

Chapter 1

THE IMPACTS AND BENEFITS OF STRUCTURAL REFORMS IN THE TRANSPORT, ENERGY AND TELECOMMUNICATIONS SECTORS IN APEC ECONOMIES

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1.1 INTRODUCTION

APEC Leaders committed to a program of work on structural reform in August 2004 when they endorsed a significant reform program in this area: the Leaders' Agenda to Implement Structural Reform (LAISR).

Structural reform in APEC, as defined by Leaders, relates to 'institutional frameworks, regulations and government policy (designed) so that barriers to market-based incentives, competition, regional economic integration and improved economic performance are minimized'. The aim is to avoid 'excessive regulation, poor economic legal infrastructure and governance arrangements (in both public and private sectors), unclear property rights and the lack of effective laws to foster competition'.

The purpose of this study is to demonstrate the benefits of structural reform and publicise a range of reforms in APEC economies. Strategies for success and bottlenecks to further progress are identified. It also develops a complementary program of work in APEC to support further reform.

Structural reform matters across the whole economy, but the focus of this study is the transport, energy and telecommunications sectors. These are valuable choices, given the significant economy-wide impacts of reform on these sectors. The effects of the reforms in these sectors are identified and the extent of their effects estimated. This includes the benefits for both consumers and small and medium enterprises.

The pace and success of reforms is expected to vary between economies and even between the three sectors within economies. It is useful to understand the reasons for the differences in degrees of success and degrees of impact on the key performance indicators. This understanding then helps define the ways in which APEC members may support each other in implementing and managing the reforms and improving their application in the three sectors.

Officials in earlier work on these issues have stressed the political economy challenges to be overcome. There are losers from policy change who oppose and seek to prevent its implementation. Often they constitute advantaged parties who have a monopoly or an excessive market power position, which can detract from overall economic welfare. Therefore, assessments of the overall benefits and transparency of effects are important contributions to sustaining reform.

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Against this background, this study reports a range of structural reforms in APEC and the impacts in terms of price, choice and quality for a range of stakeholders. The study is based on a series of steps – review, case studies, estimation and modelling.

The first step was to review existing material on the foundations for structural reform, to identify the potential impacts and benefits of APEC's structural reform agenda, to characterise different policy approaches and to discuss different measures of the contribution of structural reform to economic growth.

The next step was the selection of sectors in APEC member economies for further study, based on evidence of actual reform in sectors of interest, along with geographical and developmental diversity. The work on the case studies (Box 1.1) was guided by questionnaires on structural reforms that have been developed from existing templates available in work carried out by the OECD (OECD 2005, Conway, Janod & Nicoletti 2005) and the Australian Productivity Commission (Findlay & Warren 2000, Doove et al. 2001). The questionnaires were designed to cover the scope of the structural reform agenda as specified in the Leaders' Agenda, in particular regulation, competition policy and legal infrastructure.

Box 1.1: Case studies.

- Telecommunications in Viet Nam
- Telecommunications in Chinese Taipei
- Telecommunications in PNG
- Gas in Thailand
- Gas in China
- Electricity in Russia
- Electricity in Korea
- Rail transport in Chile
- Rail transport in New Zealand
- Maritime transport in Australia
- Maritime transport in the USA
- Air transport in Korea and Northeast Asia
- Road transport in Thailand
- Logistics in Indonesia

Initial impacts of the structural reforms on prices and productivity were also estimated. The use of econometric models for this purpose can correct for the influence of other changes that might have taken place at the same time as the structural reforms, and hence reduce the chance of incorrect attribution of impacts. Econometric models are already available for the air transport, maritime, electricity and telecommunications sectors (including Findlay & Warren 2000, Doove et al. 2001). New work was done here on air passenger traffic and freight, productivity in rail systems, cif/fob margins in international sea and air transport, penetration rates in telecommunications and prices and performance in electricity and gas.

Use of a multi-country computable general equilibrium model to estimate the national and regional effects of sectoral productivity and price changes arising from structural reform initiatives is also an important step. This model was used to provide projected impacts on macroeconomic aggregates such as GDP and national income, as well as the projected patterns of sectoral adjustment. Importantly, this sectoral examination provides empirical evidence of sectors likely to expand, sectors of increased activity, business opportunities and employment as a result of structural reform.

The case for structural reform is outlined in section 1.2. Following that is a discussion of key issues that confront policy makers working on the infrastructure sectors followed by a review of the main results for the sectors targeted in this report. General messages for managing structural reform programs are outlined and the results of the modelling of the cross-sectoral effects are presented. The report concludes with a discussion of some areas for stronger cooperation among APEC members.

1.2 THE STRUCTURAL REFORM FRAMEWORK²

Effective structural reform requires two things.³ The first is a commitment to the entrenchment of well functioning markets and to letting market competition determine economic outcomes in all circumstances where competition is appropriate. The second is good regulations (rules) to guide economic outcomes when competition is not effective.

The choice of the rules will not be ‘black and white’ and will not involve the immediate adoption of something some may define as ‘global best practice’: it will depend on the circumstances of the economy involved. There will be a continuum of options and the important target will relate to the trajectory of the evolution of policy as development proceeds. The options will depend not only on domestic considerations but also on emerging ideas in the rest of the world, and in the context of events in the rest of the world.

The forces of competition can exert powerful pressure on producers to find the least costly way of serving customer needs and to innovate, in order to better serve those needs. Individual producers can benefit from any cost savings they make in the form of higher profit, and consumers and downstream using industries can also benefit as competition from other producers squeezes those profits and drives prices down towards costs. This dynamic process leads to prices that reflect production costs, and to costs that are as low as possible. Both types of efficiency ensure the highest possible levels of income. Not only do falling costs and prices matter but so too do choice, variety and quality. Many consumers always look for new options and better delivery.

Competition helps to maximise income levels, and in an administratively efficient way. Similar patterns of production and consumption could be achieved through a system of centralised decision-making. But the administrative requirements for such central planning are burdensome, and the information requirements for doing it successfully are prohibitive. By contrast, the market place achieves these outcomes as a result of the direct interaction between many producers and consumers. No bureaucrat needs to decide which individuals should run which companies producing which products at what price. For those economies where regulatory capacities are scarce, there can be significant benefits from letting the market place decide.

But there are administrative or legislative requirements for market competition to succeed. Basic laws are needed to set the boundaries of that competition (e.g., corporation law is needed to allow for limited liability companies), thus limiting the downside risks to shareholders from poor corporate performance. Accounting standards, disclosure requirements and good systems of corporate governance are all needed so that equity holders and creditors can assess the economic performance of companies in a transparent way.

² Readers not interested in this overview of the reasoning that underlies structural reform might best go to section 1.3: Structural reform of infrastructure industries.

³ This discussion and that in the next section are based on Dee 2009.

Bankruptcy laws are needed so as to limit the downside risks to outside creditors from poor corporate performance. But once these legal foundations are set, no case-by-case decisions are needed about which producers should survive and which should go out of business.

Another benefit of competition and decentralised decision making is that it can make an economy more flexible and robust to external shocks. Producers used to out-guessing rivals on a daily basis will be better placed to react to adverse global market developments than producers who have no rivals, or are used to being told what to do by bureaucrats. Furthermore, producers with rivals will have a financial incentive to be better informed about likely global market developments than those rivals. In contrast, bureaucrats have no legal profit motive to collect such information. Finally, producers with rivals are likely to be the best placed to respond to adverse shocks, because competition is likely to have weeded out the poorer performers. Small economies in particular need to be relatively open to global markets, because they do not have the variety of resources to produce everything at home. Flexibility is the key to protecting themselves from the variability of global markets. And competition can enhance flexibility.

Potential rivals are as important as actual ones. Even a monopoly supplier will be unable to inflate costs or profits on a sustained basis if this attracts the entry of a competitor who can produce at lower cost or with a smaller profit margin. So long as it is possible for a competitor to enter at any time with few irreversible costs, this will discipline an incumbent's behaviour. So the number of actual competitors may be less important than the absence of barriers to entry and exit. Contestability, or the potential to compete, is the key to effective competition.

In summary, effective structural reform means protecting competition, not protecting particular competitors. The difference is crucial. The benefits of competition will only emerge if firms and workers have the incentive to enter into or exit out of specific activities. Entry, exit or survival of any particular player should not be preserved by administrative means. There is a growing body of empirical literature that supports the idea that the entry and exit of firms is a key determinant of productivity in developing economies (Roberts & Tybout 1997).

Foreign competition can play an important part. It can come from allowing cross-border trade to occur in an unimpeded fashion or it can come from allowing foreign direct investment, so that foreign suppliers set up a permanent local presence. The latter sort of competition can bring additional benefits, in the form of new capital, technologies and business processes. But any attempt to 'manage' the process by allowing only a specific number of foreign players, rather than allowing free entry and exit of foreign players, is an instance of protecting particular competitors rather than protecting competition. Further, creating managed competition risks handing over existing monopoly profits from domestic to a few foreign players, with little benefit to domestic consumers and users in the form of lower prices. It also creates a net loss to the economy as a whole.

Competition from domestic new entrants is arguably even more important than foreign competition. A recent study examined the empirical evidence, from among a group of East Asian economies, of the relative importance of discriminatory barriers to foreign competition and non-discriminatory barriers to any new competition. The results were striking. The gains to the region from unilaterally reforming the non-discriminatory restrictions on competition in seven selected services sectors were almost six times those from forming an East Asian preferential trade area, and three times those from a successful Doha Round (Dee 2007). The

Asia-Pacific region need not fear that unleashing the forces of competition would see their economies overrun by foreign multinationals. The critical barriers to competition are often those protecting incumbents against domestic new entrants.

