the draft law is to contribute to financial inclusion in Peru, as well as to protect participants who use this type of financing mechanisms.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

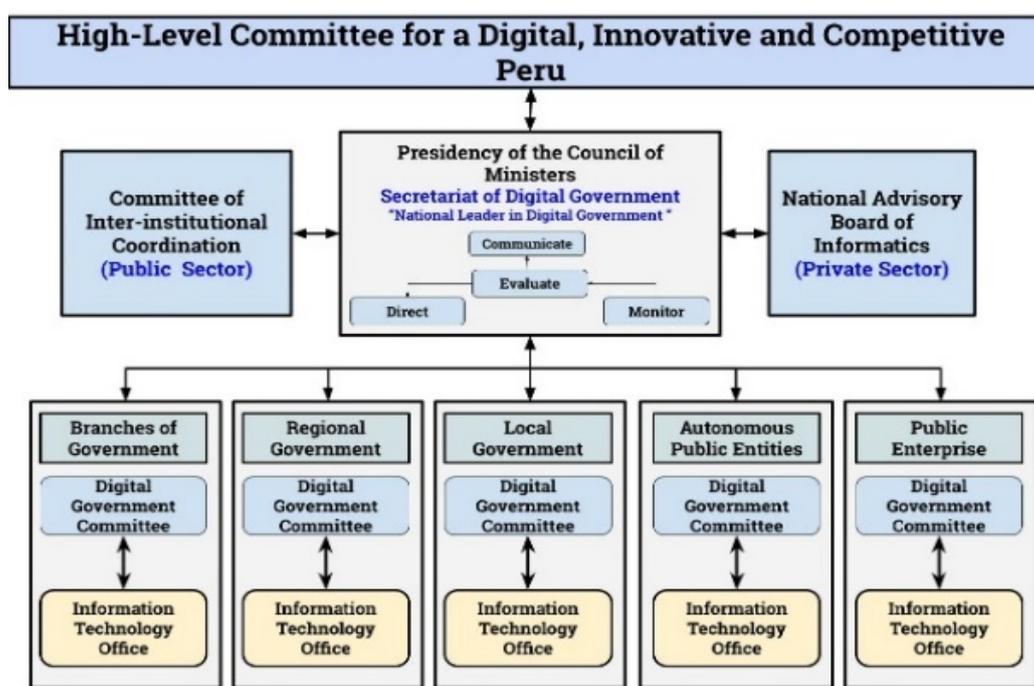
- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

To date, Peru has not worked any initiative related to regtech.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

One of the main actions carried out by the Peruvian state to define its governance model for the digital domain was to constitute the High Level Committee for a Digital, Innovative and Competitive Peru, and declared of economy-wide interest strategies, actions and initiatives for the development of Digital Government, innovation and Digital Economy with a territorial approach. In addition, it was established that the Presidency of the Council of Ministers, through the Secretariat of Digital Government, is responsible for guiding, directing, supervising and evaluating the process of digital government deployment and digital transformation in the Peruvian state.

The President of the Republic and the Presidency of the Council of Ministers chair the aforementioned High Level Committee, and involve the heads of the Ministry of Education, Ministry of Production, Ministry of Economy and Finance, Ministry of Transport and Communications. Furthermore, its Technical Secretariat is in charge of the Secretariat of Digital Government, which gives it a commitment at the highest level to promote the development of the digital economy and digital government in Peru.



On the other hand, in relation to the legal framework, it was approved the Legislative Decree 1412 (Digital Government Law) and the National Policy of Competitiveness and Productivity. Both instruments develop the general framework for strategic use of digital technologies and data with a view to ensuring administrative simplification, digital government, digital payments, digital economy, digital identity and ease of doing business, among others.

The above information is in accordance with the international indicators evaluated: Electronic Government Development Index (IDGE) developed by the United Nations (UN), the Information and Communication Technologies Development Index, developed by the International Telecommunication Union (ITU) and the Global Report on Information Technologies, prepared by the World Economic Forum.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

Promoting the digital economy has connectivity and the development of digital skills as two of its main limitations. However, the Peruvian Government through the Presidency of the Council of Ministers (Secretariat of Digital Government), the Ministry of Education, Superintendency of Bank and Insurance, Central Reserve Bank, among other actors carry out actions to monitor the progress, use and deployment of digital technologies, under the framework of their competencies, with a view to defining actions to reduce gaps in competences and access to digital services in financial areas, educational and government.

Additionally, the Peruvian State has been deploying the fiber optic backbone network at the economy level in order to reduce the access gap to connectivity and the Internet, a task that is under the responsibility of the Ministry of Transport and Communications.

Likewise, in order to promote access and orientation to digital public services, Peru has been implementing the Single Digital Platform for Citizen Orientation - GOB.PE Platform, which seeks to be our one-stop-shop for access to services and institutional and procedural information of the Public Administration in a clear and simple language for the citizen.

On the other hand, there is the PAGALO.PE platform, in charge of Banco de la Nación, which is an online payment platform of the Peruvian State, designed to simplify the payment of fees from different public entities, without the need for the citizen to go in person to an agency of the Banco de la Nación, thus promoting access to secure digital payments through mobile phones and web pages.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

The Peruvian State has close relationships with leading economies in terms of digital government, as well as with international organizations and cooperation agencies, such as:

1. Korean Agency for International Cooperation (KOIKA)
2. Agency for e-Government and the Information and Knowledge Society of Uruguay (AGESIC)
3. Organization for Economic Cooperation and Development (OECD)
4. Electronic Government Network of Latin America and the Caribbean (RED GEALC)

In this line, the international cooperation plays a fundamental role in the exchange of experiences, collaborative spaces, and research, among others, that allow identifying actions to reduce gaps and existing barriers that affect the development of the digital economy.

THE PHILIPPINES

1. Barriers and Challenges: Considering your economy's situation, what are the three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
 - Competition policy
 - Public sector governance
 - Ease of doing business
- Others, please specify: digital infrastructure gap**

Scoping and measurement of the digital economy: lack of official industry data that will measure the contribution of digital trade to the economy's overall economic growth. There is no single standard definition of digital trade and technical innovations and new business models do not exactly fit with in the traditional sectoral classifications (e.g. Grab). Nonetheless, the Philippine Statistics Authority has started efforts in August 2018 to measure the contribution of the digital economy to the gross domestic product (GDP).¹¹

Regulatory and legal framework (incl. sandboxes): regulatory barriers inhibit businesses to explore and invest in more digital technology solutions. Reforms and initiatives are needed to clear bottlenecks and obstacles to functioning digital economy.

Digital infrastructure gap: problems on internet availability (74% of secondary schools still do not have internet access¹²), affordability (e.g. prices of information and communication technology services are among the highest in ASEAN) and reliability/quality of digital infrastructure (slow internet speed, internet speed is at the lowest among economies in the Asia Pacific)¹³

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: Internet infrastructure improvements and consumer education on digital economy**

Regulatory and legal framework (incl. sandboxes): entry of new players on the information and communication technology sector is hampered by limitation in ownership. Removing these restrictions will promote competition and encourage innovation. However, relaxation of limitation of foreign participation particularly in transportation and telecommunication through the legislative process are yet to be enacted. In addition, there is lack of legal framework which regulates these business platforms and facilitate new digital products. Further, there is no standard permit issued across LGUs which hampers the accelerated deployment of needed infrastructure.

¹¹ Cordero, T., (2018 September 26). PSA to measure contribution of 'digital economy' to GDP. Retrieved from <https://www.gmanetwork.com/news/>

¹² Romulo, R.R., (2018 November 9). *A digital readiness blueprint for the Philippines*. Retrieved from <https://www.philstar.com/business/2018/11/09/1866941/digital-readiness-blueprint-philippines>

Competition policy: need to accommodate competitors in the private sector (e.g. telco companies) which play a key role in the digital economy.

Internet infrastructure improvements: need to explore minimum standards for reliable and affordable internet access.

Consumer education on digital economy: key players in the digital economy both from the public (including local government units (LGUs) and private sectors should strengthen consumer awareness relative to the value derived from operating in a digital economy, and the strength of security of these transactions.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: Efforts to expand digital services**

Regulatory and legal framework (inc. Sandboxes)

The National Retail Payment Systems (NRPS) aims to facilitate more convenient, affordable and secure electronic fund transfers and payments. BSP Circular No. 980 on the Adoption of National Retail Payment System Framework (2017) aims to “to create a safe, efficient, affordable and interoperable electronic retail payment system,” to increase retail payments from 1% electronic payments in 2013 to 20% electronic payments by 2020.

The BSP continues to issue regulations relevant to electronic payments and even virtual currency exchange in response to the dynamic changes in the environment, hence encouraging financial innovation.

Public sector governance

The main objective of the Philippine E-commerce Roadmap 2016-2020 is to contribute 25% to the economy’s GDP by 2020.

The e-Government Master Plan targets a wider reach of e-government presence and reduction of bureaucratic red tape to provide improved government services (e.g. payroll thru mobile-based e-money or e-banking, digital payments to suppliers upon availment of goods or services, and digital payments from the general public specifically to the LGUs and Non-Government Organizations.¹³

Ease of doing business

The SEC-iView is an online pay-per-use facility that gives the public the convenience of getting copies of documents (Annual Financial Statement, General Information Sheet and others) of SEC registered companies. The online system allows the general public, other government and private entities to view and print Company reports for a fee.

The Company Registration System is the full automation and online pre-processing of corporations and partnerships, licensing of foreign corporations, amendments of the articles of incorporation and other

¹³ The Department of Information and Communications Technology leads the development of the e-Government Master Plan

corporate applications requiring SEC approval. Users can verify the status of their application online at their convenience without going to the SEC office. The CRS Application Status Online Inquiry is available 24/7 from any device-desktop, phone or tablet, anytime or anywhere.

The online Capital Markets Participants Registry system is a web-enabled system designed to manage online submission of applications, evaluation and processing of applications for capital market transactions. The system is expected to lessen face-to-face transactions and reduce the number of clients who will come personally to the SEC office.

Efforts to expand digital services

Partnership between the public and private sector continue to drive initiatives for a digital economy, through continued offering of digital/mobile services to customers, which are approved by regulators upon evaluation.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

Regulatory framework for Fintech

Regulatory framework for cryptocurrency

Regulatory sandboxes

Digital Banking

Crowdfunding platforms

Digital payments

International remittances

Personal and business loans

Robo-advisors

Cloud computing

P2P lending platform

Use of open data on financial services

Open Banking

Others, please specify: _____

Regulatory framework for Fintech

The BSP issued circulars/regulations (Circular 649 on E-money Issuance) to allow both banks and non-bank/financial entities to offer electronic services in the form of e-wallets, (i.e. GCash and PayMaya), to support its move toward a cash-lite economy.

Regulatory sandboxes

The BSP has a test-and-learn approach, also known as regulatory sandbox, to enable launching of certain products and services within a live but controlled environment. These include products and services such as e-money wallets, remittance, virtual currency exchange platforms, marketplace or aggregator covering activities and platforms offering financial products and services.

Digital Banking

The offering of “digital banking” services which entails “digital only” experience from customer onboarding to conducting financial transactions is now allowed under existing rules and regulations.

Digital payments

Abovementioned circular enabled the use of e-money and have since approved a number of e-money issuers. The BSP also approved various electronic banking services to facilitate the use of digital platforms for payment and other financial transactions.

Cloud computing

While the use of cloud among BSP-supervised institutions has already been allowed as early as year 2013, the BSP is now looking into further liberalizing and streamlining supervisory processes with respect to cloud applications.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting**
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: Complaints handling system

Regulatory reporting

The BSP is now in the final stages of pilot implementation of the Application Programming Interface system that automates the collection, processing and analysis of data from BSP Supervised Financial Institutions. This project involves the development of a program that will allow machine-to-machine reporting by banks to the BSP, thereby fully eliminating manual intervention in the reporting process. Report validation is also kept to a minimum as inclusion of unnecessary data (i.e., generated totals or duplicate entries) are minimized. This in turn allows for a much faster generation of statistics that are used in various financial surveillance tools.

Complaints handling system

Another initiative by the BSP which is already in the final stage of pilot implementation is the automated complaint-handling system. This would allow financial consumers to file complaints through their mobile handsets through either an app or SMS, thereby creating new channels for them to correspond with the BSP. By improving data quality and access and developing new tools for data visualization and analysis, the prototype will support BSP's efforts to provide all Philippine financial consumers with effective access to a complaint system.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

The Philippine Development Plan 2017-2022 espouses for legislations that would relax restrictive foreign ownership restrictions on certain services sectors including telecommunication to attract more FDI; promotes ease of doing business; as well as pursues the development of services-related statistics to support digital trade and e-commerce, among others (PDP 2016-2022).

The Philippine E-Commerce Roadmap: 2016-2020 addresses a number of issues in the e-commerce ecosystem that requires collective effort of the various stakeholders towards the realization of the goals (refer to page 2) outlined in the Roadmap. The Roadmap is supported by other major initiatives of the government such as: the formulation of the National Broadband Plan, and the National Retail.

The National Broadband Plan aims to improve the overall internet speed and service availability and affordability across the economy particularly in remote areas through the deployment of fibre optics, fibre optic cables and wireless technologies.

The National Cybersecurity Plan 2022 launched in 2017 aims to shape the policy of the government on cybersecurity and the crafting of guidelines that will be cascaded to all levels of a government. The National Retail Payment System (refer to page 2) is built on three core principles, namely: interoperability, inclusivity and “coopetition”.

The National Retail Payment Framework (BSP Circular 980 dated 6 November 2017)

5. Inclusion: Describe your economy’s barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

A strong macro-economy and an enabling operating environment will be crucial for the development of a digital economy. An appropriate and enabling business environment has to encourage innovation, ensure that barriers to entry stay low, allows firms to quickly react to new developments and effectively manage ensuing risks. Modernizing physical infrastructure will prepare the Philippines to embrace the digital economy. Collaboration and strengthening partnerships among various stakeholders (government and private sector) is a way to boost capabilities in utilizing digital platforms.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Regional bodies could host avenues where different stakeholders from multiple jurisdictions may get together and explore potential areas for collaboration and benchmarking on leading standards that have proven as ideal approach on managing digital innovations.

RUSSIA

1. Barriers and Challenges: Considering your economy’s current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Other’ and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business**
- Others, please specify: _____

According to the economy-wide project Digital Economy of the Russian Federation, several main directions of the development of the digital economy were introduced, among which are ICT, education and information security. A special direction "statutory regulation of the digital economy" was introduced to provide the innovations with the proper regulation. An action plan towards the creation of the legal framework for the digital economy to 2024 was elaborated and accepted.¹⁴ The action plan includes regulatory frameworks for the development of competition policy and ease of doing business via special sections “industry-specific regulation” and “business-government relations”.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business**
- Others, please specify: _____

The major barriers for the development of the digital economy in the Russian Federation are simultaneously the major policy gaps covered by the economy-wide program “Digital Economy of the Russian Federation”.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

¹⁴ <http://static.government.ru/media/files/P7L0vHUjwVJPINcHrMZQqEEeVqXACwXR.pdf>

The economy-wide program “Digital Economy of the Russian Federation” was developed by decree of the President Vladimir Putin and is in force until 2024. The program is financed both through the government and commercial sources of funds.

It includes 6 federal projects: "Regulation of the digital environment", "Digital technologies", "Information security", "Information infrastructure", "Digital public administration" and "Human resources for the digital economy".

The main objectives of the program are to remove legal barriers, ensure information security, develop technologies and create infrastructure, introduce innovative approaches to public administration, and provide the economy with competent specialists. The program is aimed at development of the public and private sectors and their integration for the digitalization of the economy in general.

In order to ensure favourable conditions for the development of innovations in the financial market, the Bank of Russia has launched a *regulatory sandbox* in 2018 to test innovative financial technologies, products and services.

At this stage, the target process of an innovative financial technology or service is modelled in a testing environment without any risks to consumers.

Any organization that has developed or plans to use innovative financial technology or service can send an application for piloting to the Bank of Russia. By now the Bank of Russia has already received more than 30 applications for testing in the sandbox from commercial banks and fintech startups.

Professional associations of financial market participants and public authorities are involved in the selection of projects for the regulatory sandbox, evaluation of the results and preparation of proposals for amendments to the existing regulation.

The regulatory sandbox allows to pilot innovative financial technologies and services, test hypotheses regarding their positive impact on the financial market and customers, analyse and model emerging risks and use the results to adapt the current regulatory and legal framework accordingly.

As of now several projects were successfully piloted, and for one of them regulation has already been amended allowing the service’s launch in the market.

As for *Ease of Doing Business*, the government of the Russian Federation evaluates the effectiveness of the programs aimed at enhancement of the ease of doing business by the international rating “Doing Business” – Russia gained 4 positions in the period from 2017 to 2018 and took 31st place in the rating.¹⁵ The benchmark is entering top-20 economies by the ease of doing business. Much of the effort is put towards the promotion of digital governmental services for small and medium enterprises (SMEs) that will help to reduce the red tape and combat corruption.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

Fintech

¹⁵ <http://russian.doingbusiness.org/ru/rankings>

- Cryptocurrency – draft federal law regulating digital assets is expected to be adopted in 2019**
- Sandboxes – in effect from 2018**
- Digital Banking**
- Crowdfunding platforms – draft federal law is expected to be adopted in 2019**
- Digital payments – fast payment system in effect from 2019
- International remittances – draft federal law is expected to be adopted in 2019**
- Personal and business loans
- Robo-advisors – draft federal law is expected to be adopted in 2019**
- Cloud computing,
- P2P lending platform
- Use of open data on financial services
- Open Banking - There is a freeware open API architecture distributed and supported by the Bank of Russia for all financial companies working in the Russian Federation. The use of the software is free of charge.**
- Others, please specify: _____

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control**
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)**
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)**
- Others, please specify: _____

Identity management is promoted in Russia by the Unified System of Identification and Authentication and the Unified State Automated Information System and by the common digital portal "Government Services". The services help to provide both natural and legal persons with identifications. Moreover, a universal digital profile will be introduced by 2022 according to the working plan of the development of the digital economy.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

The *special action plan* for statutory regulation of the digital economy of the Russian Federation was introduced in 2018.¹⁶ The policy covers the spheres of the digital economy such as:

- Fintech – regulation of crypto- and digital assets; regulatory sandboxes; marketplaces; electronic trade;
- Anti-monopoly regulation in the field of the digital economy;

¹⁶ <http://static.government.ru/media/files/P7L0vHUjwVJPINcHrMZQqEEeVqXACwXR.pdf>

- Cyber-physical systems, incl. automotive vehicles and drones;
- Digital economy regulation within the EEU;
- Identification and Authentication;
- Artificial Intelligence regulation.

By now the efficiency of the action plan is only measured by the introduction of the special regulation related to the digital economy. The second stage of the policy will cover the measurement of the regulatory effects.

Meanwhile the Bank of Russia considers introduction of a *special licensing regime* for new market participants with limited licensing (in terms of geographical coverage/ number of clients/ volume of operations/ type of activity/ etc.) that would follow companies exit from the regulatory sandbox and would apply for a limited period of time to test the service on the real customers.

Moreover, within the program "Digital Economy of the Russian Federation" draft federal law was developed providing for the introduction of *industry-specific sandboxes* that will be regulated and operated by respective authorities and introduce limited licensing throughout the period of piloting.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

The main barrier for the development of the digital economy in the Russian Federation up to the moment lies in the sphere of regulation. Fintech firms are legally unable to introduce innovations of the domestic market. *Regulatory sandboxes* seem to be a proper and fast solution to this issue. The first cohort in the regulatory fintech sandbox of the Russian Federation was formed in 2018. There were 14 proposals from domestic fintech firms which seems to be a good first shot. After the first launch and effectiveness evaluation, a federal regulation for sandboxes will be introduced.

On 26th March 2018 the Bank of Russia Board of Directors approved the *Financial Inclusion Strategy for Russia 2018-2020* (hereinafter the FIS). The Bank of Russia has set forth the following priority goals in the field of financial inclusion for the period of 2018-2020:

- 1) to improve the accessibility and quality of financial services available to consumers in remote or hard-to-reach areas, SMEs and population groups with limited access to financial services (low-income, disabled and elderly persons and other mobility-impaired population groups);
- 2) to increase the speed and quality of access to financial services for the consumers with access to the Internet.

Achievement of the first goal requires a focus on the following major groups of consumers:

- Individuals and communities in remote or hard-to-reach areas;
- SMEs;
- Individuals with limited access to financial services.

To deliver on these goals, the Strategy *focuses on digital products and services*, digital channels and the ICT infrastructure, financial institutions' cooperation with communication service providers and financial agents, as well as the feasibility of providing financial services via satellite TV channels and other alternative technologies. In addition, the document points out the need for improving consumer protection and financial literacy, especially in terms of new financial technology development. Potential risks posed by introducing new financial technology should be taken into account, and so does certain population groups' cautiousness that is due to their insufficient financial experience.

Overall, the Bank of Russia looks to promote physical accessibility (through both physical access points and digital channels), price affordability, product variety and availability, as well as easy use and practical applicability of financial services. Among the directions developed by the Bank of Russia are:

Financial Inclusion Monitoring

Financial Inclusion for communities and individuals in remote or hard-to-reach areas

Financial Inclusion for SMEs

Financial Inclusion for population with limited access to financial services.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

The Russian Federation already closely cooperates on the international level within the Eurasian Economic Union (EEU) in the field of the digital economy regulation. Some barriers can be efficiently tackled on the international level such as financial marketplace organization and regulation, the design of regulatory sandboxes, global traceability of goods. Joint elaboration of bodies of knowledge, best practices, and guidebooks on digital economy regulation seems to be a good start for international cooperation.

SINGAPORE

1. Barriers and Challenges: Considering your economy’s current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Other’ and specify what these categories are.

Scoping and measurement of the digital economy

- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: _____

Digitalisation is an economic game changer. It has opened up uncharted territories, created new economic opportunities and delivered tangible benefits to people’s lives. The accelerated pace of technological advancements and disruptions to business models would create new paradigms for almost all traditional industries and companies to compete in. With digitalisation disrupting traditional businesses and trade, it is therefore critical for economies to develop key economic strategies to stay globally competitive and provide sufficient growth opportunities and quality jobs for its people.

However, efforts to scope, define and eventually measure the progress and impact of the digital economy were only explored in depth globally recently. The OECD has launched the “*Measuring the Digital Economy*” report in March 2019 and is in process of developing the template of the “*Going Digital Measurement Roadmap*” which aims to identify core indicators for the digital economy and would include a range of roadmaps highlighting important measurement gaps. The European Commission (EC) has released the International Digital Economy and Society Index (I-DESI) that aims to benchmark indicators on digital performance and tracks the evolution of digital competitiveness. ASEAN is also working with the EU to explore the development of an ASEAN Digital Index.

It is with these developments in mind, that the APEC Telecommunications and Information (TEL) Working Group embarked on the project “*Digital Economy: Strategies and Measurements*”. The project, which is led by Singapore, aimed to drive the adoption and development of an effective and coherent Digital Economy strategies among APEC Member Economies. It also aims to enhance mutual learning and understanding on how the progress of such a strategy can be effectively measured.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify: _____

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the

effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)
- Competition policy
- Public sector governance
- Ease of doing business

X Others, please specify: Comprehensive Framework to realise the Digital Economy

Technology has reshaped businesses, industries and economies. It has opened up greater access to the economy for SMEs, and empowered individuals to become content creators and service providers. The already rapid pace of change Singapore has observed in the past decade is expected to further accelerate in the decade ahead. Against this backdrop, Singapore is cognizant that it must prepare our businesses, workers and people for the digital economy that is upon us. Singapore is confident that the digital economy will bring new possibilities and opportunities as it transforms businesses, industries, jobs and lifestyles.

In May 2018, the Ministry of Communications and Information, in collaboration with the Infocomm Media Development Authority of Singapore, launched the Digital Economy Framework for Action. The Framework was developed with the view to build Singapore's competitive edge in the digital era through promoting collaboration and building a vibrant ecosystem. The Framework seeks to enable businesses to transform to digital businesses, empower workers with technology, and create connected citizens. It encourages collaboration and partnership to strengthen digital capabilities across the economy. The Framework comprises three strategic priorities, which are in turn supported by four enablers.

Strategic Priorities:

- **Accelerate:** Digitalising industries by ramping up digital adoption across economic sectors to place companies in a better position to seize growth opportunities.
- **Compete:** Integrating ecosystems to foster a conducive environment for the growth of such integrated ecosystems and support our businesses to innovate and evolve their business models.
- **Transform:** Industrialising digital by partnering the industry in transforming the ICM sector and nurture the next generation of digital champions and develop the sector as a key engine of growth for Singapore's future economy.

Enablers

- **Talent:** To continuously up-skill, re-skill and raise the digital competencies of the workforce across the economy.
- **Research and Innovation:** To allow businesses to gain a competitive advantage and build an innovation community.
- **Policy, Regulations and Standards:** To ensure the policy and regulatory environment is globally competitive and appropriate for a digital world.
- **Physical and Digital Infrastructure:** To ensure our infrastructure is robust amidst the explosion of data flowing in the digital economy.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If

possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech**
- Cryptocurrency (digital asset that uses cryptography for security)**
- Sandboxes**
- Digital Banking
- Crowdfunding platforms**
- Digital payments**
- International Remittances**
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)**
- Cloud computing,**
- Use of open data on financial servicesxP2P lending platform**
- Open Banking (a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs))
- Use of open data on financial services**
- Others, please specify:_____

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control**
- Risk management
- Regulatory reporting
- Transaction monitoring**
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)**
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify:_____

Example for AML/CFT:

By encouraging the use of AI and data analytics, a number of banks are experimenting and implementing AI/DA techniques to improve their systems/processes. In general, for such RegTech systems, the reduction in false positives or increase in true positives are indicators of the effectiveness. As an example of this, some FIs have implemented RegTech in areas of AML/CFT (including identity management & control as well as transaction monitoring).

In a paper by Anti-Money Laundering and Countering the Financing of Terrorism Industry Partnership (ACIP), a bank reported that in a proof-of-concept conducted on an AI machine learning solution, there is a 50-60% reduction in false positives on an AI machine learning name screening module while the transaction monitoring module resulted in a 40% reduction in false positives and in addition demonstrated capability to detect new suspicious patterns which resulted in 5% increase in true positives. Using supervised machine learning techniques which memorise past analyst decisions allows automation of low-risk decisions and allows analyst to focus on higher risk transactions.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress,

please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

The Comprehensive Framework to realise the Digital Economy, as elaborated in Q3 (Best Practices), is relevant in overcoming challenges relating to Singapore’s push for digital transformation.

Similarly, APEC Telecommunications and Information (TEL) Working Group project “*Digital Economy: Strategies and Measurements*”, which is led by Singapore, will help to overcome challenges relating to the scoping and measurement of the digital economy.

5. Inclusion: Describe your economy’s barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

The Comprehensive Framework to realise the Digital Economy, as elaborated in Q3 (Best Practices), is relevant as Singapore’s best practices to enhance inclusion/ inclusive growth with respect to the digital economy.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Regional bodies such as APEC can help member economies overcome barriers and challenges to implementing structural reforms relating to the digital economy.

For instance, the APEC Telecommunications and Information (TEL) Working Group project “*Digital Economy: Strategies and Measurements*”, which is led by Singapore, aims to drive the adoption and development of effective and coherent Digital Economy strategies among APEC Member Economies. It also aims to enhance mutual learning and understanding on how the progress of such a strategy can be effectively measured.

