



**Asia-Pacific
Economic Cooperation**

**The Impacts and Benefits of Structural Reforms
in the Transport, Energy and
Telecommunications Sectors in APEC
Economies**

APEC Policy Support Unit
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EXECUTIVE SUMMARY

This Executive Summary condenses more than 460 pages of detailed analysis and economic modelling into a digestible brief. We consider the material available in this summary and the main report can be used to develop easily communicated messages for APEC members to promote further structural reform. We also hope the Executive Summary will entice officials to read the more detailed analyses, as they contain useful examples of structural reforms and lessons on how to implement them effectively.

The study as a whole seeks to catalogue many of the substantial, tangible benefits for consumers and for small and medium businesses arising from APEC members' structural reform efforts in recent years, focusing on the transport, energy and telecommunications sectors. As well, economic modelling was undertaken to provide empirical estimates of reform impacts in those sectors.

INFRASTRUCTURE AND STRUCTURAL REFORM

Structural reform in APEC economies refers to policy change related 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'.

Infrastructure is a significant and quantitatively important determinant of growth and development. Economies with fully open telecommunications and financial services sectors, for example, grow up to 1.5 percentage points faster than other economies. Improving destination infrastructure by a factor of 16% reduces transport costs by an amount equivalent to a reduction of 6500 sea km or 1000km of overland travel. Better infrastructure also contributes to better health outcomes, including key indicators in the Millennium Development Goals.

While competition in domestic markets and openness to foreign investors might usually be expected to lead to better quality services, the link is not straightforward in infrastructure industries where the nature of an asset that is essential in service delivery can cause market and competition failures.

Where this occurs, the asset or infrastructure industries have natural monopoly characteristics. Their owners can seek to charge higher prices in the absence of competition or they may not allow others to use the infrastructure (e.g., a gas pipeline or a telephone cable) duct, at reasonable cost. Some infrastructure activities involve externalities (i.e., side effects which are not priced) so that market price signals may not convey the accurate information about the real cost and value of the activity to the economy as a whole. Noise and air pollution are examples. Even where market competition can deliver efficient outcomes, governments may distort efficiency by seeking to implement equity objectives.

The best way to achieve good outcomes is not only to design better policy, but also to match the most effective and least distorting policy instruments to the objectives being sought. Good microeconomic policy also requires policy coherence. The APEC Leaders' Agenda to Implement Structural Reform is directed at exactly these issues.

PROGRESS TO DATE

Air transport

In air transport the initial instances of competition often occur in domestic markets through the introduction of low cost carriers (LCCs). For example, in Korea fares fell by 20–30% as a result of the entry of LCCs in 2006. The LCC share of the domestic market in Korea is now 25% and close to 30% on some routes.

Reform of international markets, which involve sovereign treaties as well as operating airlines, moves more slowly than that in domestic markets, but there is a shift towards liberalisation. For example, in 2006 Korea and China entered a more liberalised agreement for routes between Korea and China's Shandong province. As a result, fares fell by an average of more than 8% on these routes and traffic grew much faster (by a factor of 2) compared to other routes between the two economies.

Other studies rank economies according to their degree of liberalisation in international markets. An economy moving from the bottom quarter of the ranking to the top quarter would see substantial benefits. Such a move would see traffic volumes between economies linked by direct air services increase by about 30%. Signing Open Skies agreements has lowered air cargo freight rates by 8%.

Regulations remaining in APEC economies, particularly in international markets, maintain barriers to the entry of new airlines. Econometric analysis undertaken for this project finds that conversion to full openness in air transport would lead to an average reduction in margins for all APEC economies of 15%. Exporters able to reap such benefits from more competitive world aviation markets would be able to capture these reduced margins and pass them on to consumers.

Rail transport

In rail transport the separation of track (below-the-rail) and train (above-the-rail) operations and the introduction of competition between train operators provide significant benefits. Free entry of new operators and the resulting dynamics of competition are critical for better performance. One study found that free entry adds over three times as much to productivity as separation.