Promoting competition is a much broader agenda than putting in place narrowly defined competition law. Anti-trust legislation is about ensuring that abuses of monopoly power by private players do not occur. Competition policy, broadly defined, is about removing the barriers to entry and exit so that positions of monopoly power do not persist.

Structural reform is therefore about competition policy in its broadest possible sense. The policy agenda includes the six items in Box 1.2.

Box 1.2: The six item structural reform agenda.

1. Removing barriers to the entry of domestic new entrants, and allowing existing firms to exit the marketplace in an orderly fashion if the market dictates that they cannot survive.
2. Removing barriers to foreign competition, be it from cross-border trade or from foreign direct investment, and not just for particular trading partners.
3. Ensuring that the minimum regulation exists to guide economic outcomes in those circumstances where markets alone may not deliver the most efficient outcomes.
4. Ensuring that the right institutions are in place to review and remove the unnecessary impediments to the functioning of markets.
5. Ensuring that the right institutions are in place to design, implement, enforce and review the functioning of more appropriate regulation.
6. Developing transparency of institutional processes, including public sector management, so as to better serve the public good.

1.3 STRUCTURAL REFORM OF INFRASTRUCTURE INDUSTRIES

A well-functioning and open infrastructure sector is an important determinant of economic growth and improving living standards. Infrastructure is a significant and qualitatively important determinant of transport costs and bilateral trade flows (Limao & Venables 2001). Improving destination infrastructure by factor of 16% reduces transport costs by an amount equivalent to a reduction of 6500 sea km or 1000km of overland travel. Openness in two key infrastructure services – telecommunications and finance – influences long run growth performance (Mattoo, Rathindran & Subramanian 2001). Economies with fully open telecommunications and financial services sectors grow up to 1.5 percentage points faster than other economies. Infrastructure affects three child-health outcomes related to the Millennium Development Goals – the infant mortality rate, the child mortality rate and the prevalence of malnutrition (Fay et al. 2003). Apart from the traditional determinants (income, assets, education and direct health interventions), better access to basic infrastructure services has an important role in improving health outcomes. But infrastructure industries include areas where competition may not lead to the most efficient economic outcomes.

Some technologies in infrastructure industries have natural monopoly characteristics. This means that a single firm can produce all the output(s) that the market requires more cheaply than could two or more firms – so-called economies of scale. This poses the following policy dilemma: introducing competition by allowing more than one firm may lead to productive inefficiency, so that total costs per unit of service are not at their lowest, but in the absence of competition (actual or threatened), the incumbent firm has an incentive to exploit its monopoly position by restricting output and inflating prices above costs.

Some infrastructure activities involve unpriced spillovers or externalities, so that market price signals do not convey the required information about the value of the activity to the economy

as a whole. For example, the pollution generated by transport or energy activities can create negative externalities, because the pollution is disposed of using a medium (the air) the use of which is unpriced. Also, traffic congestion can create negative externalities, because drivers fail to take into account their impact on other drivers. Where spillovers are unpriced, there may be a need for intervention; for example, to establish a form of pricing mechanism or incentive to encourage efficient behaviour. But this is not a case where efficiency is promoted by limiting competition.

Even where market competition can deliver efficient outcomes, governments may have additional policy objectives besides economic efficiency. They often have equity objectives – either a concern for the overall distribution of income, or of particular services (such as telephone, Internet) or a concern for certain vulnerable groups. They may also have concerns about safety, diversity or any number of other objectives. They may also have concerns about adjustment costs associated with policy reform.

The overriding principle of structural reform is to match the number of policy instruments to the number of economic objectives. Only then can more than one objective be achieved simultaneously. Partly as a corollary, successful structural reform requires that if there is a policy problem (either a current market failure or suboptimal regulation), the first-best policy response is to fix the problem directly, rather than redirecting a less suitable policy instrument towards that end.

However, successful structural reform also requires policy coherence to ensure that:

- different elements or levels of government are not pursuing mutually inconsistent objectives;
- elements or levels of government each have control of, or access to, the policy instruments that best deal with the economic problems under their responsibility;
- policy instruments designed to meet one problem do not unintentionally cut across the achievement of other objectives; and
- each policy area has the appropriate enforcement strategies.

These principles and requirements are specific to the infrastructure sector and to the services which that sector provides. They are also consistent with the principles of good public sector management, including:

- rule of law;
- transparency;
- accountability – oversight and control;
- performance management;
- public sector ethics and probity – the culture and values; and
- responsiveness to stakeholders.

1.4 SECTORAL PROGRESS AND IMPACTS

This section includes an outline of the progress of certain structural reforms across APEC economies, some assessment of business trends in APEC and a discussion of the challenges involved. Quantitative analysis of the impacts of these reforms undertaken for this study is reviewed and some aspects of the reforms are illustrated by material from the case studies.

1.4.1 Transport

1.4.1.1 Air transport

Air services have typically been heavily regulated. At the international level, a system of bilateral air services arrangements between the authorities of economies has regulated various aspects of aviation production and trade for more than 50 years. However, the political bilateral system has also created various limits on competition and trade in aviation services. The progress of APEC reform is summarised in Table 1.1. The items are rated from open to restrictive and a darker colour indicates a more restrictive regime (details are in Chapter 4).

There are some features which are relatively open, including the use of Open Skies agreements and the presence of low cost carriers (LCCs). Some items are either 'on' or 'off' (e.g., the use of liberal cargo arrangements) and within others there is more variation (e.g., privatisation). Interestingly, there is more likely to be less restriction on foreign equity in domestic carriers (the ASA rules inhibit foreign investment in international airlines).

Table 1.1: Structural reform in air transport.

APEC member	Privatisation of the national airline	Foreign equity allowed in domestic airlines	Presence of low cost airline(s)	Ease of entry of new operators	Use of multiple designation of international carriers	Extent of use of Open Skies agreements	Use of 7 th freedom cargo rights
Australia							
Brunei							
Canada							
Chile							
China							
Hong Kong, China							
Indonesia							
Japan							
Korea							
Malaysia							
Mexico							
New Zealand							
Peru							
Philippines							
Russia							
Singapore							
Chinese Taipei							
Thailand							
United States							
Viet Nam							

Source: Chapter 4

Many economies in this sample are relatively liberal in their aviation sector, measured by our indicators. However, considerable variation remains. Structural reform has also extended to domestic factors, including as noted in the figure the extent of competition in domestic markets. In some economies, this is extended to the operation of airports (not included in the indicators in Table 1.1), so that restrictions on access to flight and gate slots at airports do not act as barriers to competition in air transport services.

Even though substantial regulation exists, many air transport markets show high levels of competitive behaviour, such as price and service competition. The regulatory system in that situation is not likely to be imposing a wedge that lifts prices for consumers.

There is competition, for example, not only between the bilaterally designated operators but also between routes, and the latter becomes more intense as traffic density rises. Also some regions like the European Union (EU) and, more recently, the combination of the USA and the EU are moving to integrate markets. Their airlines face a wider set of competitors but also benefit from the wider access and the network flexibilities those integrated markets provide. The efficiencies these carriers gain may spill over as greater competitiveness in other markets in which they operate, or may be expected to enter. This leads to further pressure for reform, as is happening in Northeast Asia (Box 1.3).

Box 1.3: Air transport market integration in Northeast Asia.

Korea has signed a series of Open Skies agreements. Of particular interest is an agreement with China that opened routes to Shandong. Traffic grew much faster on those routes compared to other routes between Korea and China (by a factor of 2) and fares fell by an average of more than 8%. This experience and the potential for growth in traffic between Korea, China and Japan, for both passengers and freight, have led to further discussion about a common approach to Open Skies. The idea is to build an integrated Northeast Asian market for air transport. There is further urgency for this effort as carriers there expect a ‘competition spillover’ from the efficiency-enhancing effects of the open arrangements between the USA and the EU.

Source: Chapter 9

Some airlines themselves are now arguing for regulatory reform. Their international representative body (the International Air Transport Association) uses the term ‘pillars of stagnation’ when talking about the regulatory system (along with its ownership rules, which are used to establish eligibility for access to markets, and the concern of competition authorities about the anti-competitive effects of mergers) (Findlay & Round 2006).

A further source of competition for established carriers is the new business model – that of the LCCs. Box 1.4 illustrates its impact in Korea.

Box 1.4: Low cost carriers in Korea.

The low cost carriers (LCCs) began to enter domestic routes in Korea in 2006 in response to the growth of domestic tourism in 2005 and a change in regulation. The full service carriers faced competition from high-speed trains which began in 2004 and the use of the LCC model was a competitive response. Another driver was the interest of regional governments willing to invest and to develop their local airports. Six were set up and four remain in operation (and there are recent reports that one may resume this year). Most charge fares of up to 30% lower than the full service operator or the fare prior to their entry. Two of the airlines are subsidiaries of the established carriers and two are not. The LCC share is now 25% of the domestic market, with Korean Air having 48% and Asiana Airlines 27%. The LCC share is close to 30% on some routes, such as Gimpo-Jeju. Clearly the established full service carriers see the LCCs as a threat. Recently the Korean competition authority, the Korea Fair Trade Commission (KFCT) ruled as anti-competitive some practices of the full service carriers, including offering loyalty rebates to travel agents. The KFCT also warned against Full Service Carriers (FSCs) asking agents to restrain sales of tickets on LCCs by threatening access to fewer seats on FSCs at peak times or on certain routes. The Korean experience of the impact of LCCs on domestic routes is also evident in other APEC economies.

Source: Chapter 9

Econometric analysis of the impact of reform on passenger traffic and transport margins finds that further reform in APEC would have a significant effect. Reductions in the degrees of restrictiveness led to significant increases in passenger traffic and cargo growth (Chapter 4) and to a reduction in air freight rates (Chapter 3): a conversion to full openness according to the set of indicators in Table 1.1 would lead to average reduction in those rates for APEC economies by 15%.