CHINESE TAIPEI

1. Barriers and Challenges: Considering your economy’s current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Other’ and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

Scoping and measurement of the digital economy

According to the “Digital Nation & Innovative Economic Development Program (DIGI+) 2017-2025”, an administrative blueprint for leading digital development and innovation in Chinese Taipei, the scale of our digital economy increased from US\$72.3 billion in 2008 to US\$106.2 billion in 2015, and is expected to reach US\$213.7 billion by 2025. When measuring the digital economy, we adopt a relatively broader scope of digital economy, which includes digital manufacturing sector (e.g. Manufacture of electronic parts and components), digital services sector (e.g. information and communication products retails and equipment maintenance) and e-commerce (e.g. Internet B2C retail trade), and is in line with the broad definitions of digital economy given by international organizations such as OECD and IMF. However, like other member economies, Chinese Taipei still faces the same challenges for measuring and comparing digital economy, including the absence of a generally-agreed definition of digital economy, and the absence of industry and product classification for digital platforms and associated services. In addition, it is also challenging for including free digital services in the definition of GDP and developing new indicators for welfare created in the digital age.

Regulatory and legal framework (incl. sandboxes)

The rapid development of the digital economy is driving the rise of new business models that are having a corresponding impact on the existing regulatory framework, with respect to e-commerce, privacy and personal data, cybersecurity, protection of intellectual property rights, etc. On the one hand, the government needs to quickly respond to new business models and formulate management policies to assist startups by reducing uncertainty with regard to legal compliance, and give them space to develop; on the other hand, attention has to be paid to fair competition between existing and new business models to maintain market order.

Regarding regulatory sandboxes:

1. Financial business is a kind of business that requires official permission by law and it is subject to a high level of supervision. For example, issue of a license for limited business to a FinTech innovator that has good experimentation results still requires the procedure for amending laws, so the flexibility of being able to immediately open up a business is limited.
2. In Chinese Taipei, different financial industries are supervised separately. In light of the fact that most FinTech involves cross-industry and cross-field innovation and probably spans different financial businesses and involves the area of responsibility of different competent authorities, enhancing inter-agency cooperation and establishing new supervisory thinking are needed to promote FinTech development and supervision.
3. Non-financial industry business innovators are relatively unfamiliar with financial market practice and related regulations. Their innovative thinking may not be implementable in the financial market and risk management is often not solid. In light of this, the supervisory authority needs to spend more time and resources in communicating and providing guidance

with regard to AML/CFT and consumer protection-related accompanying mechanism or operations.

4. The current regulatory system mainly focuses on regulating the behavior of human drivers/operators of vehicles, so there are many barriers and impediments for the development of unmanned vehicles. The comprehensive review and revision of the current regulatory system will also be a challenge, since unmanned vehicle technologies and relevant standards are still being developed.

Competition policy

The goal of Chinese Taipei's competition law, the Fair Trade Act, is to focus on the efficacy of competition, freedom and fairness of the market, and the maintenance of competition order. The Act's normative purpose is result-oriented and it is not easy to be affected by changes in industrial business models. In contrast, while the industrial laws or regulations set by other competent authorities also have the legal norms related to competition policy, their nature is procedural-oriented. Whereas it is necessary to modify the industrial laws and regulations or formulate industry-specific rules and laws to respond to the digital economy, the challenges faced by competition law are in law enforcement and investigations, including adjustment and updating of competition analysis tools as well as enhancing law enforcement knowledge and skills, since the operating modes and market definitions of the digital economy are completely different from those of the traditional economy. In practice, it is also not easy to obtain digital economy operators' business data to undertake further economic or statistical analysis, so it is difficult to accurately evaluate operators' market power. Furthermore, the innovation and technological development of the digital economy, along with the application of pricing algorithms, big data and artificial intelligence, also make it difficult for the competition authorities to discover operators' illegal activities and increase the difficulty of investigation and law enforcement.

Public sector governance

1. High costs and risks of legacy system transferring: The existing data and systems are operated in legacy format and regulations, which are not easy to be transferred and shared. However, the costs of modifying these existing structures are high and rush transferring can cause risks in public agencies.
2. Digital data transfer obstacles between agencies: There is no mandatory regulation of data exchanging and reusing among these data collected by different government agencies, which often tend to be quite conservative and do not have the motive to reuse and add value to those data.
3. No broadly-used digital identity: Highly secured and efficient digital identity such as certificate, digital (chip embedded) identity, biometric authenticator are not generally trusted and used. It hinders the promotion of online services.

Ease of doing business

When promoting EoDB in Chinese Taipei, such as Getting Credit, we have faced problems relating to inconsistency of the legal framework and practices.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance**
- Ease of doing business

Others, please specify: _____

Regulatory and legal framework (incl. sandboxes)

1. Amidst the development of the digital economy, the content and form of new business models are changing rapidly as technology develops, with the result that the current operating model may be very different to what it was a few months ago. For this reason, when formulating related management policy, if management is still undertaken by means of directly setting provisions or laws, the problem of being unable to precisely define a particular service model has to be addressed. Also, in response to the cross-border transmission of digital information, the development of international trends needs to be taken into account and suitable alignment ensured in such areas as personal data protection and cyber-security.
2. Chinese Taipei strives to reduce regulatory barriers to investment and avoid excessive controls to keep policies and regulations flexible and agile so that we can quickly respond to changes and thus promote economic vitality and development.

Regarding regulatory sandboxes:

1. There may be a gap in terms of the scope of business a FinTech innovator hopes to engage but the competent authority has hesitated due to concerns about financial stability and consumer protection. Taking Security Token Offering (STO) as an example, innovators emphasize that STO uses blockchain technology and operations, which are different from the traditional capital markets, and thus different supervisory thinking and methods are needed, hoping that the competent authority can open up the business quickly and reduce related restrictions. For its part, the competent authority believes that STO and platform operations still involve securities market issue, trading and supervisory systems, investor protection, AML/CFT and other matters and should only be opened up after careful formulation of accompanying supervisory regulations or after regulatory sandbox testing is done to demonstrate its feasibility, so as to maintain financial market stability and protect the rights and interests of consumers.
2. Startups are often too small in scale and have less experience in terms of legal compliance and internal control; therefore, even if the experiment is a success, they may not be able to meet the requirements for gaining a license in a short period of time. As a result, the innovative experimentation business cannot be realized quickly enough into the market.
3. Unmanned vehicles, including automated automobiles, aircrafts, ships or any combination of these items, are advanced robotic products that utilize artificial intelligence (AI). Chinese Taipei has long been trying to transform and upgrade our high-tech industry. Regulatory reform is still required to lower barriers to the development of unmanned vehicles.

Competition policy

The business model of digital economy often breaks away from the existing model. Enterprises are innovating in a disruptive way to improve operational efficiency as well as enhance efficacy of competition. However, since the business model may not conform to industries' specific laws, it is likely to form a policy gap. As such, major challenges are whether the new business model constitutes unfair competition for other existing legal operators, and whether Chinese Taipei's competition authority, Fair Trade Commission (FTC), should intervene in the norms of law enforcement and how to reconcile with other competent agencies. In addition, should the competition authority aim at the competition issues that may be involved in the new-emerging business model of digital economy, and set different competition law frameworks for digital economic industries from traditional ones in order to take measures to prevent behaviors that harm competition? Or else under the circumstance of not inhibiting the innovation and dynamic competition of the digital economy, it is still unclear as to how the competition authority strikes a balance between law enforcement and inappropriate intervention.

Public sector governance

Difficulties of innovative industry legislation: With the growth of emerging innovative industries such as Uber, Airbnb, etc., it becomes more and more difficult to rapidly establish comprehensive regulations in new fields, because this may destruct the traditional businesses which many people rely on for earning a living.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

Regulatory and legal framework (incl. sandboxes)

In response to the development of the platform economy that is common in the emerging business models and with reference to international research and “A European Agenda for the Collaborative Economy” put forward by the EU in 2016, Chinese Taipei drafted the Reference Principles for Regulatory Adjustment by Agencies under the Cabinet in Response to the Development of the Platform Economy, which only set out principle-based rules with no individual case determination involved, to maintain the regulatory flexibility of the competent agency. The aim is to spur competent agencies, according to their areas of responsibility, to clarify related disputes arising from new platform economy types or models as well as review and amend related regulations.

Regarding regulatory sandboxes:

1. In 2018, the Financial Technology Development and Innovative Experimentation Act and Unmanned Vehicles Technology Innovative Experimentation Act were drawn up with the aim of meeting the development needs of new technology and with reference to legislative trends in other economies, so as to build a “regulatory sandbox” innovative experimentation mechanism. The intention was, with legal protection and under a suitable degree of supervision from the competent authority, to allow operators to test new products, technologies, services or business models.
2. One effective example is the financial technology innovative experimentation mechanism (regulatory sandbox), the special features of which are: it provides a safe environment for trials of FinTech R&D; FinTech innovators can be exempt from criminal and administrative liabilities and applicable regulations during the experimentation period. The experimentation period is one to up to three years, with small-scale experimentation being used to verify the feasibility of using innovative technology in financial services. The mechanism also has a regulatory adjustment function, since the Financial Supervisory Commission (FSC), by taking into account the experiment handling situations, could review the need to revise related regulations, to speed up the entry of the products or services into the market.
3. Since the mechanism was enacted on April 30, 2018, as of April 23, 2019, 3 applications have been approved to experiment, 1 application has been rejected, and 4 applications are under review; and 28 FinTech innovators are currently receiving guidance from the FSC with regards to their innovative experimentation plans. These figures show that many FinTech innovators want to use innovative models to provide services. The aforementioned three approved cases have successfully begun experimentation and related regulatory adjustment operations have been launched.

Competition policy

In the past five years, the Fair Trade Act has not amended for the digital economy. As far as the anti-competitive enforcement is concerned, the FTC investigated the “most favored customer clauses” conducted by the e-commerce operators with their suppliers from 2016 to 2017. During the process of investigation, the involved enterprises actively removed the clauses to prevent disputes and effectively eliminated the threat to the competition efficiency for the platform market. In terms of merger control, the FTC reviewed the merger case of Microsoft and Nokia in 2014, paying particular attention to whether the merger will contribute the centralization of data and cause any significant competition restraints, in order to ensure the market structure is still pro-competition. In the past five years, there are 13 merger cases involving digital economy, of which 10 are not prohibited and 3 are terminated due to jurisdiction not exercised or incomplete documentation, showing that these merger cases do not have significant competition restraints, and the overall economic benefits are greater than disadvantages.

Public sector governance

1. Open data: The public sector has released government open data in a great amount and has built a good mechanism to cooperate with the private sector to find out what additional data should be made open. The government also maintains the good quality of open data by taking the user feedbacks into account.
2. Public free WiFi: Chinese Taipei has constructed many public and free WiFi hot spots. They are located in both urban and rural areas, and bring about good and essential digital services for citizens. It is also very convenient for foreign tourists to use.

Ease of doing business

Dealing with Construction Permits indicator

Taipei City Government established a One-Stop Counter for Building Permits to issue permits for warehouses in 2011; this was expanded into a One-Stop Counter for Building Permits (for factories, warehouses, or offices under five stories) in 2012 and 2013; in 2014, with reference to actual applications, the application procedure was simplified. Since April 1, 2015, in coordination with the implementation of a digital application paperless operating system, applicants have been able to apply for a construction permit online, further reducing the required time. In the World Bank's Doing Business report of 2018, Chinese Taipei ranked 2nd globally for this indicator.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech
- Cryptocurrency
- Regulatory sandboxes**
- Digital banking**
- Crowdfunding platforms**
- Digital payments**
- International remittances
- Personal and business loans
- Robo-advisors**
- Cloud computing,
- P2P lending platform
- Use of open data on financial services**
- Open Banking

Others, please specify: _____

Regulatory sandboxes:

Since the mechanism was implemented on April 30, 2018, the FSC has approved 3 applications for FinTech innovative experimentation (as of April 23, 2019). Among them, 2 are non-financial institutions applying for experimentation involving cross-border remittance innovation cases, which are to provide foreign migrant workers with payroll remittance services in a convenient and low-cost innovation mode and to solve the problem that foreign migrant workers are not easy to visit the bank for remittances. Meanwhile, the non-financial institution FinTech innovators engaged in the experimentation will also have a chance to establish AML/CFT operations during the experimentation period. If the results of the experimentation are good, the FSC will review the need for revision of related regulations and consider the feasibility of issuing limited licenses for foreign currency remittance businesses.

Digital Banking:

1. With the aim of providing the public with convenient digital financial services, the FSC has been promoting the Program for Building a Digital Financial Environment and in January 2015 opened up 12 businesses including allowing customers to close accounts, apply for personal loans, apply for credit cards, and open a trust account online. As of the end of March 2019, 37 domestic banks (including Chunghwa Post) have launched digital banking businesses, comparing that of 27 of the end of July 2015, it was a significant increase of providing such businesses. At present, the businesses that can be applied for online include three deposit businesses, one credit business, three credit card businesses, four wealth management businesses and one marketing business.
2. As financial technology develops, use by the younger generation to obtain services using mobile devices has become a trend and there are already Internet-only banks overseas. To assist banks respond to the business opportunities offered by the development of digitization and encourage financial innovation, enhance financial inclusion and satisfy the needs of new-generation consumers, in April 2018 the FSC has completed the revision of regulations relating to the requirements for establishment of Internet-only banks. In mid-November 2018 the FSC announced the policy direction for opening up online-only banks; applications were accepted from November 2018 to February 2019, and it is expected that the results of review will be announced in mid-2019.

Crowdfunding platforms:

With the aim of providing more options for fundraising for startups, Chinese Taipei established Go Incubation Board for Startup and Acceleration Firms (GISA) in 2014. Also, in 2015 securities firms were allowed to operate equity crowdfunding platforms. As of the end of March 2019, 149 companies had been assisted to raise a total of NT\$488 million (about US\$16.27 million) through GISA. Eight business operators have also won approval to engage in equity crowdfunding platform business to assist micro enterprises raise funds through such platforms.

Digital payments:

In order to speed up the popularization of e-payment and mobile payment, the FSC has established the Working Group for the Promotion of the e-payment Rate, which is actively promoting e-payment in three directions namely rolling regulatory review, developing diverse payment tools, and expanding channel use. In response to the development of new technology and the needs of business operators, the FSC carries out rolling review of regulations at suitable times and has already completed the amendment of regulations governing credit cards, debit cards, stored value tickets, e-payment and other payment tools to increase the security and convenience of payment and lower the interface system costs of specially-engaged stores. Also, domestic financial institutions are actively using new technology and, since 2014, various types of mobile payment have been introduced including mobile credit card, mobile debit card, mobile stored value card, e-payment institution physical channel payment (O2O), mobile acquiring (mPOS); as of the end of February 2019, transaction amount totaled NT\$77.77 billion (about US\$2.59 billion).

Robo-advisors:

With the aim to assist securities investment consulting enterprises to provide more personalized investment suggestions and investment portfolio to investors, Chinese Taipei allowed authorized enterprises to implement online securities investment consulting services and investment management services, as stipulated by the “Guidelines for Securities Investment Consulting Services of Securities Investment Consulting Enterprises (SICEs) with Automated Tools (Robo-Advisor)” set on June 26, 2017.

Use of open data on financial services:

1. The FSC and the peripheral financial institutions of the National Credit Card Center (NCCC) established the “Credit Card Open Data Application Platform” in October 2016. In addition to continuing to disclose the credit card transaction data of the Chinese Taipei credit card market since 2014, the cardholder profile data such as gender, age, annual income, occupational category, education level, etc., which have been de-identified, are provided to provide quantifiable transaction data to users. The transaction data is open to the public and various industries to add value to their own applications. Through resource sharing, the profit-making industry can explore potential business opportunities.
2. This platform assists data users to effectively use open data. The NCCC regularly uses open data to, using the case analysis method, carry out cross-border, cross-area cross-analysis of the various card swiping situations of card holders in Chinese Taipei to identify potential needs and business opportunities, such as changes in gender and age group consumption, analysis of consumption patterns of card holders in different age groups, analysis of cardholders in different income brackets and analysis of card holders with different levels of education.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech’s reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

No related case study with RegTech.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Regulatory and legal framework (incl. sandboxes)

1. In October 2017, Chinese Taipei launched a policy of deregulation to eliminate investment obstacles with the aim of boosting domestic economic momentum and preventing excessive controls holding back improvements in competitiveness. Agencies were required to actively

review the need to loosen restrictive rules and regulations, administrative directions and interpretive rules so as to promote business and enhance public convenience; they are also required to use forward-looking thinking to formulate concrete programs that would help enterprises eliminate legal obstacles to investment and operation, in line with the rapid environmental changes that characterize the digital economy.

2. A Startups Regulatory Adjustment Platform has also been established to help startup operators clarify uncertainty of applicable regulations for emerging business models; operators can conveniently submit an application online and also submit their requirements in writing. By facilitating face-to-face communication between the competent agency concerned and startups, the applicability and restrictions of regulations can be quickly clarified, actively building a business-friendly regulatory environment.

Regarding regulatory sandboxes:

1. Way of resolving challenges and policy gap: FinTech startups are provided with various consulting and guidance channels, including consulting and guidance services provided by the Fintech Development and Innovation Center of the FSC, “front shop back factory” cooperation mechanism jointly implemented with the Ministry of Economic Affairs (MOEA) and regulatory clinics held by the FinTechSpace, to clear up innovators’ doubts and give them an understanding of supervisory regulations.
2. Promotion of an inter-agency regulatory sandbox mechanism: In light of the diverse nature of experimentation types and involvement of the area of responsibility of other agencies, the Fintech Development and Innovation Center of the FSC has set up an inter-agency regulatory advisory group to discuss and formulate inter-agency policies and set or amend regulations relating the experimental mechanism for FinTech innovation.
3. Formulation of a differentiated management mechanism: During the guidance process, the feasibility of issuing a limited financial business license will be assessed, and it is to lower the capitalization requirement for a single business license by taking into account the business scale and nature.
4. Supporting the development of startups: The FSC supervised the establishment of the FinTechSpace, providing nurturing, matching, creative experimentation space and other resources to startup teams; cooperation with industrial, academia and research circles and enhancing of international links are also planned to give startup teams more opportunity to develop. Accompanying fundraising policies have also been introduced, such as providing incentives to domestic banks to provide loans to companies of key innovative industry and promotion of varied TWSE and TPEX listing channels to create a friendly environment for startup development.
5. The procedure and related regulations of the Unmanned Vehicles Technology Innovative Experimentation Act are currently still being developed. We will soon implement a regulatory sandbox mechanism to reduce regulatory barriers for advanced unmanned vehicle technologies. In the future, relevant authorities can undertake review and revision of laws and regulations regarding unmanned vehicle technologies according to the results of the innovative experiments.

Competition policy

In response to the development of the new-emerging business model in the era of digital economy, the FTC set up a "Digital Economy and Competition Policy Task Force" in April 2017 to discuss potential competition issues arising from the digital economy. In the short term, the "Digital Economy and Competition Policy Task Force" will collect and study relevant literature, research, or report on digital economic issues published by major international competition authorities and international organizations such as OECD, ICN, and APEC. The FTC will also hold symposiums to consult with external stakeholders in order to clarify issues of competition that may be involved in

the areas of sharing economy, e-commerce, big data and platform economy, etc. In the long term, the Task Force will pay close attention to the trend of international competition enforcement and the dynamic development of digital economic industry, and review relevant competition regulations to evaluate the necessity of amendment or formulating specific laws and regulations so as to build a comprehensive competition regime and ensure the maintenance of the competition order.

Public sector governance

1. (short-term) Value added of open data: to continuously open up government data to encourage citizen's participation and innovation.
2. (mid-term) Integrating government services: to transform all government service processes online and empower citizens to authorize the application of personal data to all system services they want.
3. (long-term) Data-driven policy making: to analyze data as the basis for decision making and create new services by adopting AI and cloud technologies.

Ease of doing business

With regard to Getting Credit, Chinese Taipei's Financial Supervisory Commission is currently drafting amendments to the Personal Property Secured Transactions Act. As it involves the overall law amendment schedule and practical operating requirements, more communication and coordination with related parties is still required.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

Regulatory and legal framework (incl. sandboxes)

In response to the development of the digital economy, Chinese Taipei has established an advanced ICT infrastructure. Over the past few years, in terms of enhancing inclusive growth, the focus has been on building a flexible and open, transparent and information-secure regulatory and legal environment for doing business; the concrete measures are:

1. Deregulation has been promoted, actively reviewing and loosening outdated regulations. As of June 2019, 496 regulations have been loosened. Through the Startup Regulatory Adjustment Platform, startup operators are able to quickly clarify doubts about applicable regulations, reducing their legal compliance costs. In response to the development of new technology, related laws have also been formulated to establish a regulatory sandbox innovative experimentation mechanism.
2. Regulatory transparency continues to be increased and the public consulting mechanism enhanced; including increasing the notice-and-comment period for laws and regulations from 14 days to 60 days in principle since October 2016. Moreover, from April 2018, agencies have been required to respond within 10 days of draft regulations being passed to the Parliament after approval by the Cabinet, with the aim of improving the quality of their responses. An explanation as to why opinions received from the public were adopted or rejected should also be provided on the day the draft regulations are promulgated.
3. Personal data and privacy protection continue to be reinforced to build public trust in cybersecurity and assistance provided to domestic enterprises to meet the requirements of the EU GDPR.

Regarding regulatory sandboxes:

1. The experimental mechanism for FinTech innovation (regulatory sandbox) emphasizes the idea of “responsible innovation”. We require that the innovative experimentation plan submitted by innovators includes planning of participant protection measures and a risk management mechanism; it must also clearly explain how the innovative products/services will increase the efficiency of financial services, lower cost or enhance the rights and interests of consumers; the competent authority will also, according to planning, assess whether the plan will have financial inclusion or other benefits.
2. The business opportunities brought by FinTech have removed the regional restrictions of the past and the regulatory sandbox is the experimentation field for molding Fintech innovation. It is beneficial for the market’s provision of customized, fast and convenient innovative financial products or services to different customer groups to fully meet all the financial needs of the public. Through the borderless character of the Internet, service can be extended to remote areas, the disadvantaged groups or small enterprises, even to enterprises or members of the public in other economies, in doing so expanding the coverage of financial inclusion. The FSC has so far approved three applications for innovative experimentation that involve provision of financial services to groups that did not interact much with banks in the past such as new graduates, students and foreign migrant workers.
3. The Unmanned Vehicles Technology Innovative Experimentation Act is expected to facilitate the formation of relevant supply chain systems for unmanned vehicles, construct a safe environment for experimentation, raise public acceptance, and expedite relevant regulatory reforms.

Competition policy

In response to the policy gaps and challenges created by the digital economy to the competition enforcement, the FTC will strive to enhance the knowledge and skills of handling cases through conducting the collection of relevant literature, research, or reports on digital economic issues published by major international competition authorities and international organizations, and gradually adjusting and updating the competition analysis tools for enforcement practice. All these efforts contribute to a level playing field and promote the fairness and transparency of competition enforcement, which would enhance inclusive growth of digital economy.

As to how to measure Chinese Taipei’s understanding of the competition issues relevant to digital economy and assess whether our knowledge and skills in handling cases are improved, we are to use the following indicators:

1. the number of literature, research, or reports related to digital economic issues that we collect and study from major international competition authorities and international organizations;
2. the number of international workshops or seminars for discussing issues related to digital economy that we participate in; and
3. the number of initiatives and advocacy events that we coordinate with other competent authorities on competition issues of digital economy.

Public sector governance

We are to continuously conduct free public WiFi deployment so that remote areas of the territory can also access the Internet without effort. The ISP is required to reduce the internet access fee gradually for people to access internet resources in a more reasonable (lower) price, thus protecting their basic internet human rights.

For the disadvantaged and the elderly, the frontline civil servants would go to their homes with tablet PCs to serve them when they need to apply for government subsidies or other services.

Meanwhile, we are to use the following benchmarks for tracking progress:

| Benchmarks | Year 2020 | Year 2025 |
|------------|-----------|-----------|
|------------|-----------|-----------|

| | | |
|--|--------|--------|
| 90% high-speed broadband width penetration | 1Gbps | 2Gbps |
| Basic internet human right for minority groups | 10Mbps | 25Mbps |

Ease of doing business

In response to the rise of the digital era and promotion of smart government policy, electronic systems are used to provide a more convenient environment for doing business. For example, a company, business and limited partnership one-stop service request portal has been established, simplifying the process for setting up a business and reducing the time required.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Regulatory and legal framework (incl. sandboxes)

In terms of regulatory and legal framework reform, we hope to engage in exchanges with related international organizations and economies with regard to the development of new business model management policies.

Regarding regulatory sandboxes:

1. Chinese Taipei's participation in APEC can allow our experiences and implementation situations to be shared and allow friendly relations to be built with other economies. Also, through related areas or international organization research reports, we can obtain an understanding of the APEC regional development situation and the challenges faced by each economy to provide reference for policy formulation and research and the framework for cooperation between member economies.
2. Through the Unmanned Vehicles Technology Innovative Experimentation Act, the government will be able to develop and verify relevant regulations and standards, cooperate with the industry to follow the global trends of unmanned vehicle development while protecting the safety of the community. The Act will also allow international technical cooperation on the experimental procedures of the regulatory sandbox, and forge a friendly regulatory environment for the future deployment of unmanned vehicles.

Competition policy

In addition to the software and hardware advancement and innovation of technology, the development of digital economy has a great impact on the overall social and economic growth, such as people's life, business model and regulatory framework. Therefore, in addition to discussing digital economic issues or organizing workshops for capacity building in various relevant forums, APEC may also hold cross-forum dialogues or invite experts and scholars from other international organizations to share experiences and best practices, so that member economies could gain a better understanding of the technologies that underpin the digital sector and the relevance of analysis tools for competition and competition enforcement. It also could be a useful contribution to the ongoing conversation between competition authorities on the ways that how competition policy or legal framework should adapt to the digital era. With APEC's role as the platform of interaction among member economies, it will promote a comprehensive and integrated understanding of digital economic issues and help forge effective solutions to address the policy gaps, obstacles and challenges created by the digital economy.

Public sector governance

Currently, the general public holds a skeptical attitude towards accessing and utilizing personal data by the government. APEC member economies can share their experiences as to how to gain trust from citizens while promoting a data-driven smart government strategy. In addition, as cyberattacks are serious issues across the region and around the world nowadays, APEC members are encouraged

to share their cyber security information among each other so that those attacks can be prevented and deterred in the first place.

THAILAND

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: Human Capital Development**

Moving toward digital economy have long been high on Thailand's economic priorities. However, they are still challenges and barriers to implementing structural reforms regarding the digital economy in Thailand. In order to unlock the potential of digital transformation, structural reforms in many areas are required, including financial, health and education services, as well as the public sector itself. One key challenge is the fragmented management of public sector. The lacks of interagency coordination among different public institutions and institutional silos in the government have resulted in incoherent goals and priorities and overlapping responsibilities. Moreover, many authorities in the public sector still require documents to be submitted and kept in hard copies, some are due to legal requirements while some are because of the legacy system that may require some time to change.

Another challenge is the lack of expertise in the public sector to understand the technical details associated with the implementation of structural reforms. For example, the lack of experts and people with skills in big data, analytics, artificial intelligence and other areas crucial to develop the digital economy, as well as inadequate rules and regulations regarding digital technology are seen as an important barrier to implementing structural reforms for digital economy in Thailand. In addition, the changing of landscape caused by digital transformation may affect those who fail to respond to technological changes or upgrade their existing process and knowledge base can potentially go out of business. A lack of adequate protection especially when involving data privacy can also hold back consumers and businesses who embrace e-commerce or online transactions. Moreover, some of the existing rules and regulations are also not fully supportive of innovative business models, particular in terms of speed, compliance cost and opportunity cost.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance**
- Ease of doing business**
- Others, please specify: _____

One of the key policy gaps relating to digital economy is the lack of consistent policies and guidelines between different implementing agencies, which make it difficult to implement the digital development plan holistically. Moreover, in a digital era, many business models are transforming into a hybrid involving crosscutting regulators, however, since each regulator has its own legal mandate and authority, the existing legal framework may not be able to accommodate these new

business models. Therefore, the coordination among regulators to properly regulate or oversee these new financial services is extremely essential.