The separation of track ownership and operations is increasingly common in APEC economies, along with the specification of regimes that provide access for new competitors. Financing challenges in relation to track investment, however, remain. Between 2001 and 2008 the annual average rate of productivity growth in the rail sector for APEC members was 3.5%. There is still room for improvement, since for non-APEC members, productivity grew by 4.8% a year over the same period.

Tenders to operate the Auckland urban rail system were called in 2002. The track was owned and managed by a government enterprise. Traffic doubled between 2005 and 2010 under this

competitive model. Services more than doubled between 2005 and 2009. Reliability also improved. In March 2005 only 77% of trains arrived on time. This figure exceeded 85% for most of 2009. Over 5 years 21 of the 41 stations on the network were upgraded. There were more services, higher frequencies, greater punctuality and better trains. Under this model, the government continued to invest in the track. It also subsidised fares on the grounds of rail's contribution to the reduction in road congestion. The subsidy was transparent. Modelling suggests that this subsidy per passenger could be halved if further investment, including electrification, adds to service quality and attracts more passengers.

The process of privatisation in the New Zealand rail system in 1993 also had a significant effect on volumes and user satisfaction. Between 1994 and 1997 prices fell 7% per annum in the bulk goods sector and by more than 4% per annum for export goods. Significant improvements were found in customer satisfaction surveys, with recommendation rates improving from just over 30% to nearly 80%. Issues remained however in relation to investment in the rail track.

In Chile fares were 40% lower after the government-owned rail corporation divested its southern operations. The track remained in the hands of the state organisation which provided maintenance and facilities.

Road transport

Regulation of passenger and freight transport by road must juggle conflicting demands of avoiding congestion, bringing home to users the costs of road use and damage created, funding investment in the network, meeting safety targets and providing access to services. The package of regulations that is created, however, may induce a market response that in turn illustrates the opportunities available from better policy.

In Bangkok an opportunity was created for new entrants offering a differentiated passenger transport service at unregulated prices. When they began in the mid 1980s, these new services, or 'vans', were illegal, but later many were licensed. The vans were smaller than buses and charged higher prices but offered shorter and faster routes with guaranteed seats. Although passengers were required to go to terminals rather than usual bus stops, by 2008 there were more than 6500 vans operating in Bangkok. They provided consumers with more variety and wider access to services.

Freight rates fell by 20–30% when quotas on cross-border freight licences were removed between Thailand and Laos in 2004.

For international road freight, as for trade more generally as tariffs are lowered, greater importance now attaches to infrastructure and other regulatory constraints, such as arrangements for customs clearance.

Maritime transport

Shipping services markets are now regarded as largely competitive, but residual regulation of maritime services remains in some economies. The emerging issue is access to port services – in particular, access to ancillary services required to berth, load and unload.

Another common restriction in maritime services is that on cabotage rights. The Australian approach has been not to remove the regulation. Rather, the manner of its implementation has

been changed and greater flexibility is obtained through a permit system. Technological improvements and rationalisation of staffing scales resulted in a downward trend in real interstate non-bulk freight rates from the early 1980s. Regulatory changes sustained this trend. Rates were 40% lower in 2005 compared to the start of the 1990s. The Australian coastal fleet capacity was 60% lower in 2007 compared to 1999 but productivity more than doubled as a result of a rise in capacity utilisation.

New econometric work undertaken in this study finds that a movement from the current policy regime to full liberalisation for all APEC economies would on average reduce maritime freight rates by about 20%. This saves real resources and provides benefits to shippers and their customers.

Electricity

Regulatory reform in OECD economies has contributed to lower industrial electricity prices. Competitive wholesale markets and retail competition also reduced prices significantly in the United States of America: retail competition reduced prices by 5–10% for residential customers and by 5% for industrial customers.

Given the complexities involved, structural reforms that have taken place since 2004 in the energy sector in APEC economies have mostly been incremental – there have been few ‘big bang’ initiatives.