Other studies, reviewed in Chapter 2, have also quantified the cost of some of the more restrictive provisions of these agreements, including provisions that designate only one airline from each economy on a particular route, and provisions that restrict capacity and airfare competition: an increase in the degree of liberalisation from that in the bottom quarter of economies (as measured by indicators of reform) to the top quarter would increase traffic volumes between economies linked by direct air services by about 30%. Other work has found that an improvement in airport infrastructure by the same extent reduces air transport costs by 15% while a similar improvement in the quality of regulation reduces air transport costs by 14%. Open Skies agreements further reduce air transport costs by 8%.

1.4.1.2 Rail transport

Rail services consist of the construction, ownership and maintenance of railway track, the purchase, ownership and maintenance of railway rolling stock (carriages etc.), and the operation of railway rolling stock along railway lines to provide passenger and freight transportation services. As with many other forms of physical infrastructure, the track displays the characteristics of a natural monopoly up to the point at which it becomes congested. So, prior to the point of congestion, the aim of economic regulation should be to ensure its capacity is utilised effectively – a problem of static efficiency. Beyond the point of congestion, the aim of economic regulation should be to ensure an efficient level of investment in new track infrastructure – a problem of dynamic efficiency.

One way to ensure the efficient use of rail track infrastructure is to encourage competition in the provision of ‘above-the-rail’ rail passenger and freight services. However, historically, rail services in many economies have been provided by a single, integrated, often government-owned monopoly. Thus structural reform of rail services has tended to proceed by encouraging private sector participation in the provision of rail services, while making use of the existing track infrastructure, through contractual arrangements. Sometimes reform has also involved the privatisation of the incumbent service provider and/or the structural separation of the ownership and maintenance of track infrastructure from the provision of rail transport services. The rationale for structural separation is to reduce conflicts of interest – otherwise the owner of the track infrastructure would have an incentive to use its control of that infrastructure to thwart competitors.

APEC members differ significantly in the importance of freight and passenger volumes on their rail networks. Separation between track ownership and operations is increasingly common, with the specification of associated access regimes. These are summarised in Table 1.2.

The regimes in different economies are described in terms of whether they separate track and service operators (separation in the vertical dimension) and their treatment, whether there is tendering in passenger markets and whether freight operators can enter the tracks of other operators.

Rail in New Zealand, one of the case studies, provides an interesting example. The railways were run by a government department until 1982 when they were converted to a corporate management system, although retained in government ownership, and required to make a profit. In 1990 work began to prepare the ‘core rail operations’ for privatisation, which then occurred in 1993. The business changed to another private owner in 2004, with the understanding it would sell the track to the government for NZD1, which would then reinvest in the infrastructure but with the private firm maintaining operations. However, both track and operations returned to government ownership in 2008. Regulation therefore moved in a

Table 1.2: Main features of the APEC members' rail networks.

APEC member	Vertical dimension			Horizontal dimension	
	Integrated monopoly	Competitive access	Vertical unbundling	Franchising system	Entry new operators
Australia			✓	✓	✓
Canada		✓			✓
Chile			✓	✓	✓
China	✓				
Indonesia			✓		
Japan		✓			✓
Korea			✓		
Malaysia	✓				
Mexico			✓	✓	✓
Peru			✓	✓	✓
Philippines	✓				
Russia			✓ ¹	✓ ²	✓ ¹
Chinese Taipei	✓				
Thailand	✓				
USA		✓			✓
Viet Nam	✓				

¹ Implemented in 2003; ² Implemented in 2006

Source: Chapter 5

full cycle. Control of fares, without subsidies and restrictions on exit, is not consistent with a sustainable role for private operators, especially in a situation where the features of the transport to be provided may not suit the use of rail. However privatisation was associated with some improvements in performance (Box 1.5) and the introduction of tendering for rail services in Auckland was associated with higher patronage and improved service quality (Box 1.6).

Box 1.5: Effects of rail privatisation in New Zealand.

The process of privatisation in the NZ rail system did have a significant effect on performance. Marketing research led to an improved understanding of customer needs. Volumes for the bulk goods segment increased by 5.5% p.a. over 1994–97 in response to price falls of 7% p.a. In the export goods segment volumes grew at 12% p.a. in response to price falls of 4.4% p.a. Significant improvements were found in customer satisfaction surveys conducted in 2000 and 2003, with positive responses to the question 'Would you recommend (the operator) to another potential customer?' improving from just over 30% to nearly 80%. The operator improved productivity and returned the first operating profits for rail in many years. Costs were reduced, including by cutting uneconomic services. Freight volumes grew, peaking in 2000 and rail's share of the land freight market peaked at 29% in 1998. However, over this period profits were not covering the cost of capital and debt was increasing, while track maintenance was falling. The constraints were the combination of the underlying economics of rail and the constraints on operations imposed by the government. This led eventually to the return of the track to the government.

Source: Chapter 10

Box 1.6: City rail in Auckland, New Zealand.

In 2002 tenders were called for the operation of the Auckland urban rail system. The government retained ownership of the track and provided subsidies for fares (which were NZD7-8 per trip). However, the winning tenderer also improved service quality with more services, higher frequencies, greater punctuality and better trains. Services increased from 635 per week in 2005 to 1475 in 2009. In March 2005 only 77% of trains arrived on time and this figure was over 85% for most of 2009. Over 5 years 21 of the 41 stations on the network were upgraded. Patronage doubled between 2005 and 2010. The fare subsidies (in part offsetting, it was argued, the lack of congestion pricing for roads) were able to be combined with better performance. Now being planned is how to electrify the track. This is expected to increase patronage and lower the subsidy per passenger.

Source: Chapter 10

The decision to vertically separate network businesses is not straightforward, since it can lead to the loss of the advantages of economies of joint management. Integrated rail operators make better choices about investments in tracks compared to those in operations. They are more aware of the trade-offs involved. The advantage of separation is that it changes the incentives of the track operator to favour volumes of traffic. There is no incentive to hold back competitors. If separation is not undertaken, then some mechanism to avoid the bad effects of that decision on competition has to be identified, contracts for access to track by competitors for example.

Work reviewed in Chapter 2 on the European rail system found that combining vertical separation and horizontal competition provides significant benefit and that efficiency and productivity levels in economies that only introduced vertical separation are similar to those in economies that did nothing. Free entry of new operators is critical for better performance. In this respect, the experience of reform in southern Chile is reported in Box 1.7.

Box 1.7: Rail freight in southern Chile.

The government-owned rail corporation in Chile sold its southern operations to the private sector. Later a second private operator entered the market, prompted by a change in sanitary and environmental regulations that prohibited truck transport of sulphuric acid through urban areas, thus leading a major mining operation to transfer the service to the private railway. These carriers had non-exclusive 20-year contracts or 'concessions' that allow free entry of carriers to facilities and require the payment of fixed and variable tariffs for the use of the infrastructure. The track remained in the hands of the state organisation, which was required to provide maintenance and facilities. Tariffs after concessioning were around 40% lower than those prevailing before privatisation, indicating a substantial benefit to consumers. Both private carriers operated by exploiting market niches rather than providing a full range of services to the general public. They concentrated their business on the transport of bulk commodities in large volumes (paper pulp, iron ore etc.) and not in general freight, where competition from trucks was intense. Although traffic volumes did not increase in the initial years after privatisation, revenue and traffic per worker increased markedly. The slow beginning was the result of numerous issues relating to labour and line rehabilitation. After a decade of operations traffic and revenue per worker expanded markedly. Determining the fixed and variable fees for track use has been controversial. The track operator has noted that trucks are not charged the marginal social cost of their use of roads, labelling this unfair competition.

Source: Chapter 11

The work relating to the European rail system has been extended in this study to a limited group of APEC members and it was found that, on average, the productivity, efficiency and technical changes are slightly lower for APEC rail systems (Chapter 5). In particular, the average rate of productivity change for APEC rail systems rose by 3.5% per year, while for non-APEC economies productivity rose by 4.8%. Russia; Viet Nam; and China show the highest rates, while Chinese Taipei and Korea have the lowest. However, China; Japan; and the USA are efficient during the whole period. In any case, we observe again that, on average and excepting Viet Nam, APEC rail systems did not improve the efficiency scores while non-APEC economies improved the efficiency scores by 1.4% per year. Finally, APEC economies improved, on average, their rate of technical change by 3.2%, while non-APEC economies improved by 3.7%.

1.4.1.3 Road transport

Studies of the economic characteristics of road transport suggest that there is little need for intervention by government to ensure efficient allocation of resources, except to ensure that there is competition and that safety, environmental and other externality considerations are taken fully into account. In particular, there is little evidence of economies of scale in either trucking or bus operations.

Nevertheless, the damage that vehicles do to roads rises dramatically with increasing axle weight.⁴ A key rationale for regulating road freight and passenger services is therefore to limit road damage, to provide a mechanism for recovering the maintenance costs of the damage that is done and sometimes (as in the case of toll roads) to recover construction costs. Another rationale is to deal with road congestion.

In some economies, licensing requirements, price controls and other regulatory restrictions can extend beyond those required for legitimate purposes, and can be used to restrict entry into and limit competition within the industry, to the benefit of existing road service providers. Sometimes such entry barriers and price restrictions are imposed and/or enforced by professional bodies or representatives of trade and commercial interests, rather than by governments. In these cases, structural reform can follow naturally from systematic reviews of anti-competitive regulation.

In other economies, overly restrictive road transport regulations may arise from the desire to give protection to railways and/or bus operators. It may be possible to phase out such road transport regulations following structural reforms in rail that improve the productivity of the rail transport sector.