Furthermore, as new technology such as distributed ledgers, blockchain, artificial intelligence (AI), and the IoT have been introduced, the gap between policy and the changes induced by digital transformation have become greater. The government agencies may not be able to respond quick enough to this rapid transformation. There is also a concern regarding the trade-off between growth and associated risks in policy-making decisions. In financial sector, the main challenge is how policy revision could effectively and efficiently drive private sectors towards digital economy, and at the same time, not compromising the security and soundness of customers and financial system as a whole.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Scoping and measurement of the digital economy
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy
- Public sector governance
- Ease of doing business
- Others, please specify:

Since 2016, the Ministry of Digital Economy and Society (MDES) has been established to plan, promote, develop and implement activities related to a digital society and economy. Furthermore, to reaffirm the government’s commitment to Thailand’s innovation-driven future under Thailand 4.0 initiative, the National Legislative Assembly (Parliament) passed six technology-related bills in January 2019. The six digital bills include the Data Protection bill; the Cyber-security bill; the Digital Economy and Society Council bill; the Digital Identification bill; the Electronics Transaction Organisation Restructuring bill; and the Electronics Transaction Officer bill.

In addition, three regulators, including Bank of Thailand, Office of Insurance Commission and the Securities and Exchange Commission, under the Ministry of Finance have established regulatory sandboxes to facilitate innovation in the financial services industry (further details on this could be found in 3a.).

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Fintech**
- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes**
- Digital Banking**
- Crowdfunding platforms
- Digital payments**

- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- X P2P lending platform**
- Open Banking (a system that provides a user with a network of financial institutions' data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify: Digital Identity

Fintech and Sandboxes: Regulatory Sandbox allows private sectors that provide innovative financial services with new technologies to start providing services faster under regulator's close monitoring. The regulatory sandbox also allows banks, and payment service providers to test the technology, ensuring interoperability among all service providers, as well as to follow industry-led business rules. One of the most successful cases of Sandbox to drive Innovation is the Standardized Thai QR Code for Payment.

Digital Banking: The Bank of Thailand has revised its rules and regulations following the Regulatory Impact Assessment (RIA) scheme, to help facilitate the move towards Digital Banking. In particular, on IT operation for more efficient and faster financial transactions while maintaining appropriate risks involved through the permission to use new technology such as cloud computing, and biometrics for account opening process.

Digital payments: The 4th Payment Systems Roadmap (2017-2021) has been launched aiming to build the ecosystem for digital payment to become the main channel of payment through the development of 5Is: Interoperable Infrastructure, Innovation, Inclusion, Immunity, and Information. The Payment System Act (2017), or the PSA, has been facilitating digital payment landscape since it was in effect. The PSA supports payment supervision to be in accordance with international standards. Furthermore, the PSA incorporates legal provisions that are essential to introduction of new technology and innovation into the payment landscape, thereby encouraging new players and new efficient services. In addition, the Ministry of Finance and Bank of Thailand has shepherded an economy-wide effort to implement "National e-Payment Master Plan". The Master Plan has helped create a comprehensive and interoperable electronic payment infrastructure that will transform how Thais transfer money, how Thais pay taxes and even how the government disburses public welfare. This transformation will certainly create a conducive environment for digital economy to flourish in Thailand.

P2P lending platform: Ministry of Finance has issued notification in 2018 to allow P2P operators to apply for a license, paving the way for information based lending and new entrants in the consumer credit market. Moreover, in April 2019, the Bank of Thailand issued notification on the Determination of Rules, Procedures, and Conditions for Peer-to-Peer (P2P) Lending Businesses and Platforms. These regulations on peer-to-peer lending will expand opportunities for individuals or small-business owners to access financial sources, as well as to ensure the proper consumer protection and risk management of the peer-to-peer lending platform providers.

Digital Identity: Ministry of Finance and Ministry of Digital Economy and Society, along with partners in the private sector, have formed a task force to create National Digital Identification Platform, which will serve as an indispensable digital infrastructure for the economy. This National Digital ID Platform has been designed to be interoperable between government and private sector. Electronic Transaction Act B.E. 2544 has also been amended as proposed by Ministry of Finance to accommodate digital authentication and verification.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control**
- Risk management**
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

The Securities and Exchange Commission (SEC), Thailand's regulator of the securities markets, has used technology to manage regulatory process within the financial sector for mutual fund risk management, financial intermediary efficiency improvement, and the off-site monitoring system to monitor, analyze and report the risks and irregularities. Technology supports the mutual fund risk management processes from data input, processing, and output to data disclosure.

The Bank of Thailand has amended several regulations to allow banks and nonbanks to use technology to perform Electronic Know Your Customer (e-KYC) process where they source customer information prior to opening accounts or approving transactions. Banks and nonbanks can thus now comply with the Anti-Money Laundering Office (AMLO)'s requirements more accurately and more efficiently. The off-site monitoring system has also been developed as an instrument to monitor and regulate the entrepreneurs in securities, fund management, and debt securities business.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

In order to move towards digital economy, certain legislation or regulation must be enacted to ensure that electronic data has legal status and can be used as credible document. Thailand promotes the digital transformation by encouraging the use of digital technology in both public and private sector. In 2017, Thailand enacted the Digital Development for Economy and Society B.E. 2560 (the Digital Development Act) and Thailand Digital Economy and Society Development Plan (2018-2037) has released to "Transform towards Digital Thailand". The plan covers six key areas, namely: 1) developing economy-wide high-efficiency digital infrastructure; 2) driving the economy with digital technology; 3) building an equitable and inclusive society through digital technology; 4) transforming the public sector into a digital government; 5) developing workforce for the age of digital economy and society; and 6) building trust and confidence in the use of digital technology. The plan is divided into 4 phases within 20 years including Digital Foundation (1.5 years), Digital Thailand: Inclusion (5 years), Digital Thailand: Full Transformation (5 years), and Global Digital Leadership (10 years). Currently, Thailand is on the 2nd phase of the plan focusing on the digital inclusion.

Moreover, the National Legislative Assembly has approved several laws to narrow gaps in the digital age including Cyber Security Act, Data Privacy Protection Act, Royal Decree on Criteria and Procedures for Good Governance, and Royal Decree on Criteria and Procedures.

In the financial sector, the Bank of Thailand continues to support the Thailand Blockchain Community Initiative (BCI) following its official company establishment in May 2019. The BCI will encourage the Blockchain community in Thailand to be more proactive and support practical uses of Blockchain technology that benefits not only financial sector but real sector as well. Secondly, the National Digital Identity (NDID) project will begin to serve as an important fundamental for the digital economy. It facilitates the verification and authentication of identity digitally which could also be further applied to the sharing of other information such as health records. For the medium-term, it uses the digital technology to remove the barriers in doing business and overlapping procedures such as the one-stop service platform. In the short run, the close collaboration among regulators and industries must continue to ensure enabling environment and ecosystem for digital economy, for example, the three-financial regulator collaboration among the Bank of Thailand, the Securities and Exchange Commission, and the Office of Insurance Commission, either in high executive level or in working group level.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

The digital inclusion has been identified in the 20-year digital development plan to create public-private participation in digital economy and society and build trust in a business-friendly environment with standardized facilitation system. For infrastructure, it plans to expand high-speed internet network economy-wide and connect with foreign economies. Digital inclusion aims to encourage local enterprise integration and access to the online market, which can help the local entrepreneurs to generate higher income. Furthermore, digital education and literacy are necessary to narrow gaps in Thai economy including rural-urban well-beings and areas, generation gap, firm-size differentiation.

The current 12th National Economic and Social Development Plan has set four indicators to measure the extent of digital economy development in Thailand. First, it aims to improve the Network Readiness Index (NRI), which measures the propensity to **take advantage of the opportunities offered by information and communications technology (Thailand was ranked 62th by WEF in 2016)**. **Second, the plan expects to increase the number of villages where can access to high-speed internet from 30 to 85 by 2021.** **Third, it targets to introduce at least 1,000 digital entrepreneurs in the economy.** Fourth, the number of government agencies with cyber security system increases from 47 to more than 80 percent by 2021.

In accordance with the Government's National e-Payment Plan and Digital Economy vision, PromptPay was developed as a payment infrastructure that allows a faster and easier money transfer process via electronic channels by using mobile numbers or citizen IDs. Furthermore, PromptPay has served as a fundamental for the development of Standardized Thai QR code that provides more convenient and secure channel of payment. The introduction of the two infrastructure helps promote electronic payment, reduce cost of cash management, thus improving overall efficiency of the economy. In addition, to increase the financial access of the Thai households, Basic Banking Account (BBA) was introduced to widen opportunity for low income earners to access financial services and enhance their daily financial literacy. Moreover, BBA continues to support their chance to access other financial services to support occupation and leading to improve their quality of life. This will benefit the whole economy as promoting financial access for the people at the bottom end of income scale will balance income distribution, reduce social inequality and enhance sustainable economic growth. As for the access of SMEs, the regulation on P2P lending platform was issued on May 2019. This regulation aims to enhance opportunity for individuals or small and medium entrepreneurs to access financial sources because small and medium entrepreneurs face some difficulty to access funding sources because of lagging collateral or no financial history.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Partnership with regional cooperation, such as ASEAN, allows Thailand to create the network for knowledge, data & information, and expertise sharing. It also creates the collaborative framework to deal with the regional challenges and regional risk reduction. ASEAN has launched an ASEAN Master Plan on Connectivity (MPAC) 2025 to promote the regional connectivity. This Master Plan consists of five strategic key areas: sustainable infrastructure, digital innovation, seamless logistics, regulatory excellence, and people mobility. The digital innovation strategy aims to increase MSMEs technology adoption; support access to financial services through digital technologies; enhance impact of open data; and improve data management practices and more cross-border data within the region by 2025. In addition, Thailand can benefit from ASEAN and other partners. For example, ASEAN and Japan established the ASEAN-Japan Cyber security Capacity Building Centre in Thailand to promote the secured “Digital ASEAN”.

Cooperation through regional bodies such as APEC offers the opportunity to share experiences on the lessons learned in improving structural policies for the development of digital economy. APEC has played a vital role in addressing challenges in reform of digital economy through providing assistance that could help developing economies to enhance its capacity as well as accelerate innovation. Member economies can learn from others’ reforms and outcomes. A range of experiences and challenges that are shared through policy dialogues, workshops and capacity building exercises, allowing economies in similar stances to learn from other’s situations.

APEC’s engagement with international organizations, for example, Organization for Economic Cooperation and Development (OECD), and World Bank could also help providing technical support to developing economies to carry out structural reform that bring concrete and effective outcome.

UNITED STATES

1. Barriers and Challenges: Considering your economy's current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Other' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
 - Competition policy
 - Public sector governance
- Ease of doing business**
- Others, please specify: _____

The first major challenge of establishing a favorable policy climate for emerging technologies and data utilization is the inability to properly and accurately measure the value of data, ad revenue, or data flows in the same way you can measure the exact value of good trade. Data is not a commodity, nor is it a manufactured good or a statically priced service, so there are significant challenges in scoping a policy and regulatory environment to encourage expansion in the digital economy. Enhancing measurements is a key activity of many economies and multilateral institutions and will have long-term positive impacts on our understanding of digital trade policies.

Given the gaps in knowledge about the value of data, regulatory and legal frameworks, as well as competition policy and consumer protection are key areas of interest, and key challenges for the growth of the digital economy. Supportive policy frameworks have been established in economies and multilateral frameworks; however, there is not yet an international consensus on best practices. Further, some economies are resorting to protectionist policy measures meant to trap data within their physical borders that undermines the future of a global digital economy, hurts economic growth, and disadvantages underserved populations by limiting competition and innovation.

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select 'Others' and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
 - Competition policy
 - Public sector governance
- Ease of doing business**
- Others, please specify: _____

The most obvious policy gap hurting the digital economy are divergent regulatory and legal frameworks leading to a balkanization of the Internet and digital services. When economies set up a firewall that effectively prevents the export of data or the import of information, innovation and economic growth are impeded to the detriment of the global economy. APEC has long-served as an incubator for free trade policy ideas; however, in recent years APEC has lost its ability to find consensus around the free flow of data and cooperative work on digital trade initiatives. Without further cooperation and an understanding that data must flow freely to support global commerce, we are disadvantaging our economic competitiveness as a region. Restrictions on cross-border data flows, policy requiring localization of data servers or CLOUD services, and restrictions or duties on digital products and services impede economic growth and competitiveness for APEC as a region.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from

the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

Scoping and measurement of the digital economy

Regulatory and legal framework (incl. sandboxes)

Competition policy

Public sector governance

Ease of doing business

Others, please specify: _____

On the topic of regulatory and legal frameworks, the Federal Communications Commission (FCC) is pursuing a comprehensive strategy to promote 5G development and deployment in the United States. The strategy includes three components, which can be considered best practices: (1) making additional low, mid, and high-band spectrum available for 5G services; (2) updating infrastructure policy; and (3) modernizing outdated regulations. For more information, please refer to the [FCC's 5G FAST Plan](#).

Beyond 5G, the Bureau of Economic Analysis (BEA) is developing tools to better capture the effects of fast-changing technologies on the U.S. economy and on global supply chains. The project seeks to calculate the digital economy's contribution to U.S. GDP, improve measures of high-tech goods and services, and offer a more complete picture of international trade. Other goals are to advance research for digital goods and services, the sharing economy and free digital content, and to explore economic measures beyond GDP to better understand Americans' well-being.

In March 2018, BEA released, for the first time, preliminary statistics and an accompanying report exploring the size and growth of the digital economy. BEA includes in its definition of the digital economy three major types of goods and services:

- the digital-enabling infrastructure needed for an interconnected computer network to exist and operate

- the e-commerce transactions that take place using that system

- digital media, which is the content that digital economy users create and access.

Because of the limitations of available data, BEA's initial estimates include only goods and services that are "primarily digital." This means that some components of the digital economy, like peer-to-peer (P2P) e-commerce, also known as the sharing economy, are excluded from the initial estimates. P2P transactions such as ride-sharing services rely on internet-enabled devices to match supply and demand, but also have a non-digital component of in-person provision of services. BEA is continuing to work towards expanding the coverage of the estimates as we work toward a digital economy satellite account. (<https://www.bea.gov/data/special-topics/digital-economy>)

Additionally, in February 2019, the President issued Executive Order 13859, “Maintaining American Leadership in Artificial Intelligence” (<https://www.whitehouse.gov/presidential-actions/executive-order-maintaining-american-leadership-artificial-intelligence/>), which directs the Office of Management and Budget (OMB) to provide guidance to all Federal agencies to (1) inform the development of regulatory and non-regulatory approaches regarding technologies and industrial sectors that are empowered or enabled by artificial intelligence (AI) and (2) consider ways to reduce barriers to the development and adoption of AI technologies. Consistent with Executive Order 13859, OMB guidance on these matters will seek to promote American innovation generally and with respect to the application of AI technologies, while upholding and protecting civil liberties, privacy, American values, and U.S. economic and **domestic** security.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

X Fintech

X Cryptocurrency (digital asset that uses cryptography for security)

- Sandboxes
- Digital Banking
- Crowdfunding platforms
- Digital payments
- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions’ data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify: _____

Authorities in the United States have taken a number of actions relevant for the digital economy around FinTech:

Application of FinCEN’s Regulations to Certain Business Models Involving Convertible Virtual Currencies

- The Financial Crimes Enforcement Network (FinCEN) issued an interpretive guidance to remind persons subject to the Bank Secrecy Act (BSA) how FinCEN regulations relating to money services businesses (MSBs) apply to certain business models¹. For a discussion of the concept of “business model” as used within this guidance, see *infra*, Section 1.1. involving money transmission denominated in value that substitutes for currency, specifically, convertible virtual currencies (CVCs)
<https://www.fincen.gov/sites/default/files/2019-05/FinCEN%20Guidance%20CVC%20FINAL%20508.pdf>

SEC issued a Framework for “Investment Contract” Analysis of Digital Assets

- As part of a continuing effort to assist those seeking to comply with the U.S. federal securities laws, SEC published a framework for analyzing whether a digital asset is offered and sold as an investment contract, and, therefore, is a security.
<https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets>

The Office of the Comptroller of the Currency (OCC) today announced it will begin accepting applications for national bank charters from nondepository financial technology (fintech) companies engaged in the business of banking.

- <https://www.occ.gov/publications/publications-by-type/other-publications-reports/pub-other-occ-policy-statement-fintech.pdf>

The CFTC launched LabCFTC as an innovation hub.

- LabCFTC is the focal point for the CFTC's efforts to promote responsible FinTech innovation and fair competition for the benefit of the American public. LabCFTC is designed to make the CFTC more accessible to FinTech innovators, and serves as a platform to inform the Commission's understanding of new technologies. Further, LabCFTC is an information source for the Commission and the CFTC staff on responsible innovation that may influence policy development.
- <https://www.cftc.gov/LabCFTC/Overview/index.htm>

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech's reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting**
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)**
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify: _____

The OCC has supported responsible innovation in all aspects of banking, including regulatory compliance. The OCC, along with other U.S. agencies, issued the Joint Statement on Innovative Efforts to Combat Money Laundering and Terrorist Financing encouraging financial institutions to take innovative approaches to AML monitoring.

<https://www.occ.gov/news-issuances/news-releases/2018/nr-occ-2018-130a.pdf>

The Office of Structured Disclosure at the SEC works with investors, regulated entities, and the public to support the submission and use of structured data.

<https://www.sec.gov/structureddata>

Various groups within the SEC use these data analytics in support of monitoring and surveillance.

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

With the rapid growth of the Internet starting in the mid-1990s, digital technologies have fundamentally impacted business models within every sector of our economy from agriculture to healthcare, education to energy, and manufacturing to the arts. Despite enormous private investment and dedicated Federal grant and loan programs, too many American citizens and businesses lack access to this basic tool of modern economic prosperity.

While the Federal Government owns or manages key assets that support telecommunications infrastructure, the bulk of America's telecommunications infrastructure is owned and managed by private-sector companies. This private market is a significant asset to our economy and has helped the United States innovate and lead the world in each wave of telecommunications technology.

Over the past several decades, Federal partnerships have been especially important for deployment in high-cost rural areas, where the unique challenges of geography, population density, and deployment costs may make it unprofitable to expand or operate networks – creating significant gaps in rural broadband coverage.

The American Broadband Initiative (Initiative) is the Administration’s signature strategy to stimulate increased private investment in broadband infrastructure and services to fill broadband connectivity gaps in America. The Initiative will drive change across Federal Agencies to better leverage public assets and resources through partners to expand our economy’s broadband capacity. This mission is built on three core principles:

- Government processes should be clear, transparent, and responsive to stakeholders.
- Federal assets should provide the greatest possible benefit to stakeholders and the public.
- The Federal Government should be a good steward of taxpayer funds.

Drawing on these principles and the unique responsibilities of Federal Agencies, the Initiative will achieve its goals through three interagency workstreams:

- Streamline Federal permitting processes to make it easier for network builders and service providers to access Federal assets and rights-of-way, reducing the regulatory burden and expediting the deployment of broadband networks.
- Leverage Federal assets such as towers, buildings, and land to lower the cost of broadband buildouts and encourage private entities to expand telecommunications infrastructure, especially in rural America.
- Maximize the impact of Federal funding to better target areas of need, improve consistency, and provide incentives for State/local policies that efficiently and effectively leverage Federal dollars.

More information about the American Broadband Initiative is available at https://www.ntia.doc.gov/files/ntia/publications/american_broadband_initiative_milestones_report.pdf.

In addition, the United States has undertaken ongoing efforts to benchmark broadband through mechanisms such as annual reports (*e.g.*, the [2019 Broadband Deployment Report](#)), as well as initiatives like the [Measuring Broadband America](#) program, which recently issued the [2018 Measuring Broadband America Fixed Broadband Report](#).

Multiple federal agencies have outlined strategies to promote responsible innovation and FinTech adoption. See the following publications and remarks:

<https://home.treasury.gov/news/press-releases/sm447>

[https://www.fincen.gov/sites/default/files/2018-](https://www.fincen.gov/sites/default/files/2018-12/Joint%20Statement%20on%20Innovation%20Statement%20%28Final%2011-30-18%29.pdf)

[12/Joint%20Statement%20on%20Innovation%20Statement%20%28Final%2011-30-18%29.pdf](https://www.fincen.gov/sites/default/files/2018-12/Joint%20Statement%20on%20Innovation%20Statement%20%28Final%2011-30-18%29.pdf)

<https://www.occ.gov/topics/responsible-innovation/comments/recommendations-decisions-for-implementing-a-responsible-innovation-framework.pdf>

<https://www.occ.gov/publications/publications-by-type/licensing-manuals/file-pub-1m-considering-charter-applications-fintech.pdf>

<https://www.sec.gov/news/press-release/2018-240>

<https://www.sec.gov/finhub>

5. Inclusion: Describe your economy’s barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

The United States promotes several efforts to include rural and low-income communities as part of key digital economy projects in providing access to high quality, affordable, and reliable internet for communities across the economy. These projects are undertaken in hopes of increasing access for disadvantaged and rural communities to the internet and allow participation in the fast-growing digital economy.

The Bureau of Economic Analysis is developing key metrics for measuring the digital economy and the impact changing technologies have on the U.S. economy and on global supply chains. The project seeks to calculate the digital economy's contribution to U.S. GDP, improve measures of high-tech goods and services, and offer a more complete picture of international trade. Other goals are to advance research for digital goods and services, the sharing economy and free digital content, and to explore economic measures beyond GDP to better understand Americans' well-being.

Because of the limitations of available data, BEA's initial estimates include only goods and services that are "primarily digital." This means that some components of the digital economy, like peer-to-peer (P2P) e-commerce, also known as the sharing economy, are excluded from the initial estimates. P2P transactions such as ride-sharing services rely on internet-enabled devices to match supply and demand, but also have a non-digital component of in-person provision of services. BEA is continuing to work towards expanding the coverage of the estimates as we work toward a digital economy satellite account. More Information on BEA's definition of the Digital Economy can be found here: [BEA Digital Economy](#)

Action Plans:

- U.S. Department of Agriculture Telecommunications Programs: According to a 2018 report by the Federal Communications Commission, 80 percent of the 24 million American households who lack reliable, affordable, high-speed internet are in rural areas. USDA's investments in broadband infrastructure are helping transform rural America, providing innovation and technology to increase economic competitiveness and opportunities. USDA is investing \$91 million through the Telecommunications Programs. The 19 projects will benefit more than 27,000 businesses and households in Arkansas, Georgia, Iowa, Kentucky, Minnesota, North Carolina, North Dakota, New Mexico, Oklahoma, Tennessee, Utah and Virginia. More information can be found here: [USDA Partners with Communities to Bring High-Speed Broadband e-Connectivity Infrastructure to Rural Areas](#)
- National Telecommunications and Information Administration (NTIA) Broadband USA Program: The National Telecommunications and Information Administration's (NTIA) BroadbandUSA program promotes innovation and economic growth by supporting efforts to expand broadband connectivity and meaningful use across America. BroadbandUSA serves local and state governments, industry and nonprofits that need to enhance broadband connectivity and promote digital inclusion. To date, BroadbandUSA has provided support to more than 1,000 communities to help them fully participate in the digital economy. BroadbandUSA provides guidance, tools, insight and thought leadership that guide communities to work with providers to get the connectivity they need. In addition, our expert staff can help connect local and state governments to other federal funding opportunities. Local and state governments can also review BroadbandUSA's Broadband Funding Guide, which provides a roadmap on how to access federal funding to support broadband planning, public access, digital inclusion and deployment projects.
- BroadbandUSA promotes Digital Inclusion by: Guiding communities through broadband planning and digital literacy efforts via free technical assistance, tools and products Working with government entities to remove barriers to broadband efforts and promote a broadband-friendly environment Promoting industry engagement and awareness regarding broadband's

importance Convening community and thought leaders to identify best practices and activities that advance digital engagement and opportunity.

- **USDA ReConnect Program:** Agriculture Secretary Sonny Perdue announced that the United States Department of Agriculture (USDA) is offering up to \$600 million in loans and grants to help build broadband infrastructure in rural America. Telecommunications companies, rural electric cooperatives and utilities, internet service providers and municipalities may apply for funding through USDA’s new ReConnect Program to connect rural areas that currently have insufficient broadband service. This is an innovative broadband pilot program, based on modern, effective strategies that will catalyze increased private-sector investment in broadband infrastructure. These investments will prioritize projects that deploy broadband infrastructure in rural areas that are currently insufficiently connected, with the goal of increasing productivity and improving rural quality of life. More information on the ReConnect Program can be found here: [USDA Re-Connect Program](#) and here: [NTIA Report Rural Broadband](#)

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

APEC has historically been a forum which promoted the incubation of new ideas in a voluntary, but consensus-based approach and allowed economies to share experiences and learn together on how regulatory environments could promote trade and economic growth. For the United States, one of the most significant achievements of APEC was the creation of the Cross-Border Privacy Rules (CBPR) System in 2011. Given the prevalence of economy-wide privacy laws, especially those which include restrictions on the cross-border flows of data, APEC was nearly a decade ahead of the rest of the world in attempting to establish rules to ensure privacy protections without impeding the free flow of information.

Today in the WTO, economies are discussing exactly the issue APEC attempted to solve 8 years ago. The CBPR System – with 8 participating economies – covers more GDP than the entire European Union. If it grew to cover the entire APEC region, the CBPR System would not only elevate privacy protections for consumers, but would create the largest area of free flow of data in the world and set a template for ensuring data flows globally without lowering privacy protections for consumers. Models such as the CBPR System are what APEC has historically done well and an example of the immense value the forum holds when economies agree to work together on shared principles.

VIET NAM

1. Barriers and Challenges: Considering your economy’s current situation, what are three major barriers and challenges to implementing structural reforms relating to the digital economy? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Other’ and specify what these categories are.

- Scoping and measurement of the digital economy**
- Regulatory and legal framework (incl. sandboxes)**
- Competition policy**
- Public sector governance
- Ease of doing business
- Others, please specify: _____

Scoping and measurement of the digital economy: Viet Nam aims to develop policy to support the digital transformation and digital economy. In principle, the policy needs to be evidence-based.

However, scoping and measurement of the digital economy is a major barrier. In particular, the digital economy is not fully captured, if any, in the current statistics and indicators.

Regulatory and legal framework (incl. sandboxes): A key challenge with implementing regulatory sandboxes seems to be that the authorities may then be perceived by the consumers/business community as endorsing the underlying initiative, on either economy-wide or sector-wide basis.

Competition policy: Building capacity for competition policy to support the digital economy is important. Competition assessment on digital-economy-related regulations lacks rigorous foundations and evidence, especially when the digital economy platform is in competition with the traditional services (e.g. Uber/Grab vs. traditional taxis).

2. Policy Gaps: Describe what your economy considers as the three major policy gaps relating to the digital economy. Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are.

Scoping and measurement of the digital economy

Regulatory and legal framework (incl. sandboxes)

Competition policy

Public sector governance

Ease of doing business

Others, please specify: _____

Scoping and measurement of the digital economy: The lack of sound approaches to measuring the digital economy then leads to the inappropriate capacity to assess impacts of regulations to support digital economy, which in turn weakens the evidence-based nature of regulations.

Competition policy: Viet Nam is yet to improve regulations to strengthen competition policy in the digital platform, including e-commerce. This may lead to poor handling of competition cases between the digital and traditional platforms.