Russia is an exception. 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 Californian experience of reform, where blackouts followed measures to increase competition, has not been a deterrent in Russia, where the reforms have been designed with lessons learned from earlier international experience.

The first stage of electricity reforms in Korea included the separation of generators from the distribution company. Utilisation of capacity increased: planned outages of 25 days across 109 units of generators in 2000 dropped after restructuring to about 19 days across 117 units in 2003. Productivity also increased through a substantial rise in the capacity utilisation rate of coal-fired plants – from 75% in 1999 to 89% in 2003.

Econometric analysis in this report shows that further structural reforms in APEC electricity markets would reduce prices and increase efficiency. In electricity markets:

- the introduction of competition through a third party access regime would be associated with electricity prices being almost 5% lower than otherwise, on an indicative basis and holding all other factors constant;
- the introduction of a wholesale electricity market would be associated with electricity prices being about 7% lower; and
- unbundling of generation from transmission would be associated with a fall in electricity prices by more than 11%.

This study estimates that the combined effect of all three of these initiatives would be electricity prices that are 23% lower than otherwise.

Gas

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. A remarkable development in China began in 2005 with reform to the system for pricing gas. Gas prices had been based on a cost-plus formula, but from 2005 they were 'hooked' to the prices of other sources of energy. This began to correct the problem of pricing gas too low, which in 2009 had led to gas shortages.

Econometric analysis in this report identifies the effects that further structural reforms in APEC gas markets would have on prices and efficiency. The introduction of retail competition would be associated with gas prices being about 15% lower than otherwise, all other things being constant. The unbundling of gas production/import from distribution would lower gas prices by more than 23%.

Telecommunications

Telecommunications reform, which embraces information and communications technology as well as traditional telephony, leads to productivity improvements. A contributor is the greater use of the Internet for business transactions. Productivity improvements reduce costs in supply chains and enable goods to move to market more quickly and more cheaply.

As of 2009 the majority of APEC economies have adopted full market entry liberalisation. However, a common practice is to limit foreign investment from gaining dominant positions in fixed-line operators. This is a major issue in current telecommunications regulatory settings. As of 2009 all APEC economies have liberalised their mobile telecommunications sectors. In most economies new licences are granted based on market-oriented approaches unless limited by the availability of spectrum. APEC members have undertaken – as required by their respective General Agreement on Trade in Services (GATS) treaty commitments – to allocate spectrum in an objective, timely, transparent and non-discriminatory manner.

A liberalisation program began in Chinese Taipei in 1997, first in mobile then in fixed-line services. The subsequent change in performance has been remarkable in comparison with its APEC peers. Fixed-line penetration in Chinese Taipei exceeded that of Australia and Japan in 1998 and of the USA in 2003: it peaked at 65% in 2005. It has since been falling, as in many economies. Mobile penetration in Chinese Taipei exceeds 100%. Broadband penetration is at the same level as these comparator economies.

Fixed-line development in Viet Nam is outstanding when compared with other APEC economies with similar levels of economic/telecommunications development. Prior to 2003 Viet Nam had a similar level of fixed-line penetration as 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.

The introduction of competition into the mobile sector in PNG has led to universal coverage, following a rise of 700% in the number of mobile subscribers since mid 2007. Charges have fallen by 11% in the peak times for domestic calls and 51% in off-peak periods. In an economy like PNG with such a difficult terrain, the benefits cannot be underestimated. Social interaction, such as the rate of response to medical emergencies, is better, mobile banking initiatives are underway and market pricing information is more readily available.

THE NEXT STEPS AND THEIR EFFECTS

What are ‘the next steps’ to achieve greater benefits still? A common theme for all sectors is the introduction of more competition:

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

A package of reforms based on the measures outlined above would have a significant effect. Across the whole APEC region, USD175 billion a year in additional real income (in 2004 dollars) could be generated relative to what would have accrued had these reforms not occurred. This is a snapshot of the gains projected after a 10-year adjustment period.