Another source of inefficiency in some economies is the over-exploitation of road transport as a source of revenue (through licence fees, charges for trip permits etc.) for regional and local levels of government, in the absence of more efficient revenue sources, as well as road transport being a source of informal payments to police and other agents. Thus reform of road regulation may be contingent on better systems of public sector management as well as broader anti-corruption strategies.⁵

A further issue is price control, with caps on fares designed to achieve higher levels of access for poorer households or those living further from city centres. However, these controls can lead to market responses. The case of passenger vans in Bangkok is reviewed in Box 1.8.

Box 1.8: Passenger vans in Bangkok.

The bus service in Thailand had a feature that is familiar in regimes with fare control – demand exceeded supply. This created the opportunity for new entrants at unregulated prices. These new services, or ‘vans’, were strictly illegal at first in the mid 1980s, but later were licensed. The vans charged higher prices but offered shorter faster routes with guaranteed seats, although they were also smaller vehicles than buses, and required passengers to go to terminals. The vans competed with buses and were eventually brought within a licensing system with a cap on the number of licenses available (although many continue to operate outside that system). However, the initial stage of their development could be regarded as an experiment with deregulation. The dynamic force that was created which led eventually to re-regulation is not surprising. When the vans were licensed, the fees charged for access to the terminals and for their use were also increased by the investors in those facilities, attempting to capture some of the profits that re-regulation made possible.
Source: Chapter 12

There are in addition continuing concerns about the lack of pricing for congestion in Thailand and also in the freight sector for the costs of road usage by heavy trucks. The entry of the vans described in Box 1.8 added to road congestion in Bangkok, and while the vans are not supposed to stop at bus stops or elsewhere to pick up, they do so if the police fail to enforce

⁴ Damage being related to axle loads and not total loads means that vehicle design and load limits are critical components to designing and maintaining roads.

⁵ A good assessment of some of the more common problems with road transport regulation is available at www.worldbank.org/transport/roads/rdt_docs/annex2.pdf.

that requirement. This further slows down the traffic flow. While congestion pricing has an advantage of allocating available space in the road system more efficiently, there is a problem if the authority collecting the congestion pricing revenue is also the constructor of the road system. The incentives in that case are to under-invest in the road capacity and collect revenue from the congestion charges.

APEC economies are similar in the application of road transport licensing systems, most of which are managed by governments and come with safety requirements. Lower levels of government also have regulations which might also affect operations (e.g., requirements for trip permits and rules on vehicle size), and which are often more burdensome than national government policy.

Opportunities for cross border trade and the rules on foreign investment in local trucking companies are important issues. Policy may also differ between markets; for example, where a different policy is adopted on international routes compared to domestic routes. The experience of reform on routes between Thailand and Laos PDR is noted in Box 1.9.

Box 1.9: Road freight to Laos PDR.

Thailand has land connections with many neighbours but generally cross-border freight transport is not open to competition. An exception is transport to Laos PDR. Following the removal of quotas on cross-border licenses in 2004 freight rates fell by 20–30%. More important now are infrastructure constraints and other regulatory constraints, such as arrangements for customs clearance. There is a risk that the gains from deregulation, and also the construction of new infrastructure, will be captured and retained at other points in the overall transport and logistics system.

Source: Chapter 12

1.4.1.4 Maritime transport

As in other network industries, key rationales for regulating maritime services are to minimise the damage from natural monopoly and to meet safety requirements. The port facilities in a particular location may have natural monopoly characteristics, depending on the scale of the port facilities relative to traffic. However, it may be possible to encourage competition between ports as well as to encourage competition for the right to operate existing port facilities.

Because there are economies of scale from coordinating international ship movements (e.g., to avoid the movement of empty ships on one direction, even if maritime trade between two economies is unbalanced in volume terms), a variety of arrangements have also developed over time to facilitate such coordination. But as with bilateral air service agreements, many of the arrangements in maritime transport have been seen to unduly limit competition. Examples are various cargo sharing arrangements, which include bilateral agreements as well as the UN Liner Code. Another example is liner shipping conferences, which are private sector arrangements among major liner shipping companies, ostensibly to facilitate coordination but which have at times included restrictive agreements on both capacity and pricing.

As with most collusive and cartel arrangements, both cargo sharing and conference arrangements are hard to sustain when competitive pressures encourage defection. Nevertheless, they have at times been costly to the economies imposing them. The general assessment is that the provision of maritime services is now competitive in international markets. The bottleneck in the provision of maritime services is then more likely to be associated with the provision of port services.

Another arrangement common in maritime services is restrictions on cabotage rights. Cabotage is the transport of goods or passengers between two points in the same economy.

Many economies reserve such domestic shipping either for domestically owned ships or for ships that fly the APEC member's flag. Such cabotage restrictions clearly reduce competition, although they have proved resistant to reform through WTO trade negotiating channels. They have nevertheless been shown to be costly, especially for developing economies, as in research reviewed in Chapter 2. This remains the major issue in APEC.

In many economies, the provision of port services was reserved as a state-owned monopoly. Not only was there no competition in providing port services but many port services (e.g., pilotage, towing, tug assistance, use of navigational aids, use of berthing services, waste disposal, anchorage and casting off) were deemed to be mandatory, meaning that ships visiting a port had to pay for them whether they used them or not. Finally, some APEC economies have restrictive regulations governing access to ports (e.g., determining which ships and which cargoes can visit which ports). These arrangements too have proved to be costly. The case studies on Australia (Chapter 13) and the United States (Chapter 14) identify current issues in port reform in those economies (Boxes 1.10 and 1.11).

Box 1.10: Cabotage in Australia.

The Australian approach to cabotage has been not to remove the regulation but to change the manner of its implementation. The use of a permit system, introduced in the 1990s, has had two effects. At first, it sustained a downward trend in real interstate non-bulk freight rate which was already underway since the early 1980s due to technological factors and to rationalisation of manning scales introduced by the Australian government. The impact of the change in coastal shipping policy is clear from the mid 1990s, when the decrease of the freight rate for journeys between east and west Australia accelerated despite rising fuel prices. Rates were 40% lower in 2005 compared to the start of the 1990s. A second effect was that the size of the Australian fleet decreased in deadweight tonnage (carrying capacity) by almost half between 1999 and 2007, with a much larger decrease in the coastal fleet. At the same time capacity utilisation increased and productivity more than doubled.

Source: Chapter 13

Box 1.11: Cabotage in the USA.

Only vessels owned by a US corporation can carry freight on domestic routes – a company's maximum foreign equity is 25%, 75% of its employees must be US citizens and cabotage is reserved for ships built in the US. Any domestic leg of an international journey is covered by these rules. Subsidies are also provided to US shipyards to make this policy feasible. However, the higher cost of domestic freight by this mode has led to a move to other transport modes and the volume of domestic freight by sea has fallen, as has the size of the USA fleet. The shipbuilding sector has also declined. Businesses which consign freight have been lobbying against the regulation but have not been effective compared to the concentrated influence of the remaining shipping companies (now a duopoly). The complexity of the policy package and the lack of transparency make its assessment more difficult.

Source: Chapter 14

APEC members' policies are summarised in Table 1.3, where darker cells indicate a more restrictive arrangement. There has been little change in policy over the last decade, as generally, in the transport sectors, economies at later stages of development have more open regimes. Yet the story is mixed for maritime transport, with some high income economies having relatively closed regimes, including:

- not applying competition policy to maritime transport;
- the use of rules on nationality of staff and directors; and
- restrictions on cargo allocations (for only a few economies).

Lower income economies are more likely to have restrictions on foreign investment. New econometric work was undertaken for this study (see Chapter 3). It finds that a movement to full liberalisation in the dimensions shown in Table 1.3 for all APEC economies would on average reduce maritime freight rates by about 20%.

Table 1.3: Structural reform in maritime transport.

APEC member	Quotas	Exemption of carrier agreements from competition law	Form of the ownership	Caps on percentage of ownership	Acquisition domestic entity	Cabotage	Cargo Handling	Regulatory authority independent
Australia								
Canada								
Chile								
China								
Hong Kong, China						n.r.		
Indonesia								
Japan								
Korea								
Malaysia								
Mexico								
New Zealand								
Peru								
Philippines								
Russia								
Singapore						n.r.		
Chinese Taipei								
Thailand								
United States								
Viet Nam								

Source: Chapter 13

1.4.2 Energy

1.4.2.1 Electricity

While electricity transmission (and perhaps retail distribution) may possess natural monopoly characteristics, industry performance can be enhanced by encouraging competition in electricity generation (and perhaps retail distribution). Recent technological advances, such as cogeneration (of electricity and usable heat) have changed the economics of generating electricity and created options for competitive supply. A regulatory regime that encourages competition in electricity generation would:

- unbundle those activities that are considered to be competitive (generation and retailing) from those that are thought to be natural monopoly activities (transmission), so as to avoid conflicts of interest in promoting competition;
- allow third party access by guaranteeing open and non-discriminatory access for all generators to the transmission grid (subject to available transmission capacity); and
- introduce a wholesale pool, or spot market, for electricity (either mandatory or optional) to overcome limitations associated with the use of direct (bilateral) contracts between generators and retailers.

These characteristics of regulatory reform contributed to lower industrial electricity prices in OECD economies, correcting for a number of economy-specific features, according to work reviewed in Chapter 6: competitive wholesale markets and retail competition reduced prices (relative to their absence) significantly in the USA, with retail competition reducing prices by 5–10% for residential customers and 5% for industrial customers.

In a wholesale price pool there is the possibility of dominant generators using their market power to play a ‘game’ by manipulating the bidding system to deliver electricity at prices that are still above cost. Thus, while the United Kingdom established a wholesale electricity market in March 1990, the ‘gaming’ problem led to the pool’s being replaced by a system of bilateral contracts in March 2001. It was not clear that the alternative price setting mechanism would deliver lower prices than a wholesale pool, as the underlying problem was the same in both regimes – the market power of the generators. In any event, there are vertical economies between generation and retail. To the extent that vertical integration of these activities increases the proportion of wholesale transactions that are intra-firm transactions, it may mean that explicit wholesale markets will tend to be thin. For this reason, the use of a wholesale price pool rather than long term contracts may be contentious.