3. Best Practices: Of the structural reforms relating to the digital economy your economy has undertaken in the past 5 years (2014-2019), what are three effective examples? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

Scoping and measurement of the digital economy

Regulatory and legal framework (incl. sandboxes)

Competition policy

Public sector governance

Ease of doing business

Others, please specify: Viet Nam has simplified regulations on e-commerce, which promoted entry of various traders on e-commerce platform.

Public sector governance: Since 2015, the government of Viet Nam has adopted the Resolution 36a/ND-CP on improving e-government. While promoting IT applications in government-people interactions (including handling of administrative procedures).

Ease of doing business: In 2018, various agencies made way for electronization of specialization inspection procedures. This helped implement the National Single Window and reduced the costs of trading across borders.

3a. (Specific to Financial Sector) Best Practices: Considering structural reforms related to digital economy in financial markets undertaken by your economy in the past 5 years (2014-2019), what is an effective example? Please select from the following categories and elaborate. If the categories you wish to elaborate on are missing, please select ‘Others’ and specify what these categories are. Please identify the main reasons for regulatory effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

X Fintech

- Cryptocurrency (digital asset that uses cryptography for security)
- Sandboxes
- Digital Banking
- Crowdfunding platforms
- Digital payments
- International remittances
- Personal and business loans
- Robo-advisors (digital platforms that provide automated, algorithm-driven financial planning service with limited human intervention or supervision)
- Cloud computing,
- P2P lending platform
- Open Banking (a system that provides a user with a network of financial institutions’ data through the use of application programming interfaces (APIs))
- Use of open data on financial services
- Others, please specify:_____

In the past years, Viet Nam has facilitated start-ups in payment services. As of 2019, the government is promoting non-cash payment, which further induces fintech in payment services.

3b. (Specific to RegTech) Best Practices: In case your economy has implemented RegTech’s reforms to deal with challenges posed by digital economy, identify an effective example according to the list provided and elaborate. Please identify the main reasons for the effectiveness that could be relevant for other economies. If possible, please also identify the indicators your economy is using to monitor the effectiveness of the reforms and what the indicators show.

- Compliance
- Identity management and control
- Risk management
- Regulatory reporting
- Transaction monitoring
- Trading in financial markets
- AML/CFT (anti-money laundering/ combating the financing of terrorism)
- Misconduct analysis (e.g. financial fraud; mis-selling, etc.)
- Others, please specify:_____

4. Action Plans: Considering the policy gaps, barriers and challenges you have previously identified, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details. You may wish to consider the structural reform categories listed in the Terms of Reference (e.g. scoping and measurement of the digital economy; regulatory and legal frameworks incl. sandboxes; competition policy; public sector governance; ease of doing business; etc.)

Viet Nam is developing the strategy for digital transformation. In the years till 2020, Viet Nam may focus on improving the legal framework to address the policy gaps, barriers and challenges for the digital economy, apart from other measures to improve the foundations and develop human resources for digital transformation.

5. Inclusion: Describe your economy's barriers and challenges, policy gaps, best practices and action plans to enhance inclusion/inclusive growth with respect to the digital economy. Your response should describe any metrics and benchmarks that you may use to measure inclusion, design appropriate policy responses and track progress.

Viet Nam remains in shortage of skilled labour for e-commerce. Various skills related to exploit, utilize e-commerce applications, handling regular computer issues, developing e-commerce plans, etc. In 2017, the survey by VECOM shows that about 30% enterprises has designated personnel for e-commerce, and the share is smaller among small- and medium-sized enterprises. Viet Nam currently has both broad and specific policies to address this, including policy to develop human resources for IT, SMEs, etc.

6. Regional Cooperation: What role can regional cooperation and regional bodies such as APEC play? You may wish to consider the role of cooperation, including with regional and international organizations, in addressing the policy gaps, barriers and challenges you have previously identified.

Regional cooperation can be helpful in several ways to Viet Nam in improving structural reform for the digital economy. First, building capacity for structural reform and digital economy can make more sense with demonstrated lessons/benefits from APEC economies. Second, Viet Nam may learn from shared experiences and policy dialogues involving various economies with more advance in structural reform and digital economy. Third, regional bodies such as APEC may develop a more rigorous action plan to facilitate development of digital economy via structural reform.

Annex C:

Case Studies

TABLE OF CONTENTS

| | |
|---|------------|
| CANADA | 255 |
| A. Canada’s Open Government | 255 |
| B. Canada’s Innovation Superclusters Initiative..... | 261 |
| CHILE: GENERAL BANKING ACT REFORM | 266 |
| CHINA: PROMOTING HIGH-QUALITY DEVELOPMENT OF E-COMMERCE WITH STRUCTURAL REFORMS IN CHINA | 269 |
| INDONESIA: THE TRANSFORMATION OF SOCIAL ASSISTANCE DISBURSEMENT.. | 273 |
| MALAYSIA: OPPORTUNITIES AND CHALLENGES OF SHARING ECONOMY..... | 280 |
| MEXICO: LAW REGULATING FINANCIAL TECHNOLOGY INSTITUTIONS (FINTECH LAW)..... | 284 |
| THE PHILIPPINES..... | 288 |
| A. Technological Adoption in the Philippine Insurance Industry’s Regulation and Supervision | 288 |
| B. Sandbox..... | 291 |
| RUSSIA..... | 298 |
| A. Public Service Portal of the Russian Federation (gosuslugi.ru)..... | 298 |
| B. The SMEs Business Navigator Portal | 300 |
| C. Sandbox..... | 303 |
| CHINESE TAIPEI..... | 309 |
| A. Enacting the Financial Technology Development and Innovative Experimentation Act 309 | 309 |
| B. Enacting the Unmanned Vehicles Technology Innovative Experimentation Act..... | 313 |
| UNITED STATES: THE APEC CROSS-BORDER PRIVACY RULES SYSTEM | 318 |
| VIET NAM: STRUCTURAL REFORM FOR E-COMMERCE DEVELOPMENT..... | 320 |

CANADA

A. CANADA'S OPEN GOVERNMENT

Introduction

Technology has provided the capability to distribute large amounts of data and information via many different platforms, and on a vast array of subjects. This change has been shifting norms in many economies, including in Canada. For example, social media and other online platforms are giving a voice to marginalized communities and historically disempowered citizens, and offering unprecedented opportunities to engage and mobilize citizens. However, it is also presenting challenges related to viral disinformation, declining civic space and online echo chambers that can divide citizens, decrease citizen trust in government institutions, and threaten the social fabric.

Globally, the concepts of 'Open Government'¹ and 'Open Data' are increasingly being seen as countervailing forces that can help build trust in public institutions, strengthening government legitimacy and democratic norms. The idea is to maximize the release of government information and data of business value, to increase transparency, accountability, citizen engagement, and socio-economic benefits.

Pre-reform situation and value proposition for open government and open data

The Government of Canada's concerted efforts on releasing public information go back to the enactment of our *Access to Information Act* in 1983, which created a way for the public to request access to government information. This was enhanced with the *Federal Accountability Act* in 2006, which introduced proactive disclosure for various types of government information.

However, the Canadian policy environment has evolved significantly since that time, and with the advancement of digital technology and the concept of 'Open Data' gaining traction, there was a recognition that the Government could be doing more to make its information publicly accessible, and access the following benefits:

- ***Advancing government accountability and democratic reform*** by providing the public with greater insight into government activities, programs and use of tax dollars. This information makes Canadians and Parliament better able to hold the Government and public sector officials to account.
- ***Supporting research and private sector innovation*** by reducing duplication of effort and enabling the use of public sector data by academics, other levels of government and the private sector. For example, the private sector could use the data to analyze markets, make strategic investment

¹ The Organization for Economic Co-operation and Development (OECD) defines Open government (OG) as a culture of governance based on innovative and sustainable policies and practices inspired by the principles of transparency, accountability, and participation that fosters democracy and inclusive growth.

decisions and develop new commercial products. McKinsey Global Institute estimated that open data can help unlock \$3-5 trillion annually across seven sectors of the global economy including education, transportation, consumer products, electricity, oil and gas, health care and consumer finance.

- ***Supporting engagement and informed decisions by citizens*** by providing information that helps citizens access a wide variety of government initiatives and public services, helps them form and communicate views to improve the design and delivery of public services and programs and helps them make other informed choices (e.g. data on the fuel consumption of different models can help a buyer choose a new car).

Policy response

Over the last few years, the Canadian Government has taken a number of major steps on Open Government, including in the following areas.

Open Government Partnership – In 2012, the Government of Canada joined the global Open Government Partnership (OGP), the leading multilateral initiative focused on open government. Since joining, Canada has released four National Action Plans on open government. These have served as the frameworks for significant reforms in Canada, in the areas of open data, government results and delivery, and citizen engagement. As lead government co-chair of the OGP Steering Committee until October 2019, Canada also hosted the 6th OGP Global Summit from May 29 to 31, 2019 in Ottawa, with over 2,600 participants from 115 economies including senior government and elected officials, academia, representatives from the private sector, civil society and media. The key themes were to champion inclusion, protect participation and create impact with the aim of connecting and empowering people to become more involved in their governments, including a focus on marginalized or under-represented citizens.

Open Data and Information – Canada has developed a world-class open data and information portal on [Open.Canada.ca](https://open.canada.ca), for release of datasets and digital records from federal departments. This was underpinned by a [Directive on Open Government](#)² that established responsibilities for federal departments for the release of data on the portal. The portal also functions as a centralized repository for the Government's proactive disclosures on its financial and human resources-related information, such as on contracts, grants and contributions, travel and hospitality and position reclassifications. This portal makes government data easily available to the public through a single and searchable window, and in machine-readable formats. Examples of tools available through the portal include:

- Open Maps: brings together the Government of Canada's geospatial data, services, and applications for use by Canadians.

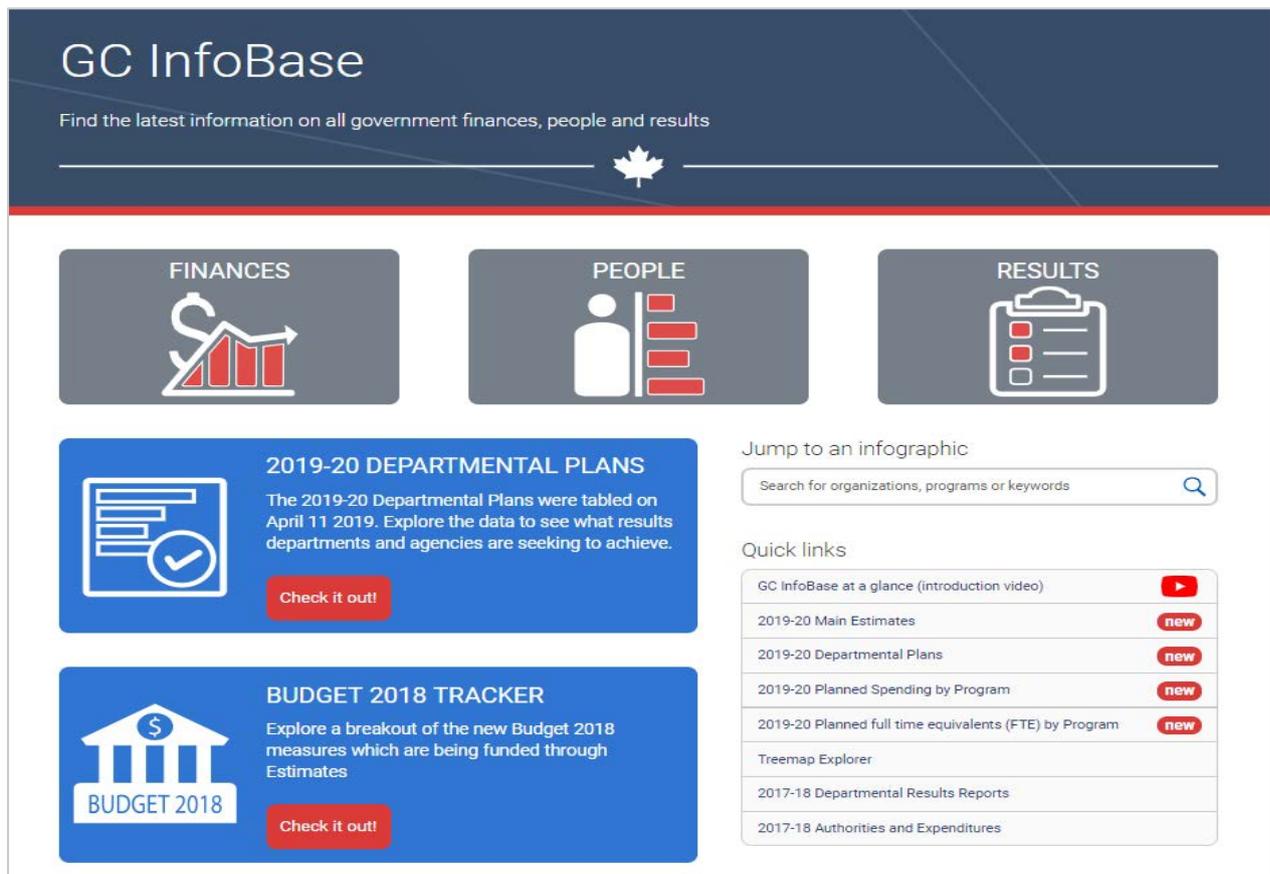
² <https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=28108>

- GC InfoBase: interactive data-visualization tool, transforming complex federal data into simple visual stories for Canadians (see picture below) and allowing users to analyse government expenditure management and information about how the government spends and manages money.
- Open by Default: this pilot project provides access to government documents as they are being created, to give users a ‘behind-the-scenes’ picture of what departments are working.
- DIY Open Data Toolkit: provides a step-by step guide on how to implement an open data project at the municipal level. It includes best practices, tools and resources.

Government Results and Delivery: Initiatives in this area include the public release of Ministerial mandate letters, setting out the Prime Minister’s directions to each Minister regarding their priority deliverables. All letters also include direction that “Government and its information should be open by default.” A ‘Mandate Letter Tracker’³ provides a status report on all these deliverables, to help Canadians hold the Government accountable.

Citizen Engagement – An emphasis has been put on engaging citizens in the design and delivery of government policies. Since 2015, the Government of Canada has conducted over 440 public consultations covering a wide range of policy domains including poverty reduction, economy-wide pharmacare, labour market opportunities for persons with disabilities, climate change, and defense. Specific to Open Government, in developing Canada’s latest National Action Plan, the Government engaged over 11,000 people, online and in-person, across the economy and worked closely with the Multi-Stakeholder Forum on Open Government, a permanent dialogue mechanism launched on January 24 2018 for civil society guidance and oversight on the Canada’s open government commitments.

³ <https://www.canada.ca/en/privy-council/campaigns/mandate-tracker-results-canadians.html>

Figure 1: The user-friendly ‘look & feel’ of Canada’s GC InfoBase

Impact

Through these efforts, there has been a successful mobilization of government information for public release. Open.Canada.ca now contains over 80,000 datasets and digital records released from 67 federal departments. In addition, it contains over 900,000 proactive disclosures of the Government’s financial and human resources information. Based on these results, Canada has become a global leader in open data, ranking first alongside the United Kingdom in the 2018 Open Data Barometer⁴ (published by the World Wide Web Foundation).

The portal receives around 140,000 user visits monthly and around 60,000 datasets are accessed by users each month. As one example of the value derived, it is estimated that in 2013, open geospatial data contributed an estimated \$695 million to Canadian Gross Domestic Product. Currently, the most popular datasets from the portal include information on the fuel consumption ratings of vehicles, contact information for Government employees, statistics on the admissions of permanent residents by our provinces and territories and historical trends on minimum wages.

As an example of how the data has been used, a CODE hackathon held in February 2013, with over 900 developers, students, and open data enthusiasts across Canada participating in this 48-hour event.

⁴ https://opendatabarometer.org/?_year=2017&indicator=ODB

Working under the theme of "Solving Problems and Increasing Productivity Through the use of Open Data", teams competed and built over 100 apps using datasets from Canada's Open Government Portal. To see what they developed, visit the [Winner's Showcase](#). More recently, in May 2019 a [hackathon](#)⁵ was held on the margins of the OGP Global Summit 2019, where participants used open data and open source to advance the UN sustainable development indicators.

Many other apps have now been developed by the public and private sector using the open data, including apps for agricultural use (such as on drought conditions and pest populations), apps to track border crossing wait times and traffic, and apps to help consumers determine the nutritional content of their groceries. For more information, see the [Open Government Apps Gallery](#)⁶.

Another initiative called the [Canadian Open Data Exchange](#)⁷ has also supported the successful incubation of dozens of Canadian small businesses, helping over 150 private sector companies use open data to launch new products and services, create ventures, optimize business processes and create economic benefits.

Challenges and lessons

Early reforms focused on opening up as much information as possible, with the expectation that citizens would do the rest. However, it has since become clearer how important it is for the Government to provide tools to make its data useful and reusable for everyone, with an emphasis on “publishing with purpose”. Some of the steps the Canadian Government has taken in this regard include:

- Adopting a set of Open Data principles to guide quality and accessibility of the data (see box below) as well as Digital Standards to improve government services in the digital age
- Making regular improvements to [open.canada.ca](#) to make it easier for users to find what they're looking for and help actively build an open government community
- Building-in capacity on the portal for user feedback including “Suggest a Dataset” and “Rate this Dataset” functions
- Helping Canadians learn about Canada's work on open government through learning materials, information sessions, and enhanced training for public servants
- Co-creating a public, digital collaboration space where citizens and government employees can work together to use and create from the data

⁵ <https://twitter.com/OpenGovCan/status/1133088300783349766>

⁶ <https://open.canada.ca/en/apps>

⁷ <https://open.canada.ca/en/commitment/mtsar/2016-2018/commitment-15-stimulate-innovation-through-canadas-open-data-exchange-odx>

OPEN DATA is a practice that makes machine-readable data freely available, easy to access, and most importantly, simple to reuse. Canada has established the following Open Data principles (based on the Sunlight Foundation’s work):

1. **Completeness** – Datasets should be as complete as possible, reflecting the entirety of what is recorded about a particular subject. All raw information from a dataset should be released to the public, unless there are Access to Information or Privacy issues. Metadata that defines and explains the raw data should be included, along with explanations for how the data was calculated.
2. **Primacy** – Datasets should come from a primary source. This includes the original information collected by the Government of Canada and available details on how the data was collected. Public dissemination will allow users to verify that information was collected properly and recorded accurately.
3. **Timeliness** – Datasets released by the Government of Canada should be made available to the public in a timely fashion. Whenever feasible, information collected by the Government of Canada should be released as quickly as it is gathered and collected. Priority should be given to data whose utility is time sensitive.
4. **Ease of Physical and Electronic Access** – Datasets released by the Government of Canada should be as accessible as possible, with accessibility defined as the ease with which information can be obtained. Barriers to electronic access include making data accessible only via submitted forms or systems that require browser-oriented technologies (e.g., Flash, Javascript, cookies or Java applets). By contrast, providing an interface for users to make specific calls for data through an Application Programming Interface (API) make data much more readily accessible.
5. **Machine readability** – Machines can handle certain kinds of inputs much better than others. Datasets released by the Government of Canada should be stored in widely-used file formats that easily lend themselves to machine processing (e.g. CSV, XML). These files should be accompanied by documentation on the format and how to use it in relation to the data.
6. **Non-discrimination** – Non-discrimination refers to who can access data and how they must do so. Barriers to use of data can include registration or membership requirements. Datasets released by the Government of Canada should have as few barriers to use as possible. Non-discriminatory access to data should enable any person to access the data at any time without having to identify him/herself or provide any justification for doing so.
7. **Use of Commonly Owned Standards** – Commonly owned standards refer to who owns the format in which data is stored. For example, if only one company manufactures the program that can read a file where data is stored, access to that information is dependent upon use of that company’s program. Sometimes that program is unavailable to the public at any cost, or is available, but for a fee. Removing this cost makes the data available to a wider pool of potential users. Datasets released by the Government of Canada should be in freely available file formats as often as possible.
8. **Licencing** – The Government of Canada releases datasets under the Open Government Licence – Canada agreement. The licence is designed to increase openness and minimize restrictions on the use of the data.
9. **Permanence** – The capability of finding information over time is referred to as permanence. For best use by the public, information made available online should remain online, with appropriate version-tracking and archiving over time.
10. **Usage Costs** – The Government of Canada releases the data on the Open Government site free of charge.

B. CANADA’S INNOVATION SUPERCLUSTERS INITIATIVE

Introduction

Digital technologies have become a critical component of Canada’s economic growth and prosperity. From 2010 to 2017, Canada’s digital economy grew by 40 percent. By 2017, it was worth \$109.7 billion (about 5.5 percent of the overall economy), and is now bigger than other industries such as mining, forestry and oil and gas. It is also the sector where job growth has been the fastest (grew by 37% since 2010). Given the importance of the digital economy, it is imperative that Canada has a cohesive vision for its digital future that builds on the economy’s strengths, is flexible and nimble in reducing barriers to innovation, encourages a thriving and secure innovation-based marketplace, and supports a new era of Canadian global competitiveness.

Pre-reform situation

Like other economies, Canada is looking to take advantage of the tremendous opportunities presented by digital innovations. Canada has key innovation strengths to build on —with a 5th rank in the OECD in creative thinking and 9th in problem-solving in a technology-rich environment. Knowledge and technological advantages have been built up in areas such as quantum computing, machine learning, blockchain and fintech, AI, autonomous vehicles and aspects of 5G. Yet, other indicators point to a need for more concerted action. For example, Canada’s research and development (R&D) indicators have been slipping in global rankings and R&D expenditures have been falling in recent years. In addition, Canadian firms have not been as fast in adopting new technology, ranking lower than other economies on robots per worker and e-commerce (20th and 21st in the OECD, respectively).

Policy response

This prompted the Canadian Government to rethink its traditional policy prescriptions on innovation. While indirect measures (i.e. tax incentives) had typically been the main policy tools in the past, the Government began to look for more direct ways to connect businesses, governments, academic and research institutions to mobilize innovation (i.e. grants and non-repayable contributions). One main goal was to support technology transfer and facilitate the commercialization of Canadian intellectual property, especially from Canada’s academic community. Another was to support entrepreneurship and connect start-ups with larger firms to realize innovative projects.

The result was Canada’s Innovation and Skills Plan. Released in 2017, the plan has four key themes: 1) equipping Canadians with the necessary skills to succeed in the workforce now and in the future, and attracting global talent; 2) encouraging greater business investments in research and capitalizing on Canadian inventions through shared risk-taking and partnerships; 3) simplifying business innovation programs, and; 4) attracting investment and supporting the growth of leading Canadian companies and start-ups.

The Innovation Superclusters Initiative (ISI) is a centrepiece of the plan. It was recognized that innovation clusters⁸ have great potential to energize economies and act as engines of growth. While many clusters were already forming in Canada across diverse sectors, there was a desire to see that progress accelerated to reach a larger scale. Through the ISI, the Government will provide funding of up to \$950 million over five years to five business-led innovation “superclusters” with the greatest potential to accelerate Canada’s economic growth.

The ISI selection process was launched in May 2017. A two-phase application process was deliberately chosen to give applicants the opportunity to surface new ideas, meet new partners, and make ambitious proposals, knowing that they would have a second phase of development if they were chosen for the shortlist. Applicants had two months to prepare and submit their first applications.

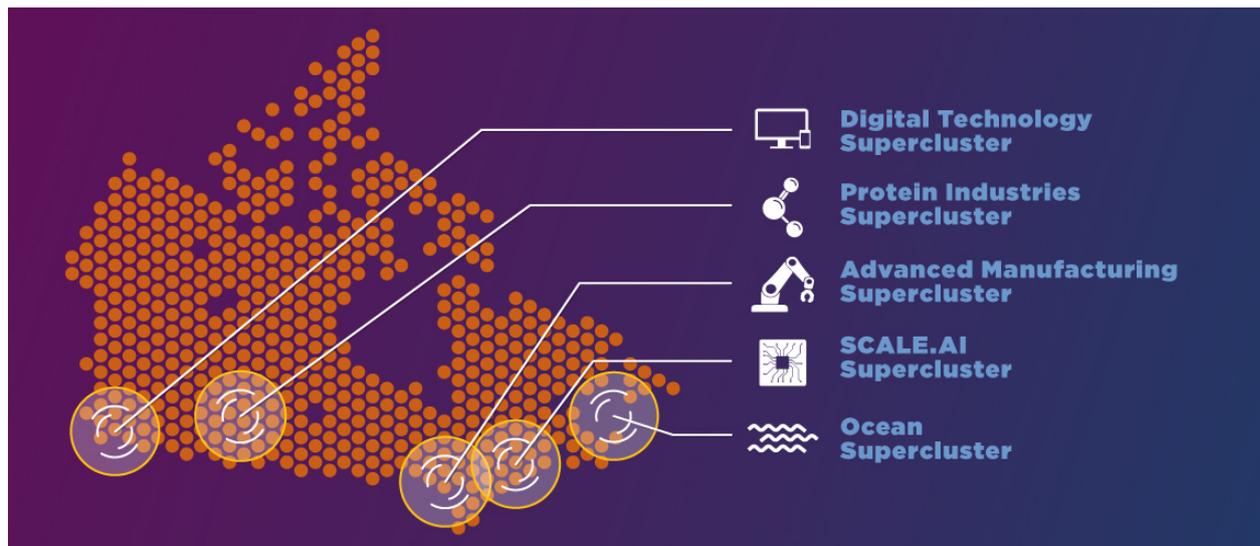
With the goal of building on Canada’s areas of existing or emerging strength, some main criteria used to assess proposals included how well they would:

- Address gaps and accelerate opportunities in innovation ecosystems;
- Support industry-led collaborative R&D and commercialization activities;
- Enhance labour force skills and create jobs; and
- Foster a critical mass of growth-oriented firms.

In early October 2017, nine proposals were shortlisted and applicants had an opportunity to further refine their proposed plans. The final recipients were selected in February 2018 (see map).

Each supercluster will receive either up to \$153 million or up to \$230 million, with industry players matching these contributions at least dollar-for-dollar. Each supercluster is represented by an industry-driven, membership-based not-for-profit organization that acts as a central organizing body.

⁸ Dense areas of business activity that contain large and small companies, post-secondary institutions and specialized talent and infrastructure.



Below is a snapshot of the five superclusters, and the types of activities they will work on.

| | | | |
|--|---|---|--|
| | <u>Canada's Digital Technology Supercluster</u> | British Columbia | Using virtual, mixed, and augmented reality, data, and quantum computing to improve service delivery in the natural resources, precision health and manufacturing sectors. |
| | <u>Protein Industries Canada Supercluster</u> | The Prairie provinces | Using plant genomics and novel processing technology to increase the value of key Canadian crops. |
| | <u>Next Generation Supercluster</u> | Ontario | Building up next-generation manufacturing by adopting advanced processes and by developing and deploying new technologies like Internet of Things, robotics and 3D printing. |
| | <u>AI-Powered Supply Chains Supercluster (SCALE.AI)</u> | Quebec and spanning the Quebec-Windsor Corridor | Bringing the retail, manufacturing, transportation, infrastructure, and ICT sectors together to build intelligent supply chains through artificial intelligence and robotics. |
| | <u>Canada's Ocean Supercluster</u> | Atlantic Canada | Harnessing emerging technologies to strengthen Canada's ocean industries, such as marine renewable energy, fisheries, aquaculture, oil and gas, defense, shipbuilding, and transportation. |

As an example, members of the Protein Industries Canada Supercluster will use cutting-edge technology to increase the value of key Canadian crops, including plant-based alternatives to meat—such as pulses and flax-based proteins—that are in high demand in foreign markets. Key activities for the supercluster will include:

- Undertaking collaborative technology projects for the creation of high-quality germplasm, smart production, novel process technology and product development;

- Helping businesses with financing/capitalization, and linking start-ups with strategic partners to help them scale;
- Promoting wide-scale adoption of data analytics and AI for better crop management; and
- Undertaking international trade missions and market research, and developing a venture capital fund to attract international investments.