The reforms 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 transport, energy and telecommunications sectors. The largest productivity gains (above 10%) would occur in Indonesia; Malaysia; Mexico; the Philippines; Chinese Taipei; and Viet Nam.

There is no compelling reason for an APEC economy to wait for others to start. In all economies an overwhelming proportion of these gains come from reforms domestically, rather than reforms in other economies. Of course, the gains from joint reforms are also considerable.

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 lead to lower real production costs, even by half as much as is estimated here, they create a return to reform effort that is much greater than that from trade reforms.

These findings, therefore, vindicate APEC Leaders’ decision to move beyond a ‘border’ focused trade reform agenda to one that focuses on ‘behind the border’ issues. Yet along with generating significant gains, structural reforms often require significant structural adjustments. These must be managed carefully and sensitively and often take a considerable transition period when implementing policy measures.

The essence of a productivity improvement is that an industry can produce more with less. To ensure that efficiency gains are passed on to consumers, competition is required. Competition also allows dynamic gains to be achieved as new ways of doing things are found and best practice is transmitted more widely across market players.

Employment effects of greater efficiency are always a concern to policy makers. Modelling work for this study indicates that sectors which show relatively high reductions in

employment do so not as a result of their own productivity improvements but because the domestic 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 the generation of 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.

A STRONGER AGENDA FOR APEC

This research shows the value of the APEC Leaders' adoption of an agenda to implement structural reform. It also reveals the importance of structural reform as providing strong bridges behind the border to capture the full benefits of improving regional economic integration. This study has found that:

- structural reform is challenging because it takes time amid the economic and political complexities in all economies;
- structural reform can create winners and losers but yields more inclusive development when it is carried out dynamically, with transitional measures and with other economic reforms; and
- structural reform is worth undertaking and provides potentially greater gains than trade liberalisation and generates economic sustainability.

These results suggest the scope to build an even stronger APEC agenda and work program. Structural reform is a vital process to achieve growth and to provide greater flexibility and resilience with which to deal with and withstand shocks, both domestic and external. However, it requires changes in economic structures, innovation and the adoption of new technologies and market responses to shape effective regulation as well as transform APEC economies and their current regulatory systems.

Steady adaptation is required, not 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, creates further forces for change. APEC economies are at various stages of reform, and their experiences to date are valuable to other APEC members. The sharing of this experience remains a priority, not just to learn about what is possible but also about the strategies for implementation. This will enable economies to examine measures and strategies and then shape and adapt them to their own situation.

To be effective, structural reform must be adopted for a purpose and specific outcomes should be the goal. Otherwise it is impossible to specify a method and explain its rationale in an often complex and sensitive environment. Another requirement to assess the impact of

implemented policy measures 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, allowing for the varying stages of development, and the costs of those gaps are drivers of reform. But in the end what matters is the outcome.

A reform program focused on structural reform will create new sources of growth. This growth will be driven by productivity. Often these new sources of growth are unable to be identified or forecast because it is the dynamics of competition, the near limitless imagination of enterprise and the innovative use of changing technology that gives rise to new beginnings. Reform at the border remains significant for the efficiency and growth of member economies but the empirical work here demonstrates the significance of the productivity effects of even a modest set of ‘next steps’, all primarily focused on the introduction of competition.

Another consequence of reform will be economic resilience. More efficient market operations, macroeconomic stability and higher productivity all follow from structural reform and will contribute to higher standards of living. The concern with resilience and macroeconomic stability is even more relevant in the context of responding to the recent global financial crisis.

Programs of structural reform in each economy, designed and implemented to suit the situation in that economy but which take into account lessons learned from other members to achieve clearly defined outcomes, can deliver new growth and economic resilience. Support in the APEC region through cooperation to learn these lessons and perhaps sequence reforms may also give rise to even more dynamic gains in APEC economies.