Other, less controversial, aspects of a pro-competitive regulatory regime include:

- allowing new generators to enter the market and new sources of supply generally, such as wind, solar and demand management mechanisms;
- allowing customers (sometimes large customers such as retailers or large industrial users, sometimes all retail customers) to purchase electricity directly from the generator or retailer of their choice; and
- introducing a regulator independent of industry players and day-to-day political influence.

Previous research has confirmed the benefits of true retail competition, which includes both choice of generator and choice in billing and contract terms. However, retail competition is only likely to be as extensive as competition in generation, because vertical economies mean that non-integrated retail companies have little chance of success at any reasonable scale.

Generally, the structural reforms that have taken place since 2004 in the energy sector in APEC economies have been incremental – there have been few big-bang initiatives. Korea made a start. But, for reasons discussed in Box 1.12, these stalled. However, according to some studies the partial reforms had some effect on productivity. Russia is another exception, where a successful reform program is reviewed in Box 1.13.

Box 1.12: Electricity in Korea.

Korean reforms in electricity established in 2000 led to the separation of the generators from the distribution company. Little progress has been made since then. The original company continued to own the generators, even though the next step in the reform had been their sale. The reforms stalled because of resistance, especially from labour unions, coinciding with a new government which was not committed to the original reform plan. The partial reforms may have created some efficiency gains, though researchers continue to debate their significance and there are conflicting conclusions. Some indicators show positive results. Reliability improved as planned outages, which required 25.0 days across 109 units of generators in 2000, dropped to 19.4 days across 117 units in 2003 after restructuring. The heat efficiency of the generation facilities and the maintenance of frequency and voltage seem to have also improved after restructuring. There was a substantial rise in the capacity utilisation rate of coal-fired plants and a subsequent reduction in generation cost after the divestiture. The utilisation rate surged from 74.8% in 1999 to 89.0% in 2003. The gains arise from improved management after the divestiture. A pattern of cross-subsidies (including from profits from constructing generation capacity) keeps industry-user prices low but this reduces incentives for those preferred in this way to support a resurgence of reforms. It may also not be sustainable with expectations of falling greenhouse gas emissions.

Source: Chapter 15

In electricity generation, the lack of ‘big bang’ initiatives is partly because introducing competition into generation and retail is a highly complex regulatory process. In electricity, the ‘product’ is completely non-storable. New capacity needs to be brought on stream in a way that does not overload or risk system stability in the network, which would result in a reduction in quality of supply. The regulatory requirements for competitive new producers and/or

Box 1.13: Electricity in Russia.

The extent of reform of the Russian electricity sector is remarkable. There has been a complete transformation of the system to separation and a wholesale market. The motivation was the urgency to mobilise investment in capacity. Demand for electric energy had been rising with an upturn in economic activity since 1999 but capacity was not expected to be sufficient. Reform was conceived around the idea of maintaining government regulation over the natural monopoly components of the sector, while introducing competition and private investment in the generating segment. The stated goals of the reform included: Increase in efficiency through restructuring and private ownership (2003–08); price deregulation according to a schedule and full competition in generation (by 2011); and competition by ensuring third party access to network infrastructure. The consequence was significant increases in capacity from 2008 onwards. Unfortunately, in part because of the effects of the global financial crisis, increases in capacity have not met expectations. But expansion is continuing. Price regulation remains to 2015 for retail consumers. With a rising share of sales procured in the wholesale market, the shortfall had to be made up and this was done via connection fees, which fell as the level of economic activity fell. The 2010 Russian budget commits to further electricity tariff increases to reduce the extent of the subsidies. The Californian experience of reform has not been a deterrent in Russia, where the reforms have been designed with its lessons in mind.

Source: Chapter 16

wholesalers to gain access to existing transmission and distribution networks need to be compatible with the technical requirements for the safety and physical integrity of the system.

Table 1.4 identifies the member economies which have unbundled generation, provide third party access to the distribution system and operate a wholesale pool.

Table 1.4: Summary of current regulation in APEC electricity markets, 2009.

APEC member	Unbundling generation	Third party access	Wholesale pool
Australia	✓	✓	✓
Canada		✓	✓
Chile	✓	✓	✓
China	✓		✓
Hong Kong, China			
Indonesia			
Japan		✓	✓
Republic of Korea	✓	✓	✓
Malaysia			
Mexico			
New Zealand	✓	✓	✓
Peru	✓	✓	
Philippines	✓		
Russia	✓	✓	✓
Singapore	✓	✓	✓
Chinese Taipei			
Thailand			
United States	✓	✓	
Viet Nam			

Source: Chapter 6

Econometric analysis used in Chapter 6 identifies the effects that further structural reforms in APEC electricity and gas markets would have on prices and efficiency. In electricity markets:

- the introduction of a third party access regime would be associated with about 4.7% lower electricity prices than otherwise, on an indicative basis and holding all other factors constant;
- the introduction of a wholesale electricity market would be associated with about 7.2% lower electricity prices; and
- unbundling of generation from transmission would be associated with 11.1% lower electricity prices.

The combined effect of all three initiatives would be electricity prices estimated to be 23% lower than otherwise.

The econometric results also suggest that wholly private ownership of electricity operators would be associated with prices that were 23.1% higher than if ownership were wholly public (with no other changes in policy). One reason is that, as studies have noted, private ownership can make it difficult to get reforms under way. Furthermore, and as might be expected, the positive relationship between price and private ownership is strongest when there is a monopoly provider – private sector monopolists might be more likely to pursue higher profits than government monopolists, and hence to raise electricity prices by exploiting their market power. This effect is unlikely to persist over time as reform efforts continue.

1.4.2.2 Gas

The rationale for structural reform in gas is similar to that for electricity. While high-pressure transmission pipelines and (perhaps) lower pressure distribution pipelines have natural monopoly characteristics, efficiency can be improved by promoting competition in the production and import of gas and in gas retailing, that is, competition for supply into the pipeline system and in the extraction from that system. An additional benefit of retail competition is that it allows retailers to offer bundles of services, such as combined electricity and gas services.

Traditionally, natural gas markets were either local – the gas was used where it was produced – or bilateral – gas consumption and production occurred at either end of a gas pipeline. Now liquefied natural gas (LNG) technology has made it possible to ship gas from a single source to multiple markets. The international market for gas can thus be expected to become much more competitive over time, in the same way that oil markets have become ‘thick’, making it easier for importing economies to shop around. On the one hand, this can be expected to promote competitive importing. Arrangements for access to pipeline systems also allow LPG to be replaced by reticulated LNG. On the other hand, LNG terminals are themselves expensive and highly capital intensive, and may display natural monopoly characteristics, depending on their capacity relative to market size. Thus, in the future, competitive importing may require arrangements that allow users other than the owners to have access to LNG facilities as well as for pipelines. These are called third party regimes.

In general, reforms in natural gas have been less extensive than in electricity. In part, this is because the scope for competition in natural gas production depends on the range of sources of supply. Indeed, many of those economies with extensive reserves had already undertaken significant reform prior to 2004. Boxes 1.14 and 1.15 review China’s progress towards price reform and the reform so far in Thailand; Table 1.5 contains a summary, and further economy detail is included in Chapter 6.

Box 1.14: Gas in China.

A remarkable development in China was the reform which began in 2005 to the system for pricing gas. Previously gas prices were based on a cost-plus formula. From 2005 they were ‘hooked’ to the prices of other sources of energy, although the application of this formula varied according to the gas field. City gas prices then varied because of the different sources of gas and the distance to gas fields. The hooking mechanism did begin to correct a problem of pricing gas too low which in some cities led to gas shortages in 2009. However gas prices remain low relative to world levels. Growing demand, environmental pressures and rising world or LNG prices are not likely to permit this situation to continue and further pressure for price rises is expected. The mechanism for arranging those changes has been established.

Source: Chapter 17

Box 1.15: Gas in Thailand.

A gas market reform plan was developed in the late 1990s which would have separated the gas transmission pipeline from the retail trading operations and from production. However, when implemented, following a change of government, the main change was the privatisation of the gas company. There was no separation, nor was an independent regulator established as had been planned. The goal had become the mobilisation of funds to invest in the network. In this the change was remarkably successful, and offshore gas fields were connected. A side effect was that domestic capacity increased so quickly that imports fell. There were no evident efficiency gains, prices remained controlled and questions remain about the quality of gas relative to global benchmarks. Prices remained relatively low, despite the lack of competition in the market. But this was due to access to low cost gas from domestic sources and government subsidies. As growth continues and local sources are used up, this situation is not likely to continue.

Source: Chapter 18

Table 1.5: Summary of current regulation in APEC gas markets, 2009.

APEC member	Unbundling transmission	Third party access	Retail competition
Australia	Yes	Yes	Yes
Canada	Yes	Yes	Yes
Chile	Yes		
China			Yes
Hong Kong, China			
Indonesia	Yes	Yes	
Japan		Yes	Yes
Republic of Korea			
Malaysia			
Mexico		Yes	Yes
New Zealand	Yes	Yes	Yes
Peru	Yes	Yes	
Philippines			
Russia			
Singapore	Yes	Yes	Yes
Chinese Taipei			
Thailand	Yes	Yes	
United States	Yes	Yes	Yes
Viet Nam			

Source: Chapter 6

Econometric analysis for this study, reported in Chapter 6, identifies the effects that further structural reforms in APEC gas markets would have on prices and efficiency. In gas markets the introduction of retail competition would be associated with gas prices being about 15% lower than otherwise, all other things being constant, and the unbundling of gas production/import from other segments of the market would be associated with about 23.4% lower gas prices. Both these percentages would be lower if initial gas prices were higher than the average in the OECD sample, as they are currently.