Impact

The ISI is a high-profile program in Canada that garnered a huge response. Over 50 applications were submitted to the first-phase of the process, backed by over 1000 businesses, 100 post-secondary institutions, and 250 other participants. These represented strong collaboration and highly innovative ideas from every region of the economy. The selected proposals brought together more than 450 businesses, 60 post-secondary institutions, and 180 other partners.

The five superclusters are now up and running, and are expected to create over 50,000 jobs and add more than \$50 billion CAD to Canada's economy over the next 10 years. Detailed performance results will be tracked for the duration of the program, such as the number of collaborative projects, the value of investments generated, the number of products and processes developed and commercialized, and employment growth.

Challenges and lessons

There were a number of challenges in creating the ISI program, as it represented a new way of doing business for the government and its industry partners.

One key challenge was to activate as many high-potential industries and firms as possible, and to motivate them to come together around transformative proposals. This gave rise to a high-quality shortlist but it also generated high expectations among sectors, with keen interest in the government's ultimate selections. In response, Innovation, Science and Economic Development Canada (ISED) officials, other relevant federal organizations, third-party contractors, and expert reviewers administered a rigorous assessment of proposals. The assessment considered the ultimate value the applications would deliver for Canada, including the potential to create jobs. It also considered superclusters' plans to increase the representation of women and other underrepresented groups in supercluster activities and leadership, and help them succeed in skilled jobs in highly innovative industries.

Another challenge was to encourage applicants to come together in new ways to achieve transformative results that will extend beyond their existing partnerships and lines of business. For many applicants, this challenge meant that they needed to think about shared challenges and interests in disruptive technologies, and how they might advance these interests by collaborating in new ways (including sometimes with their competitors). To bring new partners together around shared priorities, supercluster staff work actively with industry partners to think beyond the status quo, help shape projects, and promote frictionless collaboration. Projects are also evaluated for their benefits to the members' broader

ecosystems, which provides incentive for them to consider potential partners and applications beyond their direct interests.

CHILE: GENERAL BANKING ACT REFORM

Reasons for the reform

On 2018, the Chilean Congress approved a major reform on the banking legislation, which dated from 1986. The main objectives of this reform were to bolstering the capital requirements of the banking system by adapting the existing regulation to the Basel III standards and enhance the banking regulator's governance by consolidating the main financial regulatory function in a single entity, the Financial Market Commission (FMC). The General Banking Act Reform was the most significant structural reform on the banking industry in Chile in the last 30 years.

Before this reform, there was a significant gap with international standards. The banking legislation was primarily based on Basel I standards, while as a result of the development and changes on the global banking industry, the internationally applicable standards were Basel III, which incorporated lessons from the last global financial crisis.

Taking into account the importance of the stability of the banking industry for the functioning of the economy and the financial system, the government understood that improving the mechanism to prevent insolvencies scenario was highly desirable due to the high costs that banking crisis can inflict to depositors, fiscal budgets and the whole financial system. Beyond preventing insolvencies, the government foresaw other benefits attached to this reform.

On one side, measures that strengthen the solvency of banks can boost the international competitiveness of the sector because it allows them to access new and more diversified funding. This aspect acquired special significance because most of the jurisdictions in the LAC region were transitioning to Basel III.

On the other side, the banking sector in Chile has several subsidiaries of foreign banks that apply Basel III in their home jurisdictions, and they extend the applicability to their Chilean subsidiaries. This situation could cause regulatory asymmetries on the competitiveness of the local banking system. Besides, foreign regulators impose penalties on cross border investments to a counterpart that is resident of a jurisdiction that is not in compliance with Basel III, this, in turn, means that gaps with international standards impose a barrier to funding and investment from foreign banks.

All of these aspects were especially relevant for Chile, as a small and open economy, with a liberalized capital account, deep financial markets, strong regulators, and experience with the banking crisis.

Beyond adopting international standards, the structural reform on banking regulation involved other measures that in general, aimed at the modernization of the local banking industry.

Policy response

New governance for the bank regulator: The banking regulatory body was integrated with the insurances and securities regulator. This is the final step of the transition from an industry-focused regulator to an integrated model with a single entity, having overall responsibility for the financial sector

supervision. This will provide the banking sector with modern and independent governance, where market development and financial stability will be amongst the explicit objectives of the regulator. The new governance for the banking regulator was seen as a pre-requisite for providing the regulator with the necessary faculties for applying Basel III in Chile.

Adapts the capital requirements to Basel III: This is a substantial development with respect to the capital requirements that were largely based on Basel I. In line with Basel III, the regulator will define the standard model for the definition of Risk Weighted Assets (RWA) and the banks will be able to use internal models once the regulator authorizes them. In addition to the new capital requirements, defined in table 1, the regulator will be able to impose additional capital requirements when the standard model fail to mitigate relevant risks.

Table 1: Capital Charges (as % of RWA)

| Capital Requirements | Former Law | New Law |
|---|-------------------|---------------|
| (1) Tier 1 Capital (2+3) | 4,5 | 6 |
| (2) Common Equity Tier 1 (CET1) | 4,5 | 4,5 |
| (3) Additional Tier 1 (AT1) | - | 1,5 |
| (4) Tier 2 Capital | 3,5 | 2 |
| (5) Total Regulatory Capital (1+4) | 8 | 8 |
| (6) Capital Conservation Buffer | - | 2,5 |
| (8) Countercyclical Buffer | - | Up to 2,5 |
| (9) Systemic Charges | Only for mergers. | From 1 to 3,5 |

New tools for early regularization of banks: The Law extends the range of tools available for the regulator to deal with unstable or weak banks, before these problems evolve into insolvency scenarios. If a bank is showing solvency, liquidity or management problems, the regulator will have to approve and supervise the application of private recovery plans proposed by the bank. At the same time, the regulator will be allowed to restrict the range of operations that a bank can perform while applying the recovery plan.

The new law also eliminates the “creditors proposal resolution tool” that involves a negotiation with creditors in a context of financial problems. This was done because it was considered to be of little practical use and has the potential to aggravate the problems of banks that are close to insolvency.

Extension of government guarantees for term deposits: The law expands the term deposits guarantee scheme. Term deposits are now guaranteed on a 100% by the government, this has a limit of 200 UF for deposits on the same bank and 400 UF for deposits on all the system⁹. The current sights deposits guarantee scheme is not changed, meaning that these kind of deposits are still covered up to a 100% with no maximum limit by the Central Bank.

⁹ Before the law the deposits were covered only for 90% of the amount and up to a limit of 120 UF.

Conclusion

Notwithstanding the proved stability of the Chilean financial sector during the last 30 years, this new law will allow Chilean authorities to implement mitigation measures in case of risk of a banking crisis. This new measures will benefit depositors by diminishing the risk of losing their deposits. Also, will help entrepreneurs looking for funding by ensuring a healthy banking system capable of exercise its intermediary role in an effective manner and without any interruption. This is one of the most relevant benefit of this reform, considering that the major limitation for SMEs' growth is the lack of funding¹⁰.

This new regulation will also favor the internationalization of the Chilean financial system, expanding it beyond the internal borders, thereby allowing greater diversification of risks and creating new opportunities for growth.

In the long term, this law will create a more sustainable and competitive industry by reaching the necessary standards for operations with foreign institutions. Besides, harmonizing local capital and risk management standards with foreigners will improve the risk assessment and competitiveness of the Chilean financial system.

¹⁰ Arellano, P. y T. Schuster (2016). "Informe de resultados: El microempendedor en Chile". Cuarta Encuesta de Microemprendimiento 2015, Ministerio de Economía.
<http://www.economia.gob.cl/wp-content/uploads/2016/02/Informe-de-resultados-el-microempendedor-en-Chile.pdf>

CHINA: PROMOTING HIGH-QUALITY DEVELOPMENT OF E-COMMERCE WITH STRUCTURAL REFORMS IN CHINA

—Illustrated by the Enactment and Implementation of the E-Commerce Law

Introduction: E-commerce becomes an important force driving the development of the digital economy in China

At present, the Chinese economy maintains steady and rapid growth. In 2018, its GDP exceeded 90 trillion yuan, an increase of 6.6% over 2017. To further advance the quality-oriented economic growth, China boosts the development of digital economy and takes the acceleration of industrial digital transformation and the unleashing of digital economy dividend as important means. E-commerce is an important part of the digital economy and a strong force driving China's digital transformation. Statistics show that the scale of China's e-commerce transactions continued to increase in 2018 and maintained a high-speed growth trend. The annual e-commerce transaction volume was 31.63 trillion yuan, in which online retail sales amounted to 9.01 trillion yuan, a year-on-year increase of 23.9%; express delivery exceeded 50.7 billion pieces. The development of e-commerce not only spawned in China a group of leading Internet companies with international clout, but also gave birth to the world's largest online retail market, digital payment market and logistics market, and also promoted the digital transformation of manufacturing businesses. Currently, e-commerce is playing an increasingly positive role in boosting consumption upgrade, increasing urban and rural employment, improving openness, helping combat poverty, and serving green and coordinated development.

Pre-reform situation: E-commerce development is not adequately regulated and shows many chaotic operations

The development of the digital economy represented by e-commerce has produced desirable economic and social benefits. However, due to reasons like low threshold of entry and inadequate regulations and policies, it has inevitably caused a series of problems that harm consumer rights and interests and jeopardize the market competition order. For example, new shopping forms, such as WeChat business and delegated purchase, have provided more options for consumers, but since the practices are not on the radar of existing regulatory system, they have become areas prone to consumer disputes. Due to the asymmetry in technology and information between the two parties in online transactions, some E-commerce operators would hype their credit, delete bad reviews, and make up transaction data, which seriously damages consumers' right to be informed. Some platforms would abuse their market dominance and prohibit simultaneous sales on other platforms, request bundling or limit geographic areas of sales, which not only infringes on the right of the businesses on a platform to independent operation but also on the choices of consumers. In addition, problems such as varied product quality, dishonesty of logistics companies from time to time, platform information insecurity and personal information leaking for profit also constrain the quality-oriented development of e-commerce.

Policy response: Formulate and implement the E-commerce Law to promote market and law-based development of e-commerce

To solve the problems in the development of e-commerce with more market-oriented and legal means, China promotes structural reforms through legislation and strengthening regulation. On August 31, 2018, the Chinese legislature passed the E-Commerce Law and decided to implement it on January 1, 2019. The law was made based on four times of deliberation and three times of public consultation in five years. It is one of the few comprehensive e-commerce laws in the world. In particular, it clearly provides for the registration of entities, fines, taxation, platform responsibility, false advertising, and IPR protection. It not only responds to the current hot issues in the development of e-commerce in China, but also explicitly proposes to make enough space for future development, and encourages the formation of a social co-governance model, reflecting strong pertinence and foresight. Key measures include:

- 1) Clarify that legal entities need to be registered. The law includes new business types and involved entities into the scope of registration and requires them to fulfill their tax obligations. This helps strengthen the regulation in related areas and better settle consumer disputes.
- 2) Prohibit fictitious transactions, false advertising, fabrication, and deletion of reviews. The law requires e-commerce operators to disclose goods or service information in a comprehensive, true, accurate and timely manner, which helps protect consumers' rights of informed choice.
- 3) Prohibit and punish e-commerce operators for abusing market power. The law requires e-commerce operators to provide consumers with options non-specific to their individual characteristics when using big data for targeted marketing; the operators are not allowed to set unreasonable terms for the refund of deposit; platform operators shall not use service agreements, trading rules or technical methods to impose unreasonable terms on the operators within the platform, and a fine of under 2 million yuan will be imposed in cases of severe violation.
- 4) Clarify that a platform shall bear responsibilities if it fails to fulfill its obligations. The law requires e-commerce platforms learn about or check the qualifications of the products and services for sale to ensure compliance with relevant requirements, otherwise the platform should bear the relevant responsibilities. This clarifies a platform's responsibility in e-commerce activities and provides legal guidance for handling disputes.
- 5) Prohibit e-commerce operators from arbitrarily break the contract after consumers have successfully made the payment. The law requires that the spirit of contract and credit building be strengthened in e-commerce activities, and clarifies the burden of proof of operators, which enables consumers to safeguard their rights and interests according to law.

Impact: Disorders in e-commerce are initially curtailed, and the protection of consumer rights and interests significantly improves

Although it has only been implemented for about half a year, the E-Commerce Law has played a positive role in regulating e-commerce activities. According to some sample surveys, some disorders and illegal operations have been initially curtailed. Consumers are already sensing the improvement in the operations of e-commerce operators and are more confident about protecting their legitimate rights and interests.

- 1) The business entities in the new e-commerce model are more regulated. According to the E-Commerce Law, delegated individual purchasers must issue shopping certificates or invoices, and those who violate the law may face a penalty of up to 2 million yuan. Affected by this regulation, some unqualified and non-eligible entities have withdrawn from e-commerce. Some large-scale delegated purchasers have registered themselves as e-commerce platforms or self-support platforms due to their strength and rich customer resources, and are engaged in legal business activities under effective regulation. This metabolism is conducive to consolidating the foundation for e-commerce development.
- 2) E-commerce platform operators are more proactive. Large-scale e-commerce platforms such as Taobao, Pinduoduo, and Jingdong actively guide and constrain the activities of businesses within their platforms by implementing diverse measures such as timely releasing guidelines, strengthening systems, and promoting credit management, and timely adjust and regulate their own unreasonable practices. For example, Taobao officially released a key FAQ to the E-Commerce Law to guide the businesses on the platform to be more compliant. Jingdong strives to optimize the consumption environment in e-commerce by establishing a “beehive” commodity qualification management system, a “Jing credit” scoring mechanism, and a counterfeits interception database.
- 3) The law has improved the regulatory and enforcement effects of relevant institutions. Pursuant to the E-Commerce Law, regulators have rectified cases where e-commerce platforms arbitrarily cancel orders after consumers have made the payment. The Beijing Consumer Association inspected 21 e-commerce platforms, identifying 4 non-compliant ones and guiding them to rectify immediately, which effectively safeguarded consumer rights and interests. The Beijing Internet Court also ruled a relevant case and sentenced the e-commerce operator to an indemnity of 500 yuan to the consumer.
- 4) Consumers clearly sense that their legitimate rights and interests are more secure. A sample survey shows that the bundle sales of value-added services to consumers when they book air tickets, tickets for vehicles, and hotels have been greatly corrected. At least most of the larger platforms have made adjustments and regulations to avoid compliance risks. Since the law imposes a penalty of 500,000 yuan on the deletion of bad reviews, many consumers said that many businesses will pay more and more attention to consumer experience, and often call to ask about their services after orders are completed.

Challenges and lessons: Strengthen law enforcement, and implement inclusive regulation with market and legal tools

Although the E-Commerce Law has achieved positive effects, in reality, there are still challenges such as the need to improve legal awareness, the absence of supporting rules, and the coordination between laws. In the future, it is still necessary to improve the publicity of laws, coordination of laws, implementation standard, and supporting rules. For example, some scholars have pointed out that there are overlaps between the E-Commerce Law and the Anti-Monopoly Law and Anti-Unfair Competition Law, and that the coordination of the laws needs further research. In addition, the Ministry of Commerce has proposed to speed up the introduction of supporting rules in the future, establish and improve the e-commerce regulation system, and implement credit evaluation in e-commerce so as to build a law-based business environment that is more conducive to the healthy and sustainable development of e-commerce companies.

The implementation of the E-Commerce Law in China, with an aim to strengthen the effective regulation of the industry, is not only recognized by e-commerce practitioners but also further clarifies the rights and responsibilities of different entities, which has greatly enhanced the market vigor and standardization of e-commerce. China's practice further illustrates that promoting structural reforms with more active market and legal means so as to boost the development of the digital economy not only helps to encourage competition through the formulation of rules, but also promotes inclusive and prudent regulation by regulating government acts, thus building a favorable environment for the healthy development of the industry.

INDONESIA: THE TRANSFORMATION OF SOCIAL ASSISTANCE DISBURSEMENT

Introduction

Indonesia is an archipelago consisting of more than 17,000 islands with population of more than 260 million people¹¹. This demographic condition is supported by the availability of financial institutions and payment system infrastructure such as banking services, ATMs, EDC machines, electronic money readers and agent banking. However, the availability of infrastructure is still focused on the Java region, where the majority of economic activities are running. For example, the availability of banking services and ATM machines per 1000 km²: In Java, banking services has reached 138 offices, while outside Java only 47 offices are available. For the availability of ATM machines on Java has reached 521 units while outside Java Island only reached 159 units. This uneven amount and spread, affect people's access to financial services brings an impact on the level of financial inclusion in Indonesia. Based on World Bank Global Financial Inclusion Index, in 2014, 36% of Indonesia's adult population had accounts in formal financial institutions and continue to increase to 49% in 2017.

In order to improve access to finance, financial inclusion has become a priority program of Indonesia government in promoting economic growth, creating financial system stability, supporting poverty reduction programs, and reducing inequalities between individuals and regions. To encourage financial access in Indonesia as well as to improve the disbursement's governance, one of the policy has been taken is through the transformation of social assistance disbursement from cash into non-cash. Non cash social assistance disbursement not only bring potential to connect social assistance beneficiaries to the formal financial system; but in the long run, it will also reduce economic inequality and increase public participation in the economy.

Pre-reform situation

The Indonesian government already initiated assistance programs in various sectors including food, education, health, energy, social and economy. Assistances are provided to the poor and vulnerable group to meet basic needs, ensure social welfare, improve the life quality of the poor, and as part of efforts to reduce poverty. The assistance program is organized by various Ministries/ Institutions with classification as follows¹³:

¹¹ Bappenas (2018)

¹² Bank Indonesia - Indonesia Financial System Statistic (December 2018)

¹³ Bappenas (2019), "Pemetaan Program Bantuan Sosial, Bantuan Pemerintah, Dan Subsidi Bagi Masyarakat Kurang Mampu".

Table 1 – Mapping of Assistance Programs

| | Social Assistance | Government Assistance | Subsidies |
|----------------|--|---|---|
| Cash | <ul style="list-style-type: none"> • Smart Indonesia Program (Program Indonesia Pintar) • Conditional Cash Transfer (Program Keluarga Harapan / PKH) • Non-Cash Food Assistance (Bantuan Pangan Non Tunai / BPNT) | <ul style="list-style-type: none"> • School Operational Assistance Program (Bantuan Operasional Sekolah / BOS) • Credit for Business Program (Kredit Usaha Rakyat / KUR) | |
| Goods/Services | Prosperous Rice (Beras Sejahtera / Rastra) | <ul style="list-style-type: none"> • Priority Skill Education Program (Program Pendidikan Kecakapan Unggulan) • Entrepreneurship Skills Program (Program Kecakapan Wirausaha) | <ul style="list-style-type: none"> • LPG • Electricity • Fertilizer & Seed |

Disbursement of social assistances before 2017. Most of assistance programs were distributed in terms of cash or in terms of goods/services, and beneficiaries should be waiting in line at the disbursement location on the predetermined schedule. On this disbursement mechanism, social assistance beneficiaries should withdraw all the fund received.

Challenges of cash disbursement. Disbursement of social assistance in the forms of cash and goods/services resulted in many challenges both for government and beneficiaries. For government, distribution of social assistance in remote areas/islands requires considerable time, high costs and risks. On the other side, beneficiaries are experiencing difficulties in managing their financial as resulted from its irregular timing as well as amount. It is also trivial for them to access financial services. For social assistance in the forms of goods/services, the quality of the goods/services usually does not meet beneficiaries' expectations.

Policy response

To encourage the disbursement of social assistance efficiently, timely, and targeted as well as to increase financial inclusion level, the Indonesian Government transformed the disbursement from cash into non-cash. This transformation was a follow up of the President of the Republic of Indonesia's direction issued on April 26, 2016.

a. President of the Republic of Indonesia Direction, 26th April 2016

President Indonesia direction to transform the social assistance disbursement from cash into non-cash aims to change the people' way of thinking and behavior as well as to create a productive, independent and dignified society. The disbursement of social assistance programs must be delivered in the form of

non-cash through banking system, using 1 card and 1 account to accommodate various social assistance programs. The disbursement must follow the principle of 6T (6Tepat or 6Right) namely Right Target, Timely (Right Time), Right Amount, Right Price, Right Quality and Right Administration.

b. Follow-up Actions from President's Direction

Following the direction, the Indonesian government, Bank Indonesia and Indonesia Financial Services Authority (OJK) have made various efforts as follows:

1. Strengthening the Legal Basis

The government issued Presidential Decree No. 63 of 2017 regarding Non Cash Social Assistance Disbursement, as legal basis for the disbursement of non-cash social assistance. It regulates among others the principles of the disbursement; mechanism; the formation of The Control Team for the Implementation of Non-Cash Social Assistance Disbursement; and the role of the regional government.

2. Developing Non-Cash Social Assistance Business Model

The authorities prepared a business model of non-cash social assistance program to ensure the sustainability of the program. It consists of 4 (four) quadrants with the following coverage:

- a) **Registration or Account Opening.** The process of account opening of a social assistance beneficiaries by bank collectively based on the data provided and validated by the Ministry of Social Affairs.
- b) **Education and Socialization.** The materials of education and socialization cover the benefits of non-cash transactions; non-cash social assistance disbursement policies and mechanisms; the use of non-cash payment instruments; consumer protection; and financial management.
- c) **Disbursement.** Social assistance disbursement is conducted by overbooking the fund from the government account to the beneficiaries' account in the bank.
- d) **Withdrawals and Purchases of Food.** The beneficiaries utilize the social assistance fund through cash withdrawals and/or food purchases.

3. Strengthening the Infrastructure

In order to strengthen the infrastructure, banking agents/branchless banking have been appointed to act as delivery channels of the non-cash social assistance program. Banking agents are third parties, both individuals and business entities, who can provide banking services supported by the use of information and technology. Banking agents can act as e-warong, that is a place to withdraw or to utilize social assistance fund. Withdrawals are made by social assistance beneficiaries using the Combo Card (Kartu Keluarga Sejahtera / KKS) as a payment instrument with features of electronic money and basic saving account as channel for various social assistance.

4. Strengthening the Coordination

To ensure the effectiveness of non-cash social assistance program disbursement, the authorities formed a Control Team who is in charge of coordinating, monitoring, evaluating and reporting of the implementation of Non-Cash Social Assistance Program. The Control Team also formed comprises of representatives from related Ministries including Coordinating Minister for Human Development and Cultural Affairs, Minister of National Development Planning, Minister of Social Affairs, Minister of Home Affairs, Minister of Finance, Governor of Bank Indonesia and Chairman of the Board of Commissioners of OJK. Furthermore, MoUs were signed between the relevant Ministries / Agencies to improve coordination between related parties.

Initiatives were also put in place to strengthen coordination among Ministries/Agencies and to promote non-cash social assistance program. These include modifying regulation for bulk registration, implementing simplified customer due diligent, encouraging the creation of innovative delivery channels such as bank and e-warong agents, as well as encouraging payment system interoperability and interconnection.

Progress and impact

The transformation efforts aim to improve social assistance disbursement governance, to increase the convenience of beneficiaries, and to build awareness among the beneficiaries (those who are in low-income and vulnerable group) on the importance of sound financial planning that will improve public welfare. This was in line with the National Strategy for Financial Inclusion which targeting people in low-income and vulnerable group, woman, SMEs, migrant workers, people in frontier, outermost and least developed regions, people with special social welfare issues, and students and youth

The transformation was started by using Combo Card (Kartu Keluarga Sejahtera / KKS) to facilitate disbursement which has dual features that enabling saving account and electronic money in one card, and directed to integrate all social assistance disbursement in one card. In this regard, the social assistance beneficiaries will only need one card to receive assistance from different social assistance programs.

The integration of social assistance disbursement was started by incorporating PKH (Conditional Cash Transfer Program) and BPNT (Non-Cash Food Assistance Program) since the aforementioned programs were targeting similar beneficiaries. The non-cash social assistance was started in 2016 by using PKH (Conditional Cash Transfer Program) as a pilot project. It was disbursed to 1.2 million beneficiaries in 48 cities/regencies and gradually increased. The conversion was also implemented on the food assistance program named BPNT (Non-Cash Food Assistance Program) in 2017 to 1.2 million beneficiaries in 44 cities/regencies. The development stages of non-cash social assistance program over years is shown as follows:

Table 2. Development Stages of Non-Cash Social Assistance Programs

| Year | PKH | | BPNT | |
|---------------------------------------|-------------------------------|-----------------------------------|-------------------------------|-----------------------------------|
| | Number of Beneficiaries (KPM) | Number of Location (City/Regency) | Number of Beneficiaries (KPM) | Number of Location (City/Regency) |
| 2016 <i>(Pilot Project)</i> | 1.2 million | 48 | - | - |
| 2017 | 6 million | 298 | 1.2 million | 44 |
| 2018 | 10 million | 511 | 10 million | 219 |
| 2019 | 10 million *nonflat scheme | 514 | 15.6 million | 514 |

In general, the disbursement through banking system improves the governance of social assistance disbursement; enhances payment security; transparency; reduces financial and nonfinancial cost (distance traveled by a beneficiary to reach payment point); enhances beneficiaries' capacity in managing risks; improves beneficiaries' control of fund; and increases the speed of disbursement.

Furthermore, disbursement through banking system minimizes the risks of deducted amount of fund assistance. In addition, disbursement through electronic payment improves quality as well as quantity. Based on survey to BPNT (Non-Cash Food Assistance Program) beneficiaries¹⁴, 79% of beneficiaries were satisfied and 19% of beneficiaries were very satisfied with the quality of food received; while 75% of beneficiaries satisfied and 11% of beneficiaries were very satisfied with the quantity of food/benefits given by the government. The changes in the mechanism of social assistance disbursement were also well received by the community. Survey shown that 92% of beneficiaries preferred BPNT (Non-Cash Food Assistance Program) than Beras Sejahtera (Rastra)¹⁵ since BPNT offered better quality, easier transaction and disbursement process, more option on the food/benefit and faster time.

Furthermore, the disbursement of PKH (Conditional Cash Transfer Program) through electronic payment offered advantages that has not been provided by the conventional social assistance such as timely, simplified process, various location of payment point, and better complaint handling. Microsave Consulting Survey (2018) shows the satisfaction of beneficiaries as follows: (1) On the timely fund transfer: 24% of beneficiaries are very satisfied and 69% of beneficiaries are satisfied; (2) On the location of payment point: 31% of beneficiaries are very satisfied and 62% of beneficiaries are satisfied; (3) On the transaction process: 28% beneficiaries are very satisfied and 66% beneficiaries are satisfied; and (4) On complaints handling and resolution: 23% of beneficiaries were very satisfied and 69% of beneficiaries were satisfied.

The social assistance disbursement through electronic instruments has led to significant increase in the number of account ownership in financial institution. 87% of BPNT beneficiaries¹⁶ and 86% of PKH beneficiaries¹⁷ obtained their first formal financial fund through Combo Card. This contributes to

¹⁴ Microsave Consulting (2018). BPNT Operational Evaluation Survey.

¹⁵ Beras Sejahtera (Rastra) is an in-kind government program of subsidized rice to help low-income communities.

¹⁶ Microsave Consulting (2018). BPNT Operational Evaluation Survey

¹⁷ Microsave Consulting (2018). PKH Impact Operational Evaluation Survey

increase the number of account ownership in formal financial institutions from 36% in 2014 to 49% in 2017. In addition, the disbursement of BPNT also encourages economic empowerment specifically for women (68%) by providing business opportunities for micro and supply chain related including e-warong Kelompok Usaha Bersama (KUBE). At macro level, social assistance programs contribute to poverty reduction by 1.66%.

Challenges and lessons learned

Despite progress made in disbursing non-cash social assistance through banking system, several challenges remain as follows:

1. **Infrastructure.** There are rooms for improving the coverage of telecommunication network, to be able to cover blank spot areas, as well as improving the access to electricity for all social assistance disbursement's areas.
2. **Data:** Enhancement in the beneficiaries' data management as well as its accuracy and quality will improve the ability to distribute Combo Card (Kartu Keluarga Sejahtera / KKS) to all the targeted beneficiaries.
3. **Financial Literacy.** It is necessary to increase the capacity of human resources by strengthening education and socialization both at the central and regional levels to the beneficiaries, bank officers, e-warong agents, assistants, and related agencies. Low literacy level of beneficiaries has resulted in a high number of cases of forgetting PINs and damaged KKS Cards, which can hinder the beneficiaries to disburse the assistance.
4. **Harnessing Technology Advancement** to facilitate the KYC and authentication process using biometrics as well as the use of technology in the monitoring process with online monitoring to ensure the effectiveness and efficiency of the use of state's fund.

Changes in the mechanism of disbursement from cash to non-cash through banking system has been a big stride for Indonesia, to achieve better social assistance disbursement's governance and improve the shortcomings of the previous mechanism. Some takeaways from this case are:

1. **Regulation and supporting policies** are important as the basis to implement the programs in an effective and efficient manner. Moreover, it is also important to ensure that regulations and policies are harmonized.
2. **Strong and sound Inter-Institutional Coordination** is needed to ensure the synergy among institutions.
3. Amid the dynamics and rapid development of technology, the government or authorities need to continuously **encourage financial product and service innovation while taking into account the inherent risks of the innovation.**

4. **Strengthening Education and Dissemination** to various related parties to increase awareness of the benefits and risks of using financial products and services, and to increase literacy to improve the quality of usage of products and financial services for multiple

MALAYSIA: OPPORTUNITIES AND CHALLENGES OF SHARING ECONOMY

Introduction

Malaysia has steadily transitioned into a connected, digitalized economy; positioning the economy in line with current digital trends. In 2018, Malaysia has an internet penetration rate of 85.7%, doing fairly well in the South East Asia region which averages at around 60%. In Malaysia Budget 2019, Malaysia introduced the National Fiberisation and Connectivity Plan (NFCP) in support of the government's aspiration to increase internet access and improve Malaysia's infrastructure to support the growth in digital economy and Industry 4.0. The Malaysian digital economy on average had grown 9% annually in value-added terms between 2010 to 2016. In addition, the International Data Corporation (IDC) predicts that by 2022, over 21% of Malaysia's GDP will be digitalised against the current level of 18%. In light with the positive growth, government services are also being digitalized to maintain compatibility with the industry and regulation technology (RegTech) is a crucial topic in which Malaysia has put in efforts in understanding and providing infrastructure to implement such idea. Governments operations are being modernized and digitalized which improves the quality of life of ordinary people by cutting lines in government services and shifting towards online government processes. For example, Malaysians are now able to renew their road taxes online removing the need to visit a brick and mortar office to do so. The success of Malaysia's effort in digitalization government services has ranked Malaysia at 15 out of 190 economies on the World Bank Report on ease of doing business with simpler processes and faster turn-over rates for government services.

Despite being friendly to digitalization and innovation, issues have surfaced as a result of the digital economy. For example, the sharing economy has provided cheaper and more accessible accommodation and transportation services with platforms such as Airbnb and Uber. However, the issue of job losses by traditional hotels and taxis have led the need of providing a fair and healthy competition between traditional occupations in an ever-disruptive ecosystem. In addition, issues of safety and legality of the digitally operated services requires a need for Malaysia to study the regulatory framework in addressing the new economy. The Malaysia Case Study focuses on the tourism sector, specifically studying the home sharing economy impacts and drafting a regulatory framework to improve the quality and safety of the industry and aiding stakeholders to shift into the digital economy in the accommodation industry.

Pre-reform situation

Before the home sharing economy regulatory framework study was conducted, home owners have begun inviting guests to stay on their properties in exchange of a fee, equivalent gift or item of value. Before short term accommodation was popular, homestays were the norm in Malaysia. Homestay is a term coined to explain tourists staying in a room or some parts of a complete house to learn and experience the cultural and traditional values of the local community. These values typically include lifestyles which could be experienced through immersing in the language, food and beverages, clothing, music and dance unique to specific cultures. The homestay program in Malaysia is a government initiative launched in 1995 under the Ministry of Tourism and Culture to promote cultural tourism in

Malaysia. The total income of homestay has been steadily increasing over the years with RM2.06 million collected in 2006 to eventually collect RM28.39 million in 2015. Besides that, the number of operators has ballooned to 3653 in 2015 from only 1939 operators in 2006. However, the rise of popularity of alternative accommodation has led to growth of purely providing accommodation to generate additional income. The provision of a bed for the night was focused rather than providing the cultural experience. In addition, the rise of digital platforms such as Airbnb has provided home owners to access a larger and more efficient market base to promote their services.

The economic implications of these platforms are huge with Airbnb recording a profit of \$93 million and receiving \$2.6 billion in revenue for 2017 and signaling the transformation of the landscape of accommodation industry. Zooming in to see the effect of Airbnb in Malaysia, it has set the highest growth rate of all Airbnb markets in Asia with a 137% y-o-y growth in 2017 and received a total of 1.5 million bookings. In addition to that, Airbnb's listing in Malaysia ballooned to 31,900 by the end of 2017 which is a 69% increase from 2016. The annual median income for the host on Airbnb comes to about RM4,725 for the year of 2017. It has grown from a simple model of renting additional space into a billion-dollar accommodation industry.

The voice of traditional players of unfair advantage over the unregulated activity and the high growth rate has led Malaysia to study the regulations needed to govern the industry. Clear definitions, limitation and safety of all stakeholders are needed as the industry grows even bigger. Unregistered and unrecorded activities need to be regulated to ensure domestic safety is maintained and the industry is able to be managed and compete fairly with existing players.

Policy response

To improve regulation in the digital sharing economy, Malaysia conducted a study on policy recommendations on short term accommodations in 2018. The study provided a basis for regulatory framework that addresses the issues of public nuisance, safety, security, change of land use, taxation, registration and licencing. The policy recommendation targeted to improve the definition of short-term accommodation as current laws does not fully capture the nature of the new accommodation service. The benefit of a better definition of short-term accommodation allows the government to differentiate between it and the traditional hotels which will provide a better policy structure to govern both types of accommodation services accordingly. Clarity on mechanism collection tax will allow the government to capture data on reported revenue in the industry and income to enhance the tourism industry development. The recommendation also allows safety and zoning issues to be addressed combating public nuisances, safety concerns and commercial activities occurring in residential areas. Public consultation sessions were conducted to gather feedback on the regulatory framework ensuring all issues are captured and a good regulatory practice is achieved.

Impact

The study has allowed Malaysia to begin drafting a regulatory framework for the home sharing economy through understanding the model as a whole. The study aided the government in understanding the

differences provided by the new accommodation service as compared to traditional hotels. Challenges and issues were highlighted and provided a better insight in ensuring a well addressed and functioning regulations is to be implemented in the home sharing economic model.

The study finds that home sharing economy could create a new category in the hospitality industry with a regulatory framework that is less stringent requirements on number of rooms, sizes and services offered. All hosts must then be licensed and comply with local government requirements, such short-term accommodations may be restricted to certain districts and limits on the number of stays. For strata buildings, hosts required to obtain approval from Joint Management Body/ Joint Management Corporation.

With sensible management and regulation, governments will benefit from the influx of tourists and their spending, and hosts may earn an income without disrupting the lives of local populations. This will result in the economy as well as the citizens to be able to reap all the benefits of a sharing economy mechanism while at the same time negating the possible negative implications of STAs by putting in the necessary safeguards addressing concerns from all stakeholders.

Challenges and lessons

Malaysia's experience of implementing reforms highlights that in the light of regulating digital economy, there are winners but there are also some losers. The point of regulation and the responsibility of the Government in implementing reforms is to ensure a level playing field. Traditional hotels are being disrupted by digital platform services that are unregulated and provided at a cheaper cost. Regulation ensures stability in the growth of digitalization ensuring consumers are protected. Malaysia learn that to control the digital economy as a whole would be a fool's errand as the degree and magnitude of the economy far exceed the enforcement capacity. However, a proper guideline is needed in place and better regulation approach is needed to govern a new form of economy.

Another challenge involves taxation. In Malaysia, the digital economy has thrived in a largely tax-free environment, while the old economy is burdened by taxes. Indeed, the shift from the physical economy to the digital economy has partly contributed to the erosion of the Government's revenue base. In Malaysia, our government revenue has slowly fallen from 21.4% of GDP in 2012 to 16.3% of GDP in 2017. The challenge lies on coming up with an effective method of taxation on online platforms and cloud companies with little to no physical presence. The digital economy regulation will certainly provide a positive impact on the economy's GDP due to better capturing of unrecorded revenue from online platforms. The regulatory framework is still in the midst of discovering a solution in framing government's jurisdiction in the digital economy, and enforcement methods to monitor multi-million-dollar revenue generated on the cloud to be recorded and taxed accordingly.

Finally, a challenge arises in drafting a hybrid regulatory framework in the digital world. The sharing economy and the digital reforms involves multiple government agencies and require these agencies to champion policies and legal laws in close association. Regulatory framework in the digital economy is complex as it touches multiple jurisdiction and even across economy borders. Government

infrastructure are still being improved in order to ensure regulatory compliance can be achieved and cross border corporation are needed in order to effectively regulate the digital economy.

MEXICO: LAW REGULATING FINANCIAL TECHNOLOGY INSTITUTIONS (FINTECH LAW)

Introduction

Economic growth usually lies in the increase of the Gross Domestic Product (GDP) of an economy, which rely on the combination of various components such as: employment expansion, capital formation, volume of trade, credit expansion and domestic consumption in the domestic economy, as well as in the efficiency of the financial system and the interaction of the economic agents. In this regard, such economic growth can happen by two ways, by an "expansive way" using more resources (such as the physical, human or natural capital) or by an "intensively way", using the same amount of resources more efficiently (more productively).

The regulation of the traditional financial system is essential in order to guarantee its appropriate functioning. An adequate legal framework generates greater certainty about the operations carried out by the economic agents involved (banking, stock market, derivatives, insurance, and bonds) and encourages growth in economic activity by mobilizing the savings of the various agents to finance productive activities, facilitate transactions and to allocate the resources efficiently. So, the diverse regulations in this matter add stability to the whole financial system.

However, as a result of the *subprime*¹⁸ crisis, a new global scenario was generated where the general mistrust caused by traditional financial institutions gave rise to the need for the user of financial services to demanding more transparent, inclusive and friendly alternatives within the financial sector. This situation triggered that many young entrepreneurs who participate in a natural and intrinsic relationship with the recently active technology in the financial system began to observe these trends and to offer alternative solutions.

On this basis, emerged a proliferation of alternatives in the financial services based on accessible information and communication technologies, such as the use of the internet, smartphones, intelligent algorithms, and mobile applications to provide such services. Such alternatives have been commonly referred to as *FinTech*¹⁹, having as one of the most considerable differences, compared to the services provided by the traditional financial system, the high degree of technological content and the challenge towards the status quo of the financial services industry.

In this regard, according to "*The FinTech Book*"²⁰ it is noted that FinTech companies have similar characteristics among them, which are described below:

¹⁸ It is the name of the financial crisis of 2008, originated by an overvaluation of the real estate assets in the United States.

¹⁹ The University of Wharton define the term Fintech as "an economic industry composed of companies that use technology to make financial systems more efficient."

²⁰ Susanne Chishti & Janos Barberis, the Fintech Book.

1. They are based on an approach to satisfying the needs of specific segments of the market, which allows a greater degree of specialization in the services provided and a greater capacity for disruption in traditional sectors.
2. They don't rely on having a huge infrastructure, operational structure or the costs assumed by traditional financial services institutions. FinTech companies making more use of technological tools gives them greater capacity to innovate in the offer of its services.
3. FinTech services and products that have achieved the most success are characterized by being transparent, practical, easily accessible and closer to customers.

Pre-reform situation

According to the "*National Report on Financial Inclusion 2016*"²¹ only 39% of Mexico's 127 million inhabitants have access to formal financial services. The lack of a bank account embodies a serious limitation to improve the quality of people's lives, to strengthen personal finance and to increase micro, small and medium enterprises, as well as, to achieve greater social inclusion. So the fact that having more alternatives of financial services embodies in Mexico a fertile ground for the development of the FinTech sector since technology characterizes an essential factor for expanding and deepening financial inclusion, especially in rural areas and for the attention of traditionally excluded groups.

Furthermore, characteristics such as high penetration of fixed and mobile internet²², an adequate electronic commercial ecosystem and an increasing number of reforms to the core and adjacent sectors of the financial sector such as the "*Financial Reform*"²³ and the "*2016 National Financial Inclusion Policy*", make Mexico an attractive destination for FinTech companies.

According to the Inter-American Development Bank (IADB), the FinTech ventures have been strengthened in Mexico during the last years due to public and private initiatives implemented through stimulus packages for the development of new technological tools. These initiatives have allowed the growth and diversification of financial products, which have also benefited the entrepreneurial capital by having a greater amount of resources of domestic and international origin available.

In this regard, at the moment the Law was proposed, Mexico had 238 Fin Tech startup companies²⁴ distributed in the following segments: Payments and Remittances (48 startups, 20%), Lending (41 startups, 17%), Enterprise Financial Management (35 startups, 15%), Crowdfunding (22 startups, 9%), Insurance (15 startups, 6%), Lending:P2P (13 startups, 6%), Personal Financial Management (12 startups, 5%), PFM (11 startups, 5%), Financial Education and Savings (11 startups, 5%), Enterprise Technologies for Financial Institutions (10 startups, 4%), Scoring Identity and Fraud

21 According to the National Policy on Financial Inclusion, financial inclusion is defined as the access and use of formal financial services under the consumer attention and the promotion of financial education to improve the financial capacity of all segments of the population.

22 According to the Mexican Internet Association (AMIPCI) by the end of 2016 in Mexico, there were 65 million Internet users, so penetration of internet service went from 43% in 2012 to 59% in 2016.

23 Published in the Official Gazette on January 10, 2014.

24 Radar Finnovista, July 6, 2017 (<https://www.finnovista.com/actualizacion-fintech-radar-mexico/>)

(6 startups, 2.5%), Wealth Management (6 startups, 2.5%), Payments Crypto (5 startups, 2%), Trading and Markets (3 startups, 1%).

Policy response

As a result of the aforementioned situation, the FinTech Law pursues the following objectives:

1. Contribute to the financial inclusion and market competition by regulating the operations carried out by Financial Technology Companies, resulting in an increase in the quality and the creation of new financial products and services.
2. Establish a flexible legal framework as a result of this Law to facilitate the creation of new products, services, business models and innovative mechanisms, without having to meet all the regulatory burdens that they would be usually applicable. In this sense, the Law will allow the authorized institutions to use innovative models, defined as "those mechanisms that use for the provision of financial services technological tools or innovative modalities different from those existing in the market at the moment in which the authorization is granted" (internationally known as Regulatory Sandbox).
3. Reduce costs in financial products and services (either they are regulated in the Law or in other financial laws) provided by the Financial Technology Companies (authorized companies that operate with innovative models or financial entities authorized by Law).
4. Adjust the current financial legislation in order to make it consistent with this new regulation and facilitate its implementation.
5. Generate greater access to credit and investment flow, in synchrony with the use of technology and financial inclusion of unreached sectors of the population.
6. Continuing with the implementation of the Financial Reform through the proposal of regulations that encourage the flow of more financing, providing more flexibility and agile ways of negotiating, and incorporating international transparency principles.
7. The creation of the Financial Innovation Group, which will act as a group for consultation, advice and coordination.

Impact

In accordance with the data provided by the Ministry of Finance and Public Credit, the economic impact was foreseen as it follows:

Costs:

- Emergence of costs for the regulated sector due to the considerable administrative burdens.

- Emergence of compliance costs caused by prohibitions, obligations, restrictions, and penalties.

Benefits:

- Creation of a well-defined market with a greater degree of security for users and legal certainty for those regulated.
- Development of an appropriate environment for competition among companies by the establishment of the basic rules.
- Contribution to financial inclusion, with an immediate impact on economic development, especially in the promotion of consumption and investment.

It should be pointed out that less than two years after the FinTech Law was issued, there is still no reliable data on the direct economic impacts of this legal reform, at least in quantitative terms.

Challenges and lessons

Challenges:

- Complete the issuance and implementation of the secondary regulation that will allow the appropriate implementation of the Law.
- Implement interagency coordination in order to achieve what was indicated above, since, in the articulation of the normative framework, there are authorities of different legal powers such as the centralized Federal Public Administration, the decentralized agencies and the autonomous constitutional agencies.
- Monitor the performance of the FinTech space, as some companies expressed concern that the Law could have an impact on free competition and could concentrate the market.

Lessons:

- There is a need to encourage financial education in a FinTech environment since the sector could suffer a lack of dynamism if there is a lack of knowledge about how society can interact with this type of services.

THE PHILIPPINES

A. TECHNOLOGICAL ADOPTION IN THE PHILIPPINE INSURANCE INDUSTRY’S REGULATION AND SUPERVISION

Introduction

Today’s insurance environment involves several millions if not billions of data. A few years ago, the only way to access insurance service suppliers were through face-to-face interactions. However, today, insurance service transactions may be done through smart phones and computers, where concluding transactions may now be done with less human intervention.

This innovation in the financial services coined Financial Technologies or “Fintech” could result in new business model applications, processes or products related to financial services that would result to material effect on financial markets and institutions and provisions of financial services (Toronto Centre, 2017, 2019)

The special subset of FinTech related to insurance is InsureTech, which is a variety of emerging Insurance Technologies and innovative business models that have the potential to transform the insurance business. (Toronto Centre, 2019)

The figure below shows what InsureTech tools are being utilized along the business processes of insurance companies.

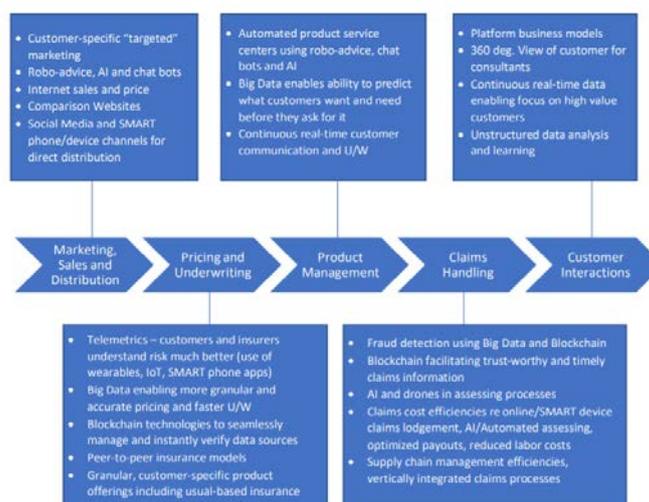


Figure 7 InsureTech Applications along the Business Process

Source: IAIS, 2018

Pre-reform situation

Before the onset of digitalization, the regulation and supervision of industry lies in the manual submission and encoding of data which resulted to backlogs in review and examination process, fewer

and/or trivial analyses and research. There were also redundancy of data submitted to several divisions, creating discrepancies in the summary and analysis of key data.

On December 28, 2016, the Insurance Commission issued Circular Letter (CL) No. 2016-65 entitled Financial Reporting Framework under Section 189 of the Amended Insurance Code (Republic Act No. 10607). This financial reporting framework provides for a standard on the economic valuation of assets and liabilities based on internationally accepted accounting, actuarial and insurance core principles. The financial reporting framework is not the same as the financial reporting framework used for general purpose financial statements for the public and filed to other regulators. It is used for the statutory quarterly and annual reporting of net worth requirements.

Additionally, the IC also issued CL No. 2016-66 and 2016-67 that properly value the policy reserves of insurance companies in accordance with generally accepted actuarial principles.

CL 2016-66 and 67 also provide that an accredited actuary shall be responsible for determining the level of policy reserves based on professional valuation of the company's life and non-life insurance liabilities using a basis no less stringent than that prescribed in the following paragraphs.

Additionally, CL 2016-68 was issued in accordance with Section 200 of the Amended Insurance Code which provides that the solvency requirements shall be based on internationally accepted solvency frameworks and adopted only after due consultation with the insurance industry associations. The CL adopted a three (3) pillar risk-based approach to solvency. The framework is issued to address the 1st pillar on quantitative requirements in relation to the calculation of capital requirements and recognition of eligible capital. All insurance companies are required to hold the RBC requirement determined in accordance with the rules and guidelines set forth by the IC at all times.

Policy response

The IC adopted “Cloud” computing for the submission of the statutory financial reporting requirements, where companies need only access the IC cloud through internet browsers to submit reportorial requirements. Life and non-life insurance companies submit their quarterly reports (Financial Reporting Framework, Risk-based Capital (RBC2) and Reserve Valuation Reports) through their cloud accounts connected to the IC. Companies may upload files in pdf, excel and word format to be accessed by IC insurance specialists for examination.

Moreover, to improve accessing and evaluating not just the financial reports but the operations of insurance companies as a whole, the IC is currently developing its Financial Examination Database System (IC-FEDS) which will help integrate the functions of the IC and the different reportorial requirements so as to capture a real-time, on a per company and industry basis, status of compliance and performance reports.

The Insurance Financial Reporting Framework (FRF), Insurance Policy Reserving Framework and Risk-Based Capital Framework (RBC2) will be incorporated in FEDS along with other operations such as investment approval, market conduct, premium rates, reinsurance and other aspects.

In the future, systems such as data gathering, data accumulation, data management systems will further help the cause of the IC to provide efficient performance of its core functions and address the risks faced by regulated entities.

Impact

Because of the change in regulatory framework and reporting, regulated companies' financial conditions may now be evaluated not just on an annual basis but throughout the quarters during the year.

Companies are compelled to comply with all the statutory financial reporting requirements. Moving forward, the IC aims to be able to process and analyze data more efficiently through the use of technology, to supervise insurance companies on a real-time basis, and to regulate companies while promoting a better consumer protection and financial stability policy.

Challenges and lessons

As the Philippine Insurance industry is adapting the changes brought about by the global technological advancement, the IC is compelled to address and adapt the changes to its own regulatory and supervisory framework. Regulatory Technology (RegTech) is a sub-set of FinTech that focuses on technologies that may facilitate the delivery of regulatory requirements more efficiently and effectively than existing capabilities. (Global Financial Innovation Network (GFIN), 2018). RegTech provide real-time monitoring of compliance to regulations, such as Identity Management Control, Counterparty due diligence and Know-Your-Customer (KYC) procedures, anti-money laundering (AML) controls and fraud detection which may be integrated into a RegTech system to manage and analyze data processed by insurers. RegTech is a mechanism to bring efficiencies to the generation of risk data, risk data aggregation, internal reporting, automatically identifying and monitoring risks according to internal methodologies or regulatory definitions and creating alerts or to trigger action at pre-determined levels. (Toronto Centre, 2019)

Another concept related to financial institutions is the Supervisory Technology (SupTech), a sub-set of FinTech that uses innovative technology to support supervision. It helps supervisory agencies to digitize reporting and regulatory processes, resulting in more efficient and proactive monitoring of risk and compliance at financial institutions. (Broeders & Prenio, 2018) SupTech can help reporting institutions automatically package business data in a standard and highly granular format according to specifications (e.g. classification) by regulators and send it to a central database. Raw (non-standardized) business data is sourced directly from the institution's operational system by automated process triggered by the regulator, and only later standardized by the regulator itself, using SupTech solutions. This will make supervisory actions a preemptive tool based on predictive behavioral analysis.

The regulator can pull operational data at will rather than at predetermined reporting periods by directly accessing the institutions' operational systems, which could include monitoring transactions in real time basis. SupTech can create reporting utilities i.e. centralized structures that function not only as a

common database of reported granular data but also a repository of the interpretation of reporting rules, in a format that is readable by computers. Collections and analysis of unstructured data with greater efficiency, which could relieve supervisors from time consuming tasks such as reading numerous PDF files, searching the internet, etc.

Bibliography

Broeders, D., & Prenio, J. (2018, July). Financial Stability Institute FSI Insights on policy implementation No 9 Innovative technology in financial supervision (suptech) – the experience of early users. Retrieved from bis.org: <https://www.bis.org/fsi/publ/insights9.pdf>

Toronto Centre. (2017, August). FinTech, RegTech and SupTech - What They Mean for Financial Supervision. Retrieved from Toronto: <https://res.torontocentre.org/guidedocs/FinTech%20RegTech%20and%20SupTech%20-%20What%20They%20Mean%20for%20Financial%20Supervision.pdf>

Toronto Centre. (2019, March 21). RegTech and SupTech: Implications for Supervision. Retrieved from [https://a2ii.org:](https://a2ii.org/sites/default/files/reports/3pm_a2ii_iais_consultation_call_regtech_and_suptech_21_march_presentation.pdf)

Insurance Commission. (2016, December 28). Circular Letter No. 2016-65: Financial Reporting Framework. Retrieved from: <https://www.insurance.gov.ph/issuances/circular-letters/>

Insurance Commission. (2016, December 28). Circular Letter No. 2016-66: Valuation Standards for Life Insurance Policy Reserves. Retrieved from: <https://www.insurance.gov.ph/issuances/circular-letters/>

Insurance Commission. (2016, December 28). Circular Letter No. 2016-67: Valuation Standards for Non-Life Insurance Policy Reserves. Retrieved from: <https://www.insurance.gov.ph/issuances/circular-letters/>

Insurance Commission. (2016, December 28). Circular Letter No. 2016-68: Amended Risk-Based Capital (RBC2) Framework. Retrieved from: <https://www.insurance.gov.ph/issuances/circular-letters/>

B. SANDBOX

The sandbox setting

1. When was the sandbox established and who are the stakeholders?

- In 2004, the Bangko Sentral ng Pilipinas (BSP) first used this “test-and-learn” approach to engage e-money pioneers. The providers of G-Cash and Smart Money were allowed to pilot e-

money products in the market at a time when there were no established models to reference anywhere in the world. Rather than say “no”, BSP decided to keep an open mind so that it can fully understand the business model, assess risks and determine how appropriate regulations can be applied to mitigate these risks.

2. Please describe the regulatory framework applied to the sandbox mechanism.

- The “test-and-learn” is within the approving authority of the Deputy Governor of the BSP.
- Since there was no e-money regulation back then, the proponents were required to comply, to the extent possible, to regulations covering technology and information security risk management, consumer protection and anti-money laundering, among others.
- Lessons learned from these pilots eventually formed the BSP regulatory framework for e-money, issued five (5) years later in 2009. This framework opened up the market for non-bank players and expanded the e-money agent ecosystem; but BSP ensured that liquidity, technology and other operational risks, Anti Money Laundering/Counter Financing of Terrorism requirements, and consumer protection concerns are properly addressed.

3. What measures are taken to create legal framework for testing new services?

- Please see responses in items 1 and 2 above.