As noted, these results are indicative only and are not fine-tuned to the individual circumstances of each APEC economy. However, they do suggest that the slow, incremental approach to reform of APEC energy markets is worth reviving or continuing, despite the considerable burdens imposed on regulatory capacity. APEC economies can learn by doing, they can learn from the general lessons of reform in other economies and they can learn from close interaction and cooperation among industry regulators. APEC processes are well-tuned to providing the sort of experience sharing and capacity building that can make the regulatory burden easier. Gains to industrial users, and by inference to households, would be considerable.

1.4.3 Telecommunications

One key rationale for regulating telecommunications is to avoid the abuse of market power, when at least some elements of the telecommunications network have the characteristics of a natural monopoly and where the exercise of that monopoly power would create greater damage than the cost of regulatory mistakes. Another key objective is often to regulate to ensure that the industry meets universal service obligations, that is, to meet community expectations of the level of access to services of particular quality.

Technology changes very rapidly in this sector and so judgements about which elements may constitute a natural monopoly also change rapidly. But the current consensus is that there is little in mobile technology that is a natural monopoly, while in fixed-line networks the ‘last mile’ (the copper wire connection, and the ducts or infrastructure associated with it, between an individual subscriber and the first switch in the network) may still have natural monopoly characteristics. The regulatory challenge is to prevent the economic waste associated with duplication of the bottleneck facility (the ‘last mile’) while encouraging competition elsewhere in the network. One of the common regulatory approaches to this problem is to establish an access regime, whereby other providers pay a wholesale charge for access to the incumbent’s bottleneck facility, so they can offer retail services (e.g., retail telephony or ISP services) that use this facility. If the access charge is set appropriately, this can encourage competition in retail services while discouraging inefficient duplication of the ‘last mile’. If the access charge is set too high, retail competition will be thwarted and there will be an incentive for inefficient duplication of the ‘last mile’, but if the access charge is set too low, the incumbent will have little incentive to invest to maintain or extend the bottleneck facility. A common regulatory solution is to price access at long run incremental cost – a charge that includes a capital component towards maintenance and eventual replacement of the asset, but does not include any ‘super normal’ profits for the incumbent.

Nevertheless, other aspects of the regulatory regime may still thwart competition indirectly. Typically, subscriber access charges were kept low to encourage participation by the poor, and usage charges were too high, particularly on long-distance calls, to compensate. Universal service obligations such as these were traditionally met in many economies by cross-subsidies in this form which were built into the incumbent’s retail pricing structure. But when competition is introduced, entrants are attracted to the high-profit parts of the market and the cross-subsidies cannot be sustained. The failure of some developing economies to find ways other than cross-subsidisation to fund universal service obligations is still thwarting the development of effective competition in telecommunications, even where the economies have made commitments to do so.

The direct benefits of effective competition in telecommunications markets are reviewed in Chapter 7 and found to be considerable. To illustrate, an effect of telecommunications reform, which embraces information and communication technology as well as traditional telephony, is productivity improvements as a result of greater use of the Internet for business transactions. One study found that this could reduce the gap between wholesale and retail prices from 19.6% to 5% of prices.

Nevertheless, there is considerable uncertainty about what the prevailing next-generation technologies will be. This in turn implies considerable uncertainty about where the natural monopoly elements (if any) will be in the future, and therefore what the appropriate future regulatory responses should be. Certainly regulation should not be designed to be specific to a particular technology and it should be designed to facilitate competition between technologies.

As of 2009 most APEC economies have adopted full market entry liberalisation. Some APEC economies allow full foreign ownership for fixed-line operators and these economies impose no restrictions on legal forms either. Others do not allow foreign investment in their fixed-line networks at all. The common practice is to limit foreign investment from gaining dominant positions in fixed-line operators (i.e., below the 50% threshold). The efficiency restrictions this FDI requirement places on telecommunications is a current major issue in this sector.

As of 2009 all APEC economies have liberalised their mobile sector. In most economies new licences are granted based on market-oriented approaches unless limited by the availability of spectrum. The scope of regulatory reform is summarised in Figure 1.1. There is little variation in the role of the independent regulator but greater variation in the measures in the table blue represents implemented, green partially done or under consideration and red is not yet implemented.

The growth of the telecom sector itself adds to GDP, but the initial impact of liberalisation on competitive market entry is often a contraction of the workforce. This is partly a response to competitive pressures by the incumbent to become more efficient. More importantly, over time it is a response by the incumbent to accelerate the adoption of new digital technologies, which are far less labour intensive. New technologies are associated with innovation in services in two ways: through more effective delivery channels (such as DSL and IP-based mobile cellular etc.) and through new services (e.g., converged services such as IPTV and mobile TV). As new entrants make their mark, users become more aware of the benefits and availability of telecoms and new services create new markets, so employment in the sector grows again. Further details of the experiences of reform in Chinese Taipei; Viet Nam; and PNG are presented in Boxes 1.16, 1.17 and 1.18.

Figure 1.1: Summary of APEC economies’ implementation of the WTO regulatory principles.

Regulatory elements	APEC performance
Establishing an access regime	
Implementing rules on interconnection	
Making licensing criteria publicly available	

Source: Chapter 7

Box 1.16: Telecommunications in Chinese Taipei.

A liberalisation program began in Chinese Taipei in 1997, first in mobile then in fixed-line services. The subsequent change in performance was remarkable in comparison with its APEC peers. Fixed-line, mobile and broadband service penetration were significantly improved over the last two decades, while price has been decreasing rapidly over the same period. In terms of accessibility performance, fixed-line penetration in Chinese Taipei exceeded that of Australia and Japan in 1998 and of the USA in 2003. Broadband penetration is also performing well compared to these economies. Mobile penetration in Chinese Taipei represents the most direct link between structural reform and performance. A sharp increase in mobile penetration took place around 1998 when competitive 2G operators began, surpassing many pioneer economies in the region, such as the USA; Australia; and Japan. This trend of rapid development continued until it reached its saturation point in 2004. The entry of 3G mobile operators in 2003 is likely to be the reason for a rebound in penetration since 2005. In relation to the change in price, performance in Chinese Taipei also demonstrates a positive relationship between structural reform and performance. A significant reduction in charges for mobile service connection and monthly subscription charges, as well as the connection charge for fixed-line services, took place around the beginning of the structural reform period. Of note is that the average connection and monthly subscription charges for mobile services reduced to zero since 2004, after the introduction of 3G mobile services. This pricing model facilitates access to services, while suppliers recoup costs through use charges.

Source: Chapter 19

Box 1.17: Telecommunications in Viet Nam.

Fixed-line development in Viet Nam seems modest compared to mobile growth, yet it is outstanding when compared to other APEC economies with similar levels of economic/telecom developments. Prior to 2003 Viet Nam shared a similar level of fixed-line penetration rate with Indonesia and the Philippines of around 5%. Yet starting from 2003, access jumped. In fixed-line availability Viet Nam is now at 35% and mobile penetration is at 80%. Monthly subscription charges for mobile services had fallen to zero by 2004, compared to \$US17 in 1999. Structural reform efforts contributed to this outcome, including the establishment of the universal service fund (VTF). There was also a relatively transparent and predictable regulatory environment to foster competition and network investment. Further, the growth of Viet Nam's Internet subscribers (from zero in 2002 to 6% in 2008) offers yet another good example of the correlation between reform and performance. Two primary reform initiatives are responsible for the sharp increase in Internet subscription: the first, the Internet services sector was liberalised and the VTF was established, which includes public Internet access as part of the universal service scheme. In relation to price, the experience in Viet Nam demonstrates a positive relationship between market liberalisation and performance. Monthly subscription charges for mobile services have been reduced from nearly USD17 in 1999 to zero in 2004. For the average tariff of a 3-minute off-peak mobile call, as at 2005 Viet Nam was the highest of the three sample economies, yet by 2008 it became the economy with the lowest rate.

Source: Chapter 20

Box 1.18: Telecommunications in PNG.

While the fixed-line service remained in the hands of a government enterprise, competition was introduced into the mobile sector when entrant Digicel joined the incumbent B-Mobile. The number of mobile phone subscribers (through B-Mobile) was estimated to be between 130 000 and 140 000 prior to the entrance of Digicel in July 2007. The firms now claim to have over 500 000 customers each, which suggests a remarkable 700% growth in the number of mobile phone subscribers. This result could be regarded as universal coverage. Average peak and off-peak domestic call billing rates have fallen by 11% for peak times and by 51% for off-peak times since the introduction of Digicel. Average peak and off-peak international call rates have fallen by 40% and 38%, respectively. As well, calling rates for both carriers and for both domestic and international calls have moved from 30-second billing increments to per second billing increments. Digicel has a wide range of market products and services such as a prepaid handset pack, 24/7 customer care, post-paid price plans, international text messaging, missed call alerts, and other promotional products such as 'talk-for-free' and 'Happy Fridays'. It claims to have provided employment opportunities to some 300 people of whom 90% are Papua New Guineans and indirect employment for about 500 people through dealer stores, top-up vendors, distributors etc. Furthermore, it has committed itself to a busy community relations program. In a land with a terrain as difficult as PNG's, the benefits to the many remote communities of being able to interact with other people cannot be underestimated. Already the availability of mobile phone services has done much for social interaction as well as being helpful in medical emergencies. Moreover, the mobile banking initiatives now underway will be enormously helpful because, hitherto, banking services in rural areas have been very limited. Further, the provision of market pricing information through mobile phone services will be very helpful because the livelihood of the bulk of the population is from agricultural and fishing activities.