4. What are the key goals of the sandbox and its target audience?

- The sandbox approach has served the BSP well since 2004. It enabled the BSP to fully understand new business models, assess risks, employ mitigating actions when necessary, while allowing benefits to be realized from these new technologies.
- Non-banks or tech players are able to offer their products and services more openly to the public. The fact that it is a pilot implementation under BSP monitoring somehow lends credibility to the project, not only to the customers, but also with other market players;
- This, in turn, increases the chances of success as the market are more inclined to adopt such products or services;
- Non-bank or tech players can compete with the regulated entities without the immediate burden of regulatory compliance; and
- They can also gain knowledge/experience on relevant BSP rules and regulations that they can leverage on when they are already directly regulated/supervised by the BSP.

5. What are the sandbox main principles?

- The main principles could be deduced from the adopted phases of the approach, to wit:

- a. Allow for market to develop and innovations to take place;
 - b. Proceed with flexibility yet with caution;
 - c. Understand operating and business model;
 - d. Adopt appropriate regulatory approach; and
 - e. Closely monitor developments and related issues.
6. How many staff members have been committed to the sandbox functioning?
- 14 plantilla positions
7. Is there a need to coordinate the sandbox functioning with other authorities due to the scope of the topics under review?
- Yes. If the pioneering products/services do not fall within the supervisory authority of the BSP, the entity/applicant is referred accordingly to other concerned regulators as part of the multi-stakeholder approach to fintech handling. BSP also collaborates for services that may fall
 - within the purview of two or more regulatory authorities. The main goal is to enhance shared understanding of risks and streamline requirements of the different authorities.
8. What kind of contribution does the sandbox operation make to promoting financial inclusion in your economy?
- The BSP measures the impact of innovation facilitators particularly on financial inclusion, efficiency gains in financial service delivery and increase in digital payments.
9. Do you have a Web site to introduce/explain the sandbox scheme outline? If yes, please provide the HP address.
- N/A

The sandbox process

1. What is the duration of the testing and review phases of the sandbox operation process?
 - BSP's test and learn approach as of now has no preset duration for the sandbox as it is primarily dependent on the nature/extent of the fintech product or service being piloted. But normally the duration of the sandbox is within 6 months to one (1) year.
2. Which activities take place after the sandbox? In case a regular update is applied after the sandbox testing what is its typical frequency?

- Once the BSP fully understands the operating/business model as well as detailed mechanics of the innovative product/service, the BSP then issues the appropriate regulations. The BSP continues to monitor developments and introduce supervisory enhancements, when necessary, to address emerging issues and risks.
3. What are the sandbox projects entry requirements?
 - Eligibility requirements include:
 - a. Soundness/feasibility of the business model;
 - b. Innovativeness and currently not within the existing regulatory framework of the BSP;
 - c. Track record and credibility of the applicant/proponent; and
 - d. Resources and capability of the proponent to carry out the pilot activities.
 4. Is it feasible to distinguish between the new entrants or established market participants?
 - Value of such distinction may be explored, though currently, the approach is entity agnostic and focuses more on the entity's proposed service and their capability to manage relevant risks associated with it.
 5. What limitations are applied while testing in the sandbox?
 - There is flexibility in relaxing certain rules and regulations during the sandbox period, except for those related to cybersecurity, consumer protection and anti-money laundering.
 6. What regulatory tools facilitate the testing?
 - Currently limited to periodic status monitoring and review of submitted test results.
 7. Please list the top 3 segments represented by the sandbox participants.
 - Payments, clearing and settlements
 - Consumer lending
 8. Which kind of projects does the sandbox mostly deal with?
 - Digital currency
 - Blockchain-related initiatives
 - Payments, remittance and e-wallet

9. Do real customers take part in sandbox piloting (or experiments are carried out only in test environment)? If yes, what is the maximum number of clients that are supposed to get financial service in the process of sandbox piloting?
 - Yes, but the proponents define the pilot parameters.
10. Which customer safeguards/ transaction limits are applied to the sandbox projects?
 - Please see response in item no. 14
11. What are the project testing milestones and exit conditions?
 - Milestones vary from one application to another though exit condition is clear that the applicant must secure formal approval when relevant regulations covering the piloted activity is established or the proponent determines that the product can already be mainstreamed,
12. Which 5 main challenges can be identified for the sandbox mechanism?
 - Firms applying for the wrong reason, limited impact, lack of awareness, resource intensive, consumer protection issues
13. What are the results of piloting in the sandbox (e.g. legal framework is created, organization receives the required license, service is approved to be provided in the market and etc.)?
 - Adoption/change of regulatory approach, issuance of license and a close monitoring of developments and relevant issues.

The sandbox impact

1. What has been the number of projects piloted in the sandbox so far?
 - 132 providers have tested in the sandbox
2. How many of them have been stopped/ approved for implementation?
 - After starting the test, 17 providers later discontinued their test or failed to successfully transition out.
3. Please provide examples of the most significant initiatives tested in the sandbox.
 - In 2004, the BSP used the “test-and-learn” approach for e-money, and allowed the providers of G-Cash and Smart Money to pilot pioneering e-money products in the market. The objective was to fully understand the business model, assess risks and determine how to apply regulatory controls to mitigate these risks. Lessons learned from these pilots eventually formed the BSP regulatory framework for e-money, issued in 2009. This framework opened up the market for non-bank players and expanded the e-money agent ecosystem.

- In 2016, the BSP again made use of “test-and-learn” approach when it allowed BSP-supervised financial institutions (BSFIs) to participate in “Lendr Loan Program” (Lendr) provided by Voyager Innovations, Inc. (Voyager), a non-bank fintech provider, under a community cloud deployment model. Lendr is a fully digital, multi-channel, telco and bank-agnostic consumer loan platform that facilitates BSFIs’ credit origination processes. Through Lendr, customers may select the best deals among the loan products offered by participating banks.
4. Has there been any significant effect of the sandbox operation for promoting financial inclusion?
 - Yes. It extends financial services even to those in unbanked and underserved areas as the platform is accessible via mobile phones.
 5. Should the testing outcomes be shared with other authorities or made public?
 - May be considered except for confidential information.

Next steps

1. What next steps are planned for the sandbox development?
 - The BSP’s test-and-learn approach proved to be a useful tool in promoting development and innovation within the financial services industry. While the approach seems effective as of date, certain enhancements to the sandbox approach are being explored to clearly define the parameters, timelines, and eligibility criteria to improve transparency and efficiency in the approval process. At present, BSP is contemplating on revising the regulations on e-banking/electronic financial products and services that shall formalize the “test-and-learn” approach.
2. What do you think about the establishment of multiple sandboxes in a single jurisdiction?
 - Value of such approach and relevance to domestic fintech regulatory regime may be further explored.
3. What can governments do to promote sandboxes?
 - Government can continue to maintain dialogues with the industry in order to gain insights on innovations and new product/services to be offered to the market.

International cooperation

1. The experience of which economies you think should be studied with regard to sandboxes?
 - For neighboring economies, it would be Singapore, Malaysia and Thailand

2. Which opportunities for international cooperation do you think exist with regard to sandboxes functioning?
 - Information sharing, regulation benchmarking, capacity building
3. What is your attitude to the concept of region-level/global sandboxes?
 - Cooperation and collaboration with peers from other jurisdiction is always an avenue to learn and share information towards formulating the appropriate approach to manage and regulate digital innovations.
4. Which topics will become urgent for sandboxes globally in the near future?
 - Potential use cases for Distributed Ledger Technology, Application Programming Interface, and Artificial Intelligence

RUSSIA

A. PUBLIC SERVICE PORTAL OF THE RUSSIAN FEDERATION (GOSUSLUGI.RU)

Introduction

In recent years, digitization of the economy in Russia has been a top priority at the highest level of leadership, and a number of digital initiatives have been implemented in the economy at the economy-wide and subnational levels. In 2019 Russian Government introduced the program “Digital Economy of the Russian Federation”. It consists of six federal projects:

- Normative regulation of a digital environment
- Digital infrastructure
- Personnel for digital economy
- Information security
- Digital technologies
- Digital public administration

Total financing for the program amounts to 1.6 trillion rubles, including 1.1 trillion from the federal budget and 0.5 from non-budget sources. It is expected that implementation of the program will allow to increase share of households with broadband internet access from current 72.6% to 97% in 2024. Share of the Russian Federation in the global market of data storage and processing will increase from 1% in 2018 to 5% in 2024, 120 thousand people will be engaged in higher education programs in digital sphere by the end of 2024, 10 million people will complete online training in E-literacy sphere by the end of 2024. All socially important buildings will have broadband internet access sphere by the end of 2024 (30.3% in 2018), and Russian software will account to more than 90% of software purchased by the government bodies.

Pre-reform situation

Along with the Public Administration Reform process (2003–2013), the government launched its first “Electronic Russia 2002–2010” program, aiming to adjust the regulatory capacity of the state and improve the efficiency of the public service through ICTs. Initial efforts were focused on the development of an e-government infrastructure. The portal (Ogic.ru) contained only the full list of public services, application templates in pdf format and links to the websites of ministries, agencies, economy-wide projects.

Policy response

The first step was the launch of the new version of the Public Service Portal of the Russian Federation (gosuslugi.ru). At first, only information on sequence of receiving services and list of required documents were available. At the end of 2010, the portal contained full information on 565 federal and 2282 regional public services, including list of required documents and application forms.

Rapid development of electronic infrastructure, including the Public Service Portal, was a consequence of long preliminary work aimed at development of administrative procedures, registries of public and municipal services and corresponding regulation framework. Key challenges that were to be overcome in order to develop electronic services were the following:

- Organization of intergovernmental interaction. The structure and formats of information sharing were analyzed, and for each service process charts of intergovernmental interaction were approved, which contained description of required information for the provision of the service, list of intergovernmental documents, formats of information requests. Starting from October, 2011, federal public bodies moved to the electronic intergovernmental interaction in the process of providing services;
- Update of the list of required documents for each of the services. According to the legislation, the documents which are possessed by public bodies, even other than those bodies providing the service, cannot be required from the applicant. This statutory provision significantly decreased number of documents required from citizens.

The second phase, which builds on the preliminary work described above, included the further development of single-window access for public services through a Public Service Portal of the Russian Federation (gosuslugi.ru) and multifunctional centers of services delivery, the creation of an interagency system for electronic interaction and a document management system, as well as open access to information on the activities of government bodies.

The portal is being continuously updated. In 2018, the following services were added: opportunity to choose the polling station; development of mobile application “Gosuslugi Business”; possibility to receive parcels and registered letters without documents, with SMS code; registration of marriage and birth registration is now available in all regions (85, in 2017 – only in 30 regions).

Impact

Over the past two decades, Russia has demonstrated a strong commitment to adapting its government institutions to the new realities of the digital era. In the development of digital government, Russia has achieved some successes in recent years, most notably an increase in the number of digital federal and municipal services using the e-government infrastructure and an increase in the number of registered users (86 million in 2018) of the Public Service Portal of the Russian Federation. The ongoing focus on government digital transformation at the highest levels of government allowed Russia to rapidly ascend in international e-government ratings and achieve remarkable success. In 2018 UN E-Government

Development Index (EGDI) Russia ranked 32 (35th place in 2016 rating) and joined the Very-High EGDI group.

The number of users of online federal and municipal services has grown rapidly and reached 40 million in 2016, 65 million in 2017 and 80 million in 2018. On average, the portal has 1.6 million users per day, and total annual number of visits in 2018 amounts to 582 million. In 2018 users filled more than 60 million electronic forms in order to get public services. The most popular service is request of position of an account at Russian Pension Fund (more than 16 million requests in 2018). Vehicle registration holds second place with 4.8 million requests, and drawing up of the passport is on the third place by popularity (3 million requests).

Payments through the portal grew from 8.1 billion in 2016 to 30.3 billion rubles in 2017 and to 52.6 billion rubles. Settlement of taxes amounted to 19.9 billion rubles in 2018, payment of duties - 17.5 billion rubles, penalties – 9.8 billion rubles, court fines – 4.3 billion rubles.

B. THE SMES BUSINESS NAVIGATOR PORTAL

Introduction

The improvement of the investment climate in Russia is an important objective for the further economic development of the economy. In Ease of Doing Business -2019 Russia has moved up to the 31st position from the 35th place year earlier. In 2019 Government of Russia approved Roadmap “Transformation of Business Climate”, which contains measures on 12 directions: connection to utilities system, urban development, property rights protection, customs, international trade, SMEs access to public procurement, SMEs access to finance, registration of legal bodies, human capital and labor productivity, enhancing corporate governance, taxes and controls. Roadmap contains some measures in digital sphere, aimed at improvement of business climate:

- Introduction of digital technologies and platforms in cadastral registration of real estate, public registration of real estate and real property transactions;
- Development of electronic documentation between participants of foreign economic activities and public bodies;
- Shift to electronic requests for connection of premises to utilities system;
- Increase of efficiency of intergovernmental interaction in the urban development sphere, shift to electronic requests for the urban development services.

Pre-reform situation

Simplification, cheapening and acceleration of business procedures has long been a priority for the Russian Federation. Starting from the 2012, 12 roadmaps aimed at improvement of the investment climate in the Russian Federation were implemented, which contained actions on digitalization of public services related to business processes. By 2018, most of the measures were implemented, and the Russian government has started to monitor the "roadmaps" to promote competition, improve the quality of supervision, and give SMEs better access to state companies' procurement and enterprise registration. Achievements in the sphere of digitalization during realization of these roadmaps include the following: implementation of online company registration; development of opportunity to pay customs duties online and submit customs transit declaration online; application of electronic document submission system for the state registration of real property titles.

Still, many challenges for the SMEs remained, among other:

- Absence of centralized information on public support for SMEs;
- Lack of entrepreneurship education;
- Absence of centralized information on prerequisites for entrepreneurship activities, such as availability of office real estate, working templates of business plans, information on demand and existing SMEs in specific location.

Policy response

SME Business Navigator (smbn.ru) was established in 2016. It is a free web tool for entrepreneurs, who are willing to open or to expand their own business and who want to work legally, pay all obligatory taxes and charges, earning for their future and for the future of their children.

Business Navigator is created on the one-stop shop principle. It contains services for burgeoning entrepreneurs, such as:

- Creation of a preliminary business plan for one of 103 types of business in 177 cities in Russia;
- Information on bank loans and application for a guarantee;
- Information on public support measures for SMEs (information on 5000 SMEs infrastructure organizations and 7500 support measures);
- Creation of a web-site for a chosen business;
- Information on biggest buyers' purchase plans (more than 5.3 million public procurements by Federal Law #223 and Federal Law #44);

- Information on business premises available for rent (database contains more than 900 000 offices for rent);
- Preliminary information on potential demand and existence of competitors in a specific location;
- Choice of a franchise;
- Step-by-step instructions for typical situations for 90 types of business on 5 phases of a business life cycle. There are more than 22.5 million documents, interactive check-lists and templates with comments for each of business types;
- Information on co-working spaces;
- Specialized resources for agriculture businesses etc.

Business navigator is designed to be useful also for the mature entrepreneurs and provides such services as:

- Checking trustworthiness of partners;
- Information on legal, accounting, management challenges on the help desk “reallife situations”
- Preparation for the exit from business;
- Tax and accounting updates; Preparation for inspections; Placement of advertisement etc.

Impact

Business navigator quickly became a popular service among entrepreneurs. The number of registered users grew from 2 thousand in 2016 to 1.6 million in April 2019. Number of SMEs which used the services provided by the Portal grew from 445 thousand in 2017²⁵ to 1 million in April 2019. As of 20.05.2019 number of registered unique users – 1 744 810; number of unique SMEs users – 1 283 303. Number of SMEs, which increased revenue or number of employees using services provided by the portal amounted to 579 thousand in April 2019.

The most popular services in 2018 were the following: checking trustworthiness of partners (30% of users made use of this service), estimation of market niche (22%), search for public procurement (20%), usage of “real-life situations” help desk (19%), search for location for business (17%), development of business plan (15%), and search for business premises for rent (14%).

As further steps of Portal development RSMB Corporation together with the Ministry of Industry and Trade of the Russian Federation and Industrial Development Fund will integrate services of the SME

²⁵ Although Portal was launched on 09 September 2016, full-scale commercial operation started on 01 January 2017.

Business Navigator Portal with the Public Services Portal of the Russian Federation in part of SMEs support measures and Technology and Industrial Parks.

C. SANDBOX

The sandbox setting

1. When was the sandbox established and who are the stakeholders?

The regulatory sandbox of the Bank of Russia was launched in April 2018. The main stakeholders are financial market participants (fintechs, financial organizations, tech companies) and the Bank of Russia.

2. Please describe the regulatory framework applied to the sandbox mechanism.

Regulated by internal regulatory framework of the Bank of Russia.

3. What measures are taken to create legal framework for testing new services?

New services are piloted in a tested environment (no real customers are involved), hence no special legal framework or regulation is required.

4. What are the key goals of the sandbox and its target audience?

- Development of financial technologies;
- Improving the security of innovative services;
- Promoting competition environment;
- Increased financial inclusion;
- Development of regulatory mechanisms.

5. What are the sandbox main principles?

- piloting innovative solutions in a risk-free environment without customers involved and performing real transactions;
- interaction with associations of financial market participants and public authorities on sandbox pilot projects;
- fast evaluation and implementation of innovative financial services.

6. How many staff members have been committed to the sandbox functioning?

Each service is analyzed by 2-10 employees of the Bank of Russia Fintech Department. At the same time, employees from other departments of the Bank of Russia, professional associations of financial market participants and public authorities are also involved in selection of projects for the regulatory sandbox, evaluation of the results and preparations of proposals for amendments to the existing regulations.

7. Is there a need to coordinate the sandbox functioning with other authorities due to the scope of the topics under review?

Yes.

8. What kind of contribution does the sandbox operation make to promoting financial inclusion in your economy?

A regulatory sandbox influences financial inclusion in several ways:

- It attracts the attention of various players like banks or private equity and venture capital funds hoping to secure their investments. Increased competition has positive impact on pricing of financial products and services that may prompt them to focus more attention on unserved and underserved segments. Moreover, it improves capacity of regulators to balance financial inclusion with other regulatory objectives;
- Companies get an opportunity to work with regulators while testing their products in a live market. Regulators, on the other hand, can develop more appropriate regulatory policies as they are provided with an insight into how innovations function;
- Customers get better protection because company products are tested in a controlled environment before official rollouts;
- Financial institutions and companies have greater confidence in an entity's ability to comply with regulation while still being able to develop truly disruptive products and services.

9. Promoting competition environment. Do you have a Web site to introduce/explain the sandbox scheme outline? If yes, please provide the HP address.

Yes.

https://cbr.ru/fintech/regulatory_platform/

The sandbox process

1. What is the duration of the testing and review phases of the sandbox operation process?

The duration of piloting does not exceed 14 working days, but can be extended by the decision of the participant. Review phase can take 2-4 weeks.

2. Which activities take place after the sandbox? In case a regular update is applied after the sandbox testing what is its typical frequency?

If the service or product tested in regulatory sandbox is deemed to be successful, a roadmap is developed to ensure the creation of the necessary legal framework for the service's/product's launch in the market. The respective changes are made to the regulation in accordance with the arrangements set in the roadmap.

3. What are the sandbox projects entry requirements?

- Consumer benefit;
- Genuinely innovative;
- Test need;
- Ready to test;
- The product or service cannot be introduced in the market per se under current legal framework.

4. Is it feasible to distinguish between the new entrants or established market participants?

No such distinctions are made.

5. What limitations are applied while testing in the sandbox?

No testing in the product environment, so no limitations/safeguards.

6. What regulatory tools facilitate the testing?

New services are not tested in the product environment and therefore do not require regulation.

7. Please list the top 3 segments represented by the sandbox participants.

- Payments, clearing and settlements;
- Lending;
- ICO.

8. Which kind of projects does the sandbox mostly deal with?

- Blockchain or distributed ledger technology;
- Crypto-assets or cryptocurrencies;

- Digitalization of certain processes related to the provision of financial services to the clients.
9. Do real customers take part in sandbox piloting (or experiments are carried out only in test environment)? If yes, what is the maximum number of clients that are supposed to get financial service in the process of sandbox piloting?
- No.
10. Which customer safeguards/ transaction limits are applied to the sandbox projects?
- No testing in the product environment, so no limitations/safeguards.
11. What are the project testing milestones and exit conditions?
- Analysis;
 - Evaluation;
 - Piloting;
 - Deciding whether the product/service should be introduced to the market;
 - If positive - creation of legal conditions.
12. Which 5 main challenges can be identified for the sandbox mechanism?
- Creation of a mechanism that will allow for the piloting with real customers (introduction of limited licensing);
 - making process of evaluation and implementation of innovative financial services faster;
 - establishing effective and fast interaction on pilot projects in a sandbox between the Bank of Russia departments and between the Bank of Russia and public authorities;
 - approval of amendments to existing regulations by the Bank of Russia departments and public authorities;
 - alteration of existing regulations that are issued by other public authorities (e.g. the Parliament, the Government, federal ministries).
13. What are the results of piloting in the sandbox (e.g. legal framework is created, organization receives the required license, service is approved to be provided in the market and etc.)?
- Service is approved to be provided in the market;
 - legal framework is created.

The sandbox impact

1. What has been the number of projects piloted in the sandbox so far?

5

2. How many of them have been stopped/ approved for implementation?

Stopped – 0/Approved – 2/Waiting for decision – 4

3. Please provide examples of the most significant initiatives tested in the sandbox.

- Service based on blockchain platform, that helps large business and SME to raise funds via ICO;
- Service that helps SME to get bank loan with scoring carried out by a bank based on transactional data from borrower's online-cashboxes instead of official reports.

4. Has there been any significant effect of the sandbox operation for promoting financial inclusion?

The effect on financial inclusion hasn't been measured.

5. Should the testing outcomes be shared with other authorities or made public?

Testing outcomes should be shared with public authorities that regulate the financial market. In the sandbox of the Bank of Russia public authorities participate in testing, reviewing of its outcomes and making decisions of alteration of existing regulations. The decision on the result publicity must be made by the initiator of a pilot project.

Next steps

1. What next steps are planned for the sandbox development?

At the moment, the Bank of Russia considers introduction of a special licensing regime for new market participants that would imply limited licensing (in terms of geographical coverage/ number of clients/ volume of operations/ type of activity/ etc.) that would follow companies exit from the regulatory sandbox and would apply for a limited period of time to test the service on the real customers.

2. What do think about the establishment of multiple sandboxes in a single jurisdiction?

Only one regulatory sandbox organized by a single authority (regulating the particular market) should function in a certain sector. At the same time, market participants can create industry tech sandboxes to test the products in a virtual environment. If these products do not meet the regulatory requirements, no real customers can be involved in the piloting in the industry sandboxes. Only government authorities and the central bank should have the right to define the exemptions from

legislation, set special requirements or provide limited licenses with respect to the companies taking part in the sandbox.

3. What can governments do to promote sandboxes?

Potential sandbox participants should see feasible outcomes from piloting in the sandbox to be interested to do so. Hence, there should be enough success stories (eg, regulatory amendment to launch the product to the market, finding investors as a result of a pilot project, etc.), which should be published in media.

International cooperation

1. The experience of which economies you think should be studied with regard to sandboxes?

UK, Singapore, Australia, Switzerland, UAE, Kazakhstan.

2. Which opportunities for international cooperation do you think exist with regard to sandboxes functioning?

Divisions and departments providing for the operation of regulatory sandboxes in national regulators can interact on a bilateral or multilateral basis on such issues as exchange of analytical information on innovative financial services, exchange of experience on organizing sandboxes and their regulatory framework, conducting pilot projects, expert participation in foreign pilots, organization of multinational pilot projects, etc.

3. What is your attitude to the concept of region-level/global sandboxes?

Region-level/global sandboxes are relevant for services and products to be introduced in several markets.

4. Which topics will become urgent for sandboxes globally in the near future?

Provided GFIN Global Sandbox initiative, questions related to the fast and effective international interaction between sandboxes and different divisions of financial regulators when conducting multinational pilot projects would be of much interest.

CHINESE TAIPEI

In 2018, the Financial Technology Development and Innovative Experimentation Act and Unmanned Vehicles Technology Innovative Experimentation Act were drawn up with the aim of meeting the development needs of new technology and with reference to legislative trends in other economies, so as to build a “regulatory sandbox” innovative experimentation mechanism. The intention was, with legal protection and under a suitable degree of supervision from the competent authority, to allow innovators to test new products, technologies, services or business models.

A. ENACTING THE FINANCIAL TECHNOLOGY DEVELOPMENT AND INNOVATIVE EXPERIMENTATION ACT

Introduction and pre-reform situation

The Financial Supervisory Commission (FSC) formulated the “Financial Technology Development and Innovative Experimentation Act” (hereafter “the Act”) to assist financial technology (FinTech) innovators to test and realize their innovative ideas and to accelerate the entry of innovative products or services into the market, to promote financial inclusion and the development of FinTech. The FinTech innovative experimentation mechanism (regulatory sandbox) was promoted by means of a special law and the Act came into force on April 30, 2018. This mechanism provides a safe environment for trial of FinTech under development; FinTech innovators are exempt from related criminal and administrative liabilities and applicable regulations during the period of experimentation. Through small-scale experimentation, the feasibility of using innovative technology in financial services can be verified.

Policy response

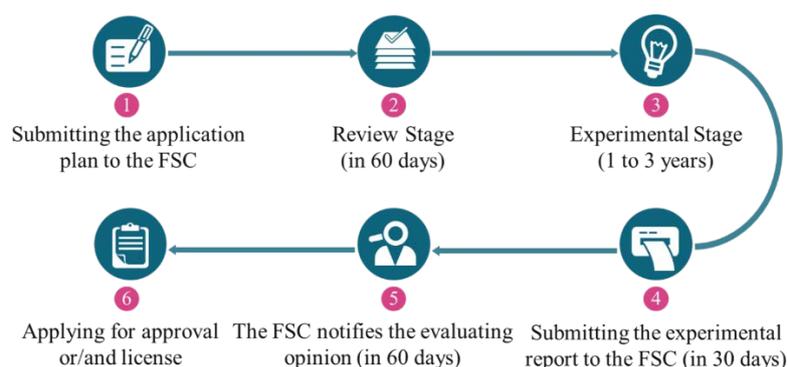
A. The mechanism stipulated by the Act is explained as follows:

1. Eligible applicants: Experimenters that use innovative technology or innovative business model in the scope of business requiring special permission from the FSC are eligible. Domestic and overseas natural persons, wholly owned or partnerships businesses and juristic persons can all apply. At present, most applications have been from FinTech companies and financial institutions.
2. Receiving unit: The FSC has set up the dedicated unit, the “Financial Technology Development and Innovation Center” (the Center), to receive applications for experiments and provide guidance with respect to application.
3. Assessment principles:
 - (1) Operation of financial business requiring special permission: The financial business involved in the application requires special permission, approval or license from the FSC.
 - (2) Being innovative: Utilization of innovative technology or innovative business model.

- (3) Bringing economic and social benefits: The innovative FinTech products/services involved can increase the efficiency of financial service, reduce operating or use costs or enhance the rights and interests of consumers and enterprises.
 - (4) Complete risk management and protection measures: Possible risk has been assessed and related countermeasures formulated; protection measures for participants have also been established and suitable compensation set aside.
4. Accompanying measures:
- (1) Diverse consultation and guidance service channels: The Center will provide consultation and guidance and will jointly handle a “front shop, back factory” cooperation mechanism with the Ministry of Economic Affairs. The FinTechSpace provides the “regulatory clinics.”
 - (2) Measures for speeding up the realization of FinTech innovative products or services: The FSC will, taking into account the implementation situation of the innovative experiment, actively review and revise financial regulations; and will also, at a suitable time, invite related units to provide business startup guidance including matching cooperation and referral guidance.
5. Inter-agency cooperation mechanism: If innovative experimentation involves business that is in the scope of the responsibility of another agency, the FSC will consult the agency involved for related opinions and request that a representative is dispatched as a member of the review committee for reviewing the application; also, the Center has a consultative group that convenes meetings according to the needs of individual cases to discuss related cross-agency policies and revision of regulations and other issues.
- B. The sandbox process:
1. Application and experiment process: (see Fig. 1)
 - (1) Application stage: The applicant submits application form, applicant details, experiment plan and other required documents to the FSC.
 - (2) Review stage: Within 60 days of receiving the application, the FSC holds a review meeting, decides to approve or reject the application and notifies the applicant of the decision in writing.
 - (3) Experimentation stage: Within three months of receiving the review decision, the applicant should begin conducting the innovative experiment. The period of experimentation is up to one year, with a one-time extension of 6 months available when necessary; however, when the contents of the experiment involves the need for amending regulations, the aforementioned extension is not limited to one time, and the maximum total length of experimentation period can be three years.
 - (4) Reporting of experiment results: After the experiment ends, within one month from the expiry of the experimentation period, the applicant reports results to the FSC.