Source: Chapter 21

1.5 TEN LESSONS OF REFORMS TO DATE

In this section, ten general lessons of the reform in APEC economies to date are put forward. The themes of these lessons include the value of transparency, of having a clear view about goals and of having the expectation of continuing change. In other words, the process of reform is continuous.

1.5.1 Competition is more important than ownership

Generally the result of the review of reform to date stresses the value of competition and contestability and the value of preceding changes in ownership by the introduction of competition. Most important is competition, since privatisation without it can lead to the continuation of the same problems under a new owner. At least competition for the market or regulation of the critical infrastructure, whose owners might otherwise capture the gains from trade, is required. This is illustrated for instance in the case studies on markets for gas electricity, as well as reform of the international road freight sector in Thailand. Whether or not different stages of the production of the services are separated (independent of ownership) – and there is debate about the value of separation – the focus should be on the introduction of competition.

At the same time, there may be some concerns about introducing competition. For example, the result may be market structures in which a small number of firms compete, that is, oligopolies, or foreign firms might enter, try to drive out competitors by lowering prices, that is, demonstrated predatory behaviour, and highlight the lack of capacity of local firms to compete. If that is a problem, options include a regulatory response and capacity building or support to market failure problems related to research and development or training skilled staff. Complementary reforms in other sectors help with adjustment costs, and there is value in packaging and sequencing reform. Predatory behaviour is also more rewarding to producers but not consumers. Therefore, it is more likely in the presence of remaining entry barriers, to which constant attention should be given.

1.5.2 Take a forward looking view and provide a leadership commitment

A forward looking view that is regularly and clearly explained helps avoid a trajectory to landing in an ‘undesirable equilibrium’, becoming stuck at that point because of the emergence of new vested interests. One example might be in an urban transport system where not acting might result in the system descending into congestion from which a number of vested interests extract significant benefit. The situation with urban transport in Bangkok is an example. Another is undertaking a partial reform, such as privatisation in gas or electricity but then not proceeding past that point. The experiences of gas in Thailand and electricity in Korea highlight the challenges. Along with this, it is important that there is a commitment by leaders to structural reform (e.g., to a set of national development goals) and that they have the ability to explain structural reforms.

1.5.3 Be aware of ‘the gap’ in regulatory practice

It is important to have some sense of ‘the gap’, that is, how far away the current regime is from relevant ‘good practice.’ This level of performance is not the same as ‘best practice’ in global terms but it is the regulatory process that would be regarded as efficient at the state of development. APEC has a key role to play in sharing this experience, as discussed with reference to the material on gas markets in the previous section. Reform in electricity is also complex, and concerns remain about the Californian experience where reform, which later was

argued to be incomplete, was followed by blackouts and by attempts by suppliers to extract higher prices from newly created markets. The designers of electricity reform in Russia, for example, drew on advice and experience from the rest of the world to design a new system.

1.5.4 Know the costs of the current regime

For reform to proceed it is important that the community has some sense of the costs of the gap, which might be poor performance and choice in various dimensions, for example, low quality services or prices too high. High prices are not the only cost of incorrect choices or a lack of action. It could be, as in many energy markets where the sustainability of policy is critical in environmental terms, that prices are too low. Gas markets provide examples of this.

Other points that help make the case for change are:

- the scope for efficiency gains, like those available from electricity reform, or even a partial reform, as in Korea;
- the capacity to respond to other shocks or developments, such as responding to climate change, an emerging pressure in markets for gas in China for example;
- the easing of otherwise tightening fiscal constraints and interests from within the industry itself, such as its capacity to raise finance, which was a driver of reform in Russia;
- technological change which leaves some interests ‘stranded’, as is becoming more apparent in air transport markets and in telecommunications; and
- environmental impacts which are getting worse, including congestion, which may be worsened by inappropriate regulation, as in the case of Bangkok despite its otherwise beneficial effects.

Reform driven by efficiency gains to the general public may be important in terms of economic welfare but the dilemma is that reforms of this type may be very difficult to implement and manage. How can it be done? Is this a case where compensation is required? How could efficiency gains be presented as a benefit to the public or small business? Some more appealing communication of the challenges as well as the likely gains will be important. The cases in this study include instances where service quality also improved because of reform, for example, the van market in Bangkok and the Korea–China air routes.

1.5.5 The commitment to structural reform is continuous and never stops

Structural reform is a dynamic process resulting in dynamic benefits. Yesterday there may not have been a performance gap of note but as times change, gaps will re-emerge. For example, investment in capacity lags behind the growth in demand – this was a driver of reform in the electricity sector in Russia where a key figure in the industry played a lead role in identifying that ‘gap’. Markets will continue to anticipate where momentum exists. They will respond to regulation and changes in costs and benefits: the reaction of markets to cabotage rules in Australia and the USA illustrates this process, as does the impact of competition in air transport markets. New technologies may also provide new sources of competition and undermine the rationale for existing regulation, as in telecommunications. Equally, new bottlenecks may emerge because of technological change and demand attention, so the regulatory focus has to shift. In maritime transport, for example, a key issue is no longer the anti-competitive behaviour of shipping companies but the management of ports, as the Australian and USA cases illustrate.

The choice, therefore, is not simply one between good and bad practice in a static sense. There is a need to adjust the regime as new gaps to good practice emerge. This is not easy. Also, since

structural reform is dynamic (as are its benefits), it is important to avoid the problems of ‘reform indigestion’, that is, a build-up of valuable reforms which are not implemented. Monitoring of performance and reporting on it is part of the process to avoid indigestion.

1.5.6 Promoting engagement from within

Is there pressure from the regulated businesses within a sector or constrained businesses in a contestable position? And when can it work as a source of pressure for reform? Relevant factors might be:

- reform to help correct an internal weakness and improve performance;
- pressures from shareholders;
- pressure from competitors (who might operate in a different regulatory environment, for example, the same market in technical terms providing substitute services but a different institutional setting);
- financing constraints; and
- pressure from downstream sectors which place flow-on pressure.

Reform happens faster when motivated from within. A clearly defined end point is required for a particular reform initiative. Otherwise, incumbents can recapture a process. But, due recognition needs to be paid to the need to keep up with competitive and regulatory benchmarks set by others. It will be interesting to see if there is a change in regulation in international aviation as interests shift and attitudes to the current regime change: the lively discussion about options in air transport in Northeast Asia is an illustration of this.

It is easier to prevent special pleading from particular regulated industries if structural reform is taken as a package across all state owned enterprises, or at least a group of them. It also helps to establish structural reform as part of a better governance campaign or a budget ‘clean-up’ based on good principles. It need not be simultaneous but it can be a rolling reform.

1.5.7 The use of experiments

Experiments can be useful to demonstrate the value of reform. In air transport, for example, the experience with the result of deregulation in the freight sector and the introduction of LCCs has been vital for wider progress. The ‘testing’ going on at present in Northeast Asia with regional reform is very influential. The experience of the passenger van market in Bangkok, although not originally officially sanctioned and later re-captured by regulation, is an example of a market-led, natural experiment that grew out of the regulation itself. Experiments can be useful to break bottlenecks to change – they demonstrate benefits in smaller areas, even regions, or parts of markets. Criteria for selection (or acceptance) might be the extent of change required or the capability to execute change and the capacity to quantify effects. Complementary research efforts are important to capture the experience and distribute the messages.

1.5.8 The value of independent evaluation for designing options

Independent evaluation can be very important, either in the formal sector or utilising the second track. Those organisations help to offset the lobbying efforts of the vested interests. They also can challenge the ‘good performer’ myth, that a structure looks to be working well because it is profitable (perhaps too much so) or financing its own investment and maintaining capacity (to too great an extent). To some extent, this is an issue in the progress

of reform in the gas market in Thailand. These agencies are also important in that they identify options, engage the stakeholders in a process to choose between options, maintain attention on the efficiency case, then propose a reform plan, publicise targets, monitor reform and report back on progress. Researchers working on air transport in Northeast Asia have played a key role in driving change there.

To facilitate the conduct of voluntary reviews of institutional frameworks and processes for structural reform, the APEC Policy Support Unit has prepared a guidance manual that sets out in a single document the objectives, scope and desired outcomes of the reviews. It is designed to assist reviewers, volunteering economies and their respective agencies and other interested stakeholders to prepare for and participate in the reviews.⁶

1.5.9 Coordination and when it matters

Some problems demand coordination across infrastructure services for a solution, for example, in public transport where coordination across modes is important to avoid congestion. This is also relevant to logistics, as illustrated in the case of Indonesia where policy across a number of modes of transport has to be coordinated. It is illustrated in the case of Thailand with respect to investment in road networks. According to experience to date, the Indonesian case study provides a checklist of action items for success in setting up and managing this coordination. Critical activities include:

- establishing a formal process in which all relevant parties are involved;
- providing funding for it;
- providing the process with relevant powers to make changes to policies and practices;
- including all the stakeholders, not just suppliers but also users of the services – public and private – from the beginning;
- having a functional organisation; and
- monitoring progress.

Other examples of the value of coordination include setting up integrated ticketing systems, which requires as much coordination as does network wide traffic signal coordination. It is important to recognise this as it has beneficial efficiency impacts. To say how it has or has not been dealt with can be, but it is not always, critical. Other structures are easier to operate on their own account, for example, railways and highways. However, when co-ordination is critical, the question is how to get it done? This requires leadership and external advice.

1.5.10 Universal service obligations

Viet Nam in the telecommunications sector demonstrates yet again the value of dealing with universal service obligations directly. To embed them in the commitments of incumbents creates a disincentive for reform. Separating them makes the cost transparent.

1.6 THE NEXT STEPS

1.6.1 Effects of further reform

Chapter 2 examines the economy- and region-wide effects of prospective structural reforms in the transport energy and telecommunications sectors of APEC economies. What are the next steps to complete the programs of structural reform already begun in these sectors?

⁶ The PSU manual is available at http://publications.apec.org/publication-detail.php?pub_id=960.

The theme of these next steps is the introduction of competition into each sector. This implies a series of changes, such as in:

- air transport, a range of reforms to air services agreements, to entry conditions for domestic and foreign carriers, and to ownership;
- maritime transport, the dismantling of remaining entry restrictions, quotas or cargo sharing arrangements and the granting of national treatment to foreign-owned carriers located domestically;
- rail transport, vertical separation and free entry in freight operations in those economies that do not yet have them;
- electricity and gas, third party access, unbundling, wholesale markets and/or retail competition in economies that have not yet implemented them; and
- telecommunications, the removal of remaining foreign equity limits.

The study uses modelling work to assess the implication of this package of ‘next steps’ in structural reform. The modelling assumes no privatisation of incumbents in rail, electricity or gas. Key results, discussed in more detail in Chapter 2, include the following four points.

Firstly, this package of reform would have significant effects. They can be translated into productivity effects, and the estimated first-round impacts of these reforms suggest that they could lead to weighted average productivity improvements in the range of 2–14% across the sectors involved. The most extensive reform effort, and the largest productivity gains (i.e., above 10%), are projected to occur in Indonesia; Malaysia; Mexico; the Philippines; Chinese Taipei; and Viet Nam.

Secondly, economy-wide gains can also be estimated, as there is strong correlation between the size of the reform tasks and the economy-wide gains they generate. Furthermore, in all economies, an overwhelming proportion of these gains come from reforms at home, rather than reforms in other economies. Thus, while the gains from joint reforms are considerable, there is no compelling reason for each APEC economy to wait for others to start.

Thirdly, while most APEC economies are also projected to reap small gains from reforms elsewhere, this is not a foregone conclusion, because productivity improvements elsewhere are a two-edged sword. The income and price effects of productivity gains in other economies on the home economy work in opposite directions, and very often the adverse price effects dominate. The difference here is that structural reforms in other economies also reduce the cost of transporting merchandise exports from the home economy. In most cases, this restores the balance in favour of the home economy.

Fourthly, across the APEC region, structural reforms in transport, energy and telecommunications as outlined above are projected to generate USD175 billion a year in additional real income (in 2004 dollars), relative to what would have accrued had no reforms occurred. This is a snapshot of the steady state gains after a 10-year adjustment period, during which smaller gains accrue.

1.6.2 Gains from structural reform compared to other agendas

APEC-wide, the projected gains from these structural reforms are almost twice as big as the gains from further liberalisation of merchandise trade. Yet the sectors where the structural reforms occur are less than a quarter of the size of those engaged in merchandise trade. When structural reforms lower real production costs, even by half as much as is estimated here, they

generate a ‘bang for the buck’ that is much greater than from trade reforms. However, cost bases can also contribute to further trade gains. Exporters which capture benefits can use cost advantages to decrease the costs of the products they export.

The findings of Chapter 2, therefore, vindicate the decision of APEC Leaders to move beyond a ‘border’ agenda to one that focuses on behind-the-border reforms. Yet structural reforms to generate significant gains are also likely to generate significant structural adjustment costs. The expected size and extent of those adjustments has also been examined.

At the sectoral level, the projected output gains tend to be in the services sectors undergoing reform, and in the sectors that use their services intensively. These can include metals (intensive users of electricity), chemicals (intensive users of gas), wood and paper products (intensive users of domestic transport services), and a range of industries (meat and livestock, forestry and fishing, grains, dairy, other manufacturing) that are intensive users of international transport services. Construction is typically also projected to gain slightly from the additional impetus given to industry investment.

The sectors projected not to gain (and, therefore, could be viewed as losing in relative terms) are typically those that do not fall into the above categories. They suffer indirectly from higher wages and rates of return, effects that are induced primarily by the expansions in overall activity. Industries typically losing in this way include textiles and clothing, motor vehicles, other transport equipment, electronic equipment and other machinery and equipment.

The relative losses in industry output in these sectors are relatively minor, however. And they are even smaller when reforms in other APEC economies are taken into account. Thus, structural reforms in other APEC economies can play a useful role in helping to cushion the adjustment costs of reforms at home, even if they do not add greatly to the overall gains from reform.

The employment effects of structural reforms can be significant. The essence of a productivity improvement is that an industry can produce more with less. As a result, input usage can fall, even when output rises. Sectors which according to the modelling lose employment to a relatively large extent do so not as a result of their own productivity improvements but because the home industries that use their services lose their position as other economies reform.

In the extreme cases, modelling indicates relative losses in unskilled employment in a particular sector after 10 years can accumulate to upwards of 30%. But this modelling result needs to be kept in perspective. Employment changes occur over time and can be addressed through targeted structural assistance measures. Secondly, as long as an economy grows, overall employment will increase so the modelling shows that structural reforms may require significant relative shifts of labour across sectors over time. Thirdly, the model projects higher real wages for all workers in all economies. Modelling and real world examples demonstrate that displaced workers earn higher real wages in their new occupations.

To reiterate, employment opportunities overall depend on the growth of an economy. Thus, one of the best ways that APEC economies can guard against any adverse employment effects of structural reform is to maintain healthy underlying rates of economic growth. Structural reform itself makes a contribution to this goal, since it adds to productivity, stimulates activity and increases the resilience of the economy, but prudent macroeconomic management is also crucial.

1.6.3 The LAISR agenda

The importance of structural reform in APEC economies and how it is conducted cannot be overestimated. This research shows the value of the APEC Leaders' adoption of an agenda of structural reform.

The case studies and the associated research also reveal the importance of structural reform as providing strong bridges behind the border to the benefits of regional economic integration. This study has found that:

- structural reforms are very challenging and require balanced reform and political commitment amid the economic and political complexities in all economies;
- structural reforms can create winners and losers but yield more inclusive development when they are carried out dynamically and with other economic reforms; and
- structural reforms are worth undertaking and provide much greater gains than trade liberalisation and generate economic sustainability.

These results suggest the need for APEC to build an even stronger structural reform agenda and work program. Structural reform will be a continuing process, as growth, changes in economic structures, new technologies and market responses to existing regulation continue to change the situations in which APEC economies and their regulatory systems operate. Steady adaptation is required, not the least because expectations will rise as development proceeds. Pressure from the rest of the world, both competition from other economies and new commitments for cooperation, create further forces for change. APEC economies, as the tables and figures in this report illustrate, are at various stages of reform and their experiences to date are valuable to other members. The sharing of this experience remains a priority as they assist to learn about what is possible. But, what is most important, are the strategies for implementation and starting the reforms – turning shared experiences into concrete actions.

Effective structural reform is adopted for a purpose and to achieve a stated outcome. A key to progress is first to be clear about that purpose and the outcomes sought. Another area of cooperation is the design and implementation of reporting systems and monitoring arrangements for the progress of reform. The impacts of reform and their economy-wide effects are worthy of regular attention. Evidence of gaps between good practice, given the stage of development, and the costs of those gaps are drivers of reform. The pace of reform is important. But in the end what matters is the outcome.

More efficient market operations, greater resilience, macroeconomic stability, higher productivity that follow from structural reform contribute to growth and thereby to higher standards of living. The concern with resilience and macroeconomic stability is even more relevant in the context of the response to the global financial crisis.

A reform program focused on structural reform will create new sources of growth. The new growth will be driven by productivity. Reform at the border remains significant for efficiency and growth of member economy but the empirical work here demonstrates the significance of the productivity effects of even a modest set of 'next steps', all primarily focussed on the introduction of competition. New growth, more dynamic economies and a stronger APEC would be the result.

1.7 REFERENCES

- Conway, P, V Janod & G Nicoletti 2005. 'Product Market Regulation in OECD Countries: 1998 to 2003', OECD Economics Department Working Papers 419, OECD, Economics Department.
- Dee, P 2007, 'East Asian Economic Integration and its Impact on Future Growth', *The World Economy*, 30:3, pp. 405–23.
- Dee, P 2009, *Institutions for Economic Reform in Asia*, Routledge, New York and London.
- Doove, S, O Gabbitas, D Nguyen-Hong & J Owen 2001. *Price Effects of Regulation: International Air Passenger Transport, Telecommunications and Electricity Supply*, Productivity Commission Staff Research Paper, Ausinfo, Canberra.
- Fay, M, D Leipziger, Q Wodon & T Yepes 2003. 'Achieving the Millennium Development Goals', World Bank Working Paper No. 3163, World Bank, Washington DC.
- Findlay, C & T Warren (eds) 2000. *Impediments to Trade in Services: Measurement and Policy Implications*, Routledge, London and New York.
- Findlay, C & D Round 2006. 'The three pillars of stagnation: challenges for air transport reform', *World Trade Review*, 5:2, pp. 251–70.
- Limao, N & A Venables 2001. 'Infrastructure, geographical disadvantage and transport costs', *World Bank Economic Review*, 15, pp. 315–43.
- Mattoo, A, R Rathindran & A Subramanian 2001. 'Measuring Services Trade Liberalisation and its Impact on Economic Growth: An Illustration', World Bank Working Paper No. 2655, World Bank, Washington DC.
- OECD 2005. 'Indicators of Regulatory Conditions in Seven Non-manufacturing Sectors, 2 December 2005', accessible at http://www.oecd.org/document/32/0,2340,en_2649_37421_35791136_1_1_1_37421,00.html.
- Roberts, M & J Tybout (eds) 1997. *Industrial Evolution in Developing Countries: Micro Patterns of Turnover, Productivity and Market Structure*, Oxford University Press, Oxford.