- (5) Experiment results assessment stage: The FSC will complete assessment, provide suggestions within 60 days of receiving experiment results documents and will notify the applicant in writing.
- (6) Application for permission for business operation: If the applicant wants to operate the business involved in the experiment, application for permission must be made according to existing or amended financial regulations.

Fig. 1: The Application and Experimentation Process for the FinTech Innovative Experimentation Mechanism:



2. Limits on experimentation scale: There is no limit on the number of participants; however, the financial exposure of all participants must not exceed NT\$100 million; limits are also set for exposure of individual participants, such as limit on consumer loan of NT\$500,000, limit on insurance policy premium of NT\$100,000 or NT\$1 million insured amount, and limit of NT\$250,000 for insured amount of other insurance products.
3. Measures for protection of participants:
 - (1) In accordance with the professionalism of participants and the risk that may arise from the innovative experiment, a suitable management mechanism for suitability assessment, risk notification, dispute handling and compensation etc. should be established.
 - (2) A suitable compensation mechanism must be in place including consigning to trust or bank escrow.
 - (3) The accounts of the innovative experiment must be independent.
4. Possible experiment withdrawal situations:
 - (1) The applicant terminates the experiment voluntarily.
 - (2) The FSC cancels or terminates approval (if the innovative experiment is materially adverse with regard to the financial market or the rights and interests of consumers or the approved scope is not followed etc.).

- (3) The experimentation period expires.

The sandbox impact

1. Application approval/rejection situation: As of April 23, 2019, 3 applications have been approved for experiment, 1 application has been rejected; also, 4 applications are under review (including waiting for required documents to be submitted) and 28 business innovators are receiving guidance for innovative experimentation application (Table 1).

Table 1: FinTech innovative experimentation application receipt and guidance situation

| Item/No. of Cases | Application | Guidance |
|-------------------|-------------|----------|
| Total | 8 | 47 |
| Approved | 3 | — |
| Rejected | 1 | — |
| Under Review | 4 | — |
| Under Guidance | — | 28 |
| Under Supplements | — | 19 |

2. Industry and business type (Table 2)

(1) Industry type: Non-financial industry application cases and guidance cases total 26; there have been 10 financial industry application cases and guidance cases.

(2) Types of application/guidance: there have been 22 cases involving banking businesses, the highest for any business, mainly cross-border remittance and online loans; there have been 10 cases involving securities & futures business, mainly wealth management and cryptocurrency; and 4 cases mainly involving online insurance.

Table 2: Types of FinTech innovative experimentation

| Types of businesses | Application cases | | Guidance cases | |
|---------------------------------|------------------------|----------------------------|------------------------|----------------------------|
| | Financial Institutions | Non-Financial Institutions | Financial Institutions | Non-Financial Institutions |
| Banking | 2 | 5 | 2 | 13 |
| Securities & Futures | 0 | 1 | 2 | 7 |
| Insurance | 0 | 0 | 4 | 0 |

International cooperation

Financial Technology Cooperation Agreement: As of the end of 2018, the FSC has signed two financial technology cooperation agreements with foreign authorities of other jurisdictions; the contents of the agreements include a bilateral supervisory mechanism referral mechanism, information sharing and potential collaborative innovation plans.

B. ENACTING THE UNMANNED VEHICLES TECHNOLOGY INNOVATIVE EXPERIMENTATION ACT

Introduction

Unmanned vehicles or self-driving vehicles have quickly become a growing trend across the globe. Unmanned vehicle technologies are expected to improve the safety, mobility, efficiency, and productivity of our transportation system. However, the advanced technologies of unmanned vehicles also bring with concerns regarding the risks of unpredictability. Therefore, to make a seamless transition to an integrated future of unmanned vehicles, we need a regulatory framework that removes unnecessary legal barriers and supports a trial of technology in the public arena while ensuring the safety of our community.

To allow the industry's development while ensuring public safety, a bill was approved on May 17, 2018, to govern innovative experimentation with unmanned vehicles. After three readings in the Legislature, the Unmanned Vehicles Technology Innovative Experimentation Act was passed into law on November 30, 2018. Similar to the regulatory sandbox for financial technology, this Act provides, within a certain range and under certain conditions, temporary exemption of related regulations to innovative experimentation to the technical/service/business operation models of unmanned vehicles in a real-life environment.

Pre-reform situation

Unmanned vehicles, including automated automobiles, aircrafts, ships or any combination of these items, are advanced robotic products that utilize artificial intelligence (AI). Chinese Taipei has long been trying to transform and upgrade our high-tech industry so as to add new momentum to economic growth, especially in the digital economy. Significant initiatives include the following:

1. The Asia Silicon Valley Development Plan, approved on September 8, 2016, is to connect Chinese Taipei with high-tech R&D communities across the globe and seize opportunities in next-generation industries. The plan focuses on promoting innovative R&D for the Internet of Things (IoT) and building a comprehensive ecosystem for innovative startups. The strategies include: establishing an innovative R&D center, connecting with Silicon Valley and other innovation communities, converting IoT academic research into commercial applications, coordinating field

verification among central and local governments and international firms, setting up an IoT testing center for the Asia-Pacific, and promoting demonstration projects for smart application services, as well as attracting and retaining talent.

2. The Digital Nation and Innovative Economic Development Program (also known as “DIGI+”) was initiated at the end of 2016, as the blueprint to lead digital development and transform Chinese Taipei into a smart island. The DIGI+ program focuses on enhancing soft infrastructure to create an environment conducive to digital innovation, promoting the development of the digital economy, creating a service-oriented digital government and promoting open governance, developing a vibrant online society with equal access and building sustainable smart cities and townships.
3. The Ministry of Science and Technology (MOST) formulated a five-year (2017-2021) strategic plan to cultivate AI technology specialists and create an environment for AI scientific research. The policy goal is to focus on areas where Chinese Taipei possesses strengths and potential advantages, such as semiconductors and ICTs, and develop selected fields for the future, which may include the IoT, security solutions, and driverless vehicles. Major strategies include: creating an economy-wide AI cloud service and a high-speed computing platform, nurturing AI research service companies, establishing four AI innovation research centers to train AI talents, creating the AI Robot Makerspace for innovative applications and integration of robotics software and hardware, using industrial pilot programs such as the semiconductor “moonshot” project to remove bottlenecks in AI-powered edge computing. Three “Formosa Grand Challenge” technology competitions will also be organized to encourage social participation.
4. The Ministry of Transportation and Communications (MOTC) launched a plan (2017-2020) to develop smart transportation and smart living. The plan will leverage Chinese Taipei’s advantages in ICTs so as to reduce losses from traffic accidents, offer convenient transportation in remote and rural areas, alleviate congestion on main traffic arteries and make public transportation more accessible. The plan contains six programs, including: an intelligent transportation safety plan, relieving congestion on major traffic arteries, making transportation more convenient for the eastern region and remote areas, integrating and sharing transportation resources, developing “Internet-of-Vehicles (IoV)” technology applications, and conducting fundamental R&D for smart transportation technology.

Chinese Taipei has been focusing on supporting the development of innovative technologies together with the unmanned vehicle and intelligent manufacturing industry. However, because the current regulatory regime mainly focuses on regulating the behavior of human drivers/operators of vehicles, there are many barriers and impediments for unmanned vehicle development in Chinese Taipei. For example, the “Road Traffic Management and Penalty Act” forbids drivers who use handheld mobile phones, computers, or other similar devices while driving on the road; the “Seafarer Act” regulates ships to have a certain number of seafarers on board; and the “Civil Aviation Act” stipulates that drone operation shall be within the visual range of the operator, etc. Most laws, regulations, and standards require human drivers/operators, and therefore have not incorporated regulation on matters relating to automated/unmanned vehicles. Therefore, while the government is promoting various plans and

programs, there is still urgent need for review and revision to the regulatory framework of Chinese Taipei to lower barriers for operating unmanned vehicles.

Policy response

Referring to the rationale of the regulatory sandbox mechanism of the Financial Technology Development and Innovative Experimentation Act, Chinese Taipei has thus passed the “Unmanned Vehicles Technology Innovative Experimentation Act,” to provide, within certain range and under certain conditions, temporary exemption of related regulations to public-area innovative experimentation on unmanned vehicles’ technical/service/operation models for the industry, academia or research institutions. This Act was expected to lower the barriers of existing regulations and provide industries with a friendly environment for unmanned vehicle experimentation. In the Act, the unmanned vehicle is defined as a driverless transport vehicle that may be an automobile, aircraft, ship or any combination of these items, equipped with sensing, positioning, monitoring and decision making and control technologies.

The Act established a procedure for the applicant to apply for innovative experimentation approval to the competent authority, the Ministry of Economic Affairs (MOEA). Those applying to conduct innovative experiments with unmanned vehicles must present such documentation as insurance plans and a mechanism for managing risk, as well as display a testing notice either at the site of experimentation or on the vehicle itself. The period of innovative experimentation shall be limited to 1 year and the applicant may apply for approval of a one-year extension. Applications for extensions to the experimentation period should not exceed a total of four years. The MOEA should call review meetings to review innovative experimentation applications. Members of the meeting should include competent authorities for the related issues, legal experts and scholars. The review meetings will consider, based on the innovation, conditions and qualification, the safety and risk management of the proposed innovative experimentation. If an accident happens during the experiment, the applicant should immediately suspend the experiment and notify the competent authority of the accident and how it was managed.

Innovative experimentation activities are not subject to the applicable laws, regulations, orders or administrative rules that were exempted in the approved decision. Exempted applicable laws include: Road Traffic Management and Penalty Act; Highway Act; Civil Aviation Act; Law of Ships; and Telecommunications Act, etc. Except civil/criminal liabilities, other specific regulations can also be exempted through application. Laws, regulations, orders or administrative rules to be exempted shall be publicly announced by the competent authority based on the decision of the review meeting. The competent authority shall comply with the approval decision and exempt the application of related laws and regulations in the duration of innovative experimentation.

After this Act is officially implemented, the industry, academia or research institutions involved in unmanned vehicle technology in Chinese Taipei and abroad can apply for innovative experimentation. The Act is expected to integrate with other important intelligent technology and transportation

initiatives of Chinese Taipei, so as to forge a flexible and vibrant regulatory system to support further development.

Impact

The Act is expected to make many improvements and achievements in the near future.

Firstly, through the regulatory sandbox mechanism established by this Act, the government can promote industrial development through science and technology supervision while providing a flexible regulatory environment. Also, the Act enables domestic manufacturers of vehicles, semiconductors, sub-systems, sensors, software and land, sea and air hardware equipment, etc. to connect among them, and establish a technology supply chain system for unmanned vehicles.

Secondly, the government can use the supervisory process to construct a safe and experimental environment to promote technological development, thereby attracting domestic/foreign players and promoting international cooperation. Moreover, the introduction of public-area experimentation can also help to raise public awareness of the developments and applications of advanced unmanned vehicle technologies.

Thirdly, through the regulatory sandbox mechanism, the related authorities can start to review their regulations to cover intelligent transportation and unmanned vehicle of the future, and verify whether the current regulatory system is compatible with the technological development through the outcomes of innovative experimentation. The regulatory sandbox mechanism can help to accelerate regulatory reforms and allow a gradual integration of unmanned vehicles into our daily lives.

Challenges and lessons

As unmanned vehicle technologies and applications affect many different aspects of public administration, apart from competent authorities concerning vehicle technology being involved in the review process of innovative experimentation applications, relevant local authorities and service/business supervisors also play an important role in the management process. To exclude certain regulations, coordination and integration among the various ministries and authorities concerned are indispensable.

On the other hand, because of the forward-looking nature of pilot experiments, how to maintain safety and cultivate social acceptance is also a challenge. Therefore, the government will closely observe trends and developments of international legislation and standards, and make sure the regulatory process is transparent and recognized by the general public. The safety and security issues concerning the innovative experiment should also be addressed, including measures relating to insurance and incident liabilities, which are vital to building a robust management mechanism.

Last but not least, after the experiment ends, revising relevant regulations and removing unnecessary barriers so the unmanned vehicle technology application can continue to be utilized in the real world, will also be a challenge that needs to be solved through cooperation and coordination across sectors.

The role of the legislature and competent authorities will be critical in leading the evolution of the socio-economic and legal landscape of unmanned vehicle technology in the foreseeable future.

Through this Act, Chinese Taipei hopes to build a digital economy with the inclusion of a future with smart transportation that can provide the general public with a better and safer world.

UNITED STATES: THE APEC CROSS-BORDER PRIVACY RULES SYSTEM

In the United States, data flows – both domestic and international – underpin nearly all aspects of our economy. For example, services are responsible for 80% of all U.S. exports and data is essential to all cross-border services. Since the boom of the technology sector in Silicon Valley and the rise of Internet-enabled services, the United States has experienced unprecedented growth and prosperity. Data, and especially the free movement of data, has facilitated immense amounts of wealth creation and lifted quality of life and wages across the United States. As data and data flows are necessary aspects of all economic activity in the 21st century, this case study will be pan-sectoral.

In the 1990's, the European Union introduced the first expansive privacy directive which included principles on restricting the flow of data on the basis of protecting privacy. While the United States and EU share many similar legal structures, the United States operates on a sectoral approach to privacy which necessitated a policy response to maintain data flows with the EU. The solution was to create a bridging mechanism based around companies certifying to a common standard of privacy protections and then being given an ability to transfer data collected in the EU across borders. This mechanism – the first of its kind – facilitated data flows from the EU for more than 15 years before being replaced with an updated certification mechanism known as the Privacy Shield.

However, while many economies – and most APEC economies – did not have privacy regulations which restricted data flows in 2010, the United States made it a priority of our host year in 2011 to finalize the long-discussed APEC certification mechanism, the Cross-Border Privacy Rules (CBPR) System. This mechanism was to ensure both privacy protections for consumers in APEC as well as facilitating trade and economic integration for the region by ensuring the free flow of data for participating economies.

The United States was the first economy to participate in the CBPR System and has worked with partners in APEC to strengthen the system, update the APEC Privacy Framework in 2015 – the Framework underpins the CBPR System's requirements – and to establish a complimentary system, the Privacy Recognition for Processors (PRP) System to facilitate SME activity in the digital value chain.

The United States' Federal Trade Commission (FTC) engaged privacy regulators throughout APEC in the Cross-Border Privacy Enforcement Arrangement (CPEA) to ensure the CBPR System would be enforceable across jurisdictions and the Department of Commerce worked with industry partners to bring multiple Accountability Agents into the CBPR System – with two domestic certifiers in the United States – and has seen more than two dozen companies certify compliance to the regional transfer mechanism. In addition, the FTC labeled the CBPR System as a mechanism which is viewed favorably for enforcement proceedings, offering tangible regulatory benefits in the United States to certified companies.

There are currently eight CBPR participating economies – the United States, Canada, Mexico, Japan, Korea, Singapore, Chinese Taipei, and Australia. These eight APEC economies have a greater combined GDP than the entire European Union, thus enabling the CBPR System to be the single largest mechanism bridging data flows for equivalent parties. In addition, the United States, Mexico, and

Canada agreed to enshrine the protections of the CBPR System and recognize it as a data transfer mechanism in the updated trade agreement between the three parties, the USMCA Agreement.

The CBPR System has served as a bridging mechanism between eight economies with an expectation of further growth – the Philippines has already committed to participation. In addition, the CBPR System has been studied by the European Commission, the European Data Protection Board, and the OECD as a model for certifications in those respective regions. There is an ongoing work streak to promote interoperability between the APEC and EU certification models, and a recent report from the EU indicated that aspects of the CBPR System could be adopted in the certification mechanism being created to facilitate compliance with the EU’s General Data Protection Regulation (GDPR). For the United States, five of our top-10 trading partners are participants in the CBPR System, creating immense benefits and regulatory certainty for U.S. businesses engaged in cross-border activity.

In Japan, the CBPR System is explicitly recognized by the Personal Information Protection Commission (PPC) as a valid basis for transfer of data from Japan, one of the few legal mechanisms available to companies to transfer personal information out of Japan. This has enabled bilateral trade between the United States and Japan to continue efficiently in concert with the 2017 updates to Japan’s domestic privacy law. In addition, as more APEC economies join the CBPR System, there will be more tangible benefits for regional trade and consumers, particularly those who would benefit from the innovative technologies provided by existing and future certified companies.

In the United States, the greatest challenge in the growth of the CBPR System has remained cost of the certification. As the certification requires a review from an independent third party certifier – known as an Accountability Agent – there is a significant cost to obtaining the CBPR certification. The United States continues to actively work to address this situation, including through an increase in Accountability Agents and possible domestic reforms to offer enforcement mitigations for certifying entities. The CBPR System and its growth is a living process and the more APEC economies that participate, the greater the benefit will be for economies, businesses, and consumers. The United States remains committed to this System and to the region’s continued integration through its increased adoption, as demonstrated through our upcoming workshop on the CBPR System and Accountability Agents in Honolulu, Hawaii in June 2019.

Ultimately however, the greatest challenge to the CBPR System remains the trend towards divergent privacy regimes or restrictions on cross-border data flows in the name of economic protectionism. APEC has always been a forum to lower trade barriers, and the CBPR System presents the region with perhaps the best opportunity to prevent a balkanized digital economy.

VIET NAM: STRUCTURAL REFORM FOR E-COMMERCE DEVELOPMENT

Introduction

Viet Nam has recognized that e-commerce development could generate spillover impacts to many economic sectors and sectors. For example, the rapid development of e-commerce can help promote transformation of business models and production methods, whilst supporting the development of small and medium-sized enterprises (SMEs) in Viet Nam. On the other hand, e-commerce can help enterprises, including SMEs, to promote and diversify trade activities. With this acknowledgement, Viet Nam has promoted structural reform for e-commerce development since 2005.

Some remarkable structural reforms

In 2005, the National Assembly of Viet Nam passed the three laws that laid the legal foundation for e-commerce, namely the Commercial Law, the Civil Code and the Electronic Transaction Law. Basically, these three laws recognize the legal value of data messages in civil and commercial transactions. The Electronic Transaction Law 2005 sets the basic legal foundation for electronic transactions. This Law also provides detailed regulations of e-signatures, a factor that ensures the reliability of data messages when conducting transactions. The Law on Information Technology in 2006 then regulates the application and development of information technology and security measures in terms of policies and infrastructure for these activities.

In the period of 2011-2015, Viet Nam's legal framework related to e-commerce continues to be improved towards more clarity in obligations of enterprises, while enhancing the management role of state agencies. Various legal documents related to e-commerce have been issued, including important documents such as Bidding Law No. 43/2013/QH13, Decree No. 83/2013/ND-CP in 2013, Decree No. 52/2013/ND-CP in 2013, Decree No. 72/2013/ND-CP in 2013, etc.

Managing Internet services and electronic information on the Internet is one of the most concerned issues related to e-commerce. Decree No. 97/2008/ND-CP on management, provision and use of internet and electronic information services on the Internet was issued in 2008, which marked a significant step forward in creating a more open environment for e-commerce applications in Viet Nam. A major improvement of Decree 97 is the reduction of licensing regulations. In addition, this Decree narrows the scope of "internet service" to a form of telecommunications service, to include only internet access services, internet connection services and internet application services, under telecommunications and under the direct management of the Ministry of Information and Communication. This is considered a new regulatory approach, viewing the internet as a complementary and modern channel for socio-economic activities, rather than a separate area that requires special management. Consequently, the e-commerce environment is more open, along with the

gradual elimination of licensing barriers; the IT and communication infrastructure in general is increasingly competitive, creating a strong driving force for internet application services.

The Telecommunications Law in 2009 further improve the regulatory approach over domestic domain names. Previously, the domain name ".vn" was considered a part of Viet Nam's information resources and managed under a registration mechanism - the allocation scheme was quite tight. The provisions of the Telecommunications Law are closer to the general trend of the world to allocate domain names according to the market mechanism, allowing the transfer of internet domain names (except domain names for state agencies), and simultaneously allows the allocation of high-value internet resources through auction.

The participation in some new FTAs also requires Viet Nam to make commitments on e-commerce. The most prominent among them is the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The most direct is the Electronic Commerce chapter of CPTPP, with various commitments on e-commerce policies, consumer protection, and respect of freedom for entities in e-commerce. However, regarding data flows, commitments are not only in the Electronic Commerce chapter, but also scattered in the Financial Services, Intellectual Property, and Telecommunications chapters. Besides, in November 2018, Economic Ministers of ASEAN (including Viet Nam) signed the Agreement on E-Commerce to facilitate cross-border e-commerce transactions in the ASEAN region.

Some notable progress

Viet Nam is considered to have a fast growing e-commerce market, especially in the last 5 years. Statistics in recent years show that the B2C e-commerce market size has a stable growth rate, the trend of increasing gradually over 20% per year, from USD 2.2 billion in 2013 to USD 6.2 billion USD in 2017.

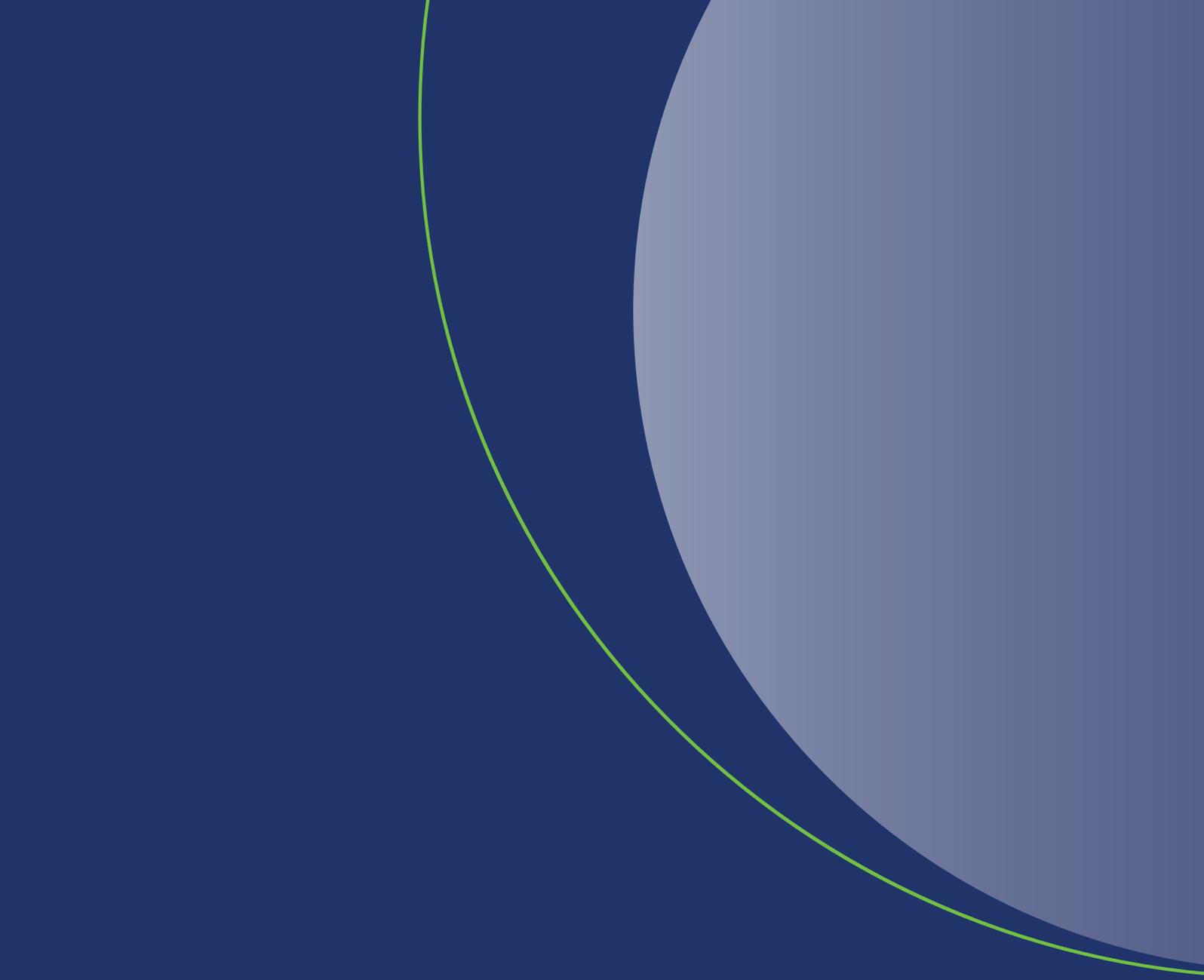
Viet Nam's e-commerce market also attracted the presence of the world famous "hypermarkets" such as Alibaba or Amazon. Lazada e-commerce site (already in Viet Nam for 6 years) also rated Viet Nam as the fastest growing market in 6 markets that Lazada has commercial presence, with growth rates of up to 100%. The presence of large foreign e-commerce enterprises also creates more competitive pressures for e-commerce enterprises within Viet Nam. In turn, the latter must improve their capacity to strengthen competition with foreign counterparts.

E-commerce transactions not only take place on websites or traditional electronic devices (such as desktops, laptops), but also thrive on applications through other electronic devices such as smartphones, smart watches, tablets. The survey showed that the percentage of people accessing the Internet via mobile phones increased rapidly from 50% in 2013 to 89% in 2017. The rate of Internet users participating in online shopping also increased from 57% in 2013 to 67%. In 2017, three of the most popular consumer goods for online transactions were clothing, footwear and cosmetics; technology and electronic equipment; and household appliances (with respective shares of 59%, 47%, and 47% in 2013 - 2017).

Apart from other factors (such as increasing use of smartphones, etc.), improved telecommunication services – which benefited from structural reform in this sector – also contributed to the development of e-commerce. According to the Vietnam Internet Network Information Center (VNNIC), by the end of 2017, the number of internet users in Viet Nam reached 53.86 million, accounting for about 66.3% of the population, almost twice as large as in 2010. Viet Nam's download speed reached 6.72 Mbps, an increase of 23% compared to 5.46 Mbps in 2017 and the same as the average growth rate of the world. In the official list of the Ministry of Information and Communication, by the end of 2017, Viet Nam had 65 licensed internet service providers, of which 51 were providing internet services in the market. However, Viet Nam still needs to improve Internet-related infrastructure further, as it only ranks the middle group of APEC in terms of download speed and cost of Internet access (PECC 2018).

Some major policy directions

- Develop and improve institutions, mechanisms and policies for the development and application of digital economy;
- Establish and operate essential infrastructure for e-commerce (including telecommunication and logistics); build the architectural framework and technical platform for popular electronic business models;
- Building capacity for enterprises, especially SMEs, in the digital transformation process;
- Build and enhance the connectivity of economy-wide and regional supply chains, aiming for effective participation in global value chains;
- Develop human resources for digital economy.



Prepared or printed by
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace, Singapore 119616
Telephone:(65) 6891 9600 Facsimile: (65) 6891 9690
Email: info@apec.org Website: www.apec.org