

DFAT Submission
to
the Review of the
National Innovation System

Department of Foreign Affairs and Trade

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Declaration: The Department of Foreign Affairs and Trade provides foreign and trade policy advice to the Government. The department works with other government agencies to ensure that Australia's pursuit of its global, regional and bilateral interests is coordinated effectively.

Executive Summary

- The Government's trade policy is based on two pillars: opening up new markets through international trade negotiations; and improving productivity and competitiveness behind the border. Innovation is relevant to both of these dimensions of trade policy.
- In the past five years, Australia has experienced slow export growth despite its longest-ever commodities boom. There are a number of contributing factors to this deterioration in the performance of exports. Productivity growth, in particular, is the key to building a more internationally competitive Australian economy, but this has slowed in recent years. It is in large part through innovation that a country can achieve and maintain strong productivity growth.
- Although the significance of innovation is clearest in elaborately transformed manufactures and high-technology services, it is critical across all sectors, including mining, agriculture and other services. Investment in innovation in the services sector has not adequately reflected its significance.
- The trade policy environment is an important factor in innovation. In a more open trading environment, competition against other firms encourages best international practice across a wide range of areas, including quality of firm output and use of resources and management. The impact is felt not only on firms in goods and services sectors which are directly traded, but also in firms which supply them.
- Research by the Productivity Commission has found that the more open trading environment brought about by reforms in the 1980s and 1990s was an important factor in explaining the surge in productivity growth in Australia in the 1990s. The experience of particular industries which have faced significant cuts in industry protection, such as the automotive industry and dairy industry, also suggests that they have responded by significantly increasing productivity. A number of studies have provided quantitative estimates of the relationship between greater openness to trade and investment and productivity or income growth.
- The World Trade Organization (WTO) provides a rules-based trading system that underpins Australian and global economic growth by providing legal certainty in the trading environment. Building on these rules, through bilateral, regional and multilateral agreements, will increase certainty and transparency in the regimes of Australia's strategic trading partners.
- Australia has a limited market for intellectual property (IP)-intensive products (such as pharmaceuticals). Access to overseas markets is necessary to grow businesses and recover the often significant development costs for innovative products and is therefore an important incentive to commercialisation. Internationally consistent IP regimes allow Australian producers and manufacturers to take advantage of global supply chains by protecting important IP in foreign markets when parts of their business operations are offshore.
- The Department of Foreign Affairs and Trade engages actively in international fora and encourages other countries to adopt a balanced approach to intellectual property protection that would provide sufficient return to innovators while yielding social returns. Australia supports the balance of IP rights and obligations in a manner that is consistent with encouraging innovation.

Introduction

The Department of Foreign Affairs and Trade welcomes the opportunity to provide a submission to the National Innovation Review.

The Government's trade policy is based on two pillars. The first is to open up new markets through international trade negotiations, while the second is to undertake the necessary reforms to improve productivity and competitiveness behind the border. These two dimensions are closely interrelated and both are critical to tackling Australia's trading challenge. Promoting innovation is one of the keys to improving Australia's competitiveness behind the border. But at the same time, the Government's international trade negotiations can affect the environment in which innovation occurs and the willingness of firms to take intellectual property offshore, including through global supply chains.

The submission falls into five parts reflecting the interests of the Foreign Affairs and Trade portfolio:

- the first looks at the role of innovation in tackling Australia's trading challenge;
- the second looks at the benefits of an open trading and investment environment for productivity and innovation;
- the third analyses the importance of a multilateral rules-based system in establishing an enabling environment for innovation, highlighting the importance of intellectual property (IP) protection;
- the fourth analyses the importance of IP protection for Australian innovators in overseas markets; and
- the fifth part draws conclusions.

1. Australia's Export Challenge and the Role of Innovation

In the past five years, world trade has grown at twice the rate of world output. During these years, in Australia, despite its longest-ever commodities boom, export growth was slower than the growth rate of GDP, in terms of both value and volume. In the five years to 2007, exports accounted for a little more than one-eighth of GDP growth, compared to nearly one-third of GDP growth over the period 1980-2001. Slow growth in exports has contributed to a trade deficit over these five consecutive years, reaching \$6.9 billion for the December 2007 quarter, the largest trade deficit on record.

There are a number of contributing factors to this deterioration in the performance of exports, including the appreciation of the dollar, drought, and slower productivity growth. Productivity growth, in particular, is the key to building a more internationally competitive Australian economy. Australia has recorded a decline in its multifactor productivity growth since the late 1990s. The most recent national accounts show that Australia recorded almost zero productivity growth in 2007. Over the last five years, average productivity growth has been lower than in any other equivalent period in the last 16 years.

Productivity gains arise from various sources. Slow growth of productivity could come from the slow adoption of new technologies, and/or from insufficient development of higher value added activities, such as R&D, high-tech industries and

services. It is in large part through innovation, along with other reforms to improve productivity and competitiveness, that a country can achieve and maintain a strong position in such activities. In Australia, however, the performance of innovation appears to be declining. A recent publication released by the Australian Bureau of Statistics (ABS) found that the proportions of innovation novelty for "New to the industry", "New to Australia" and "New to the world" have all declined since the 2002 to 2003 calendar years¹. The publication also pointed out that when compared to the European Union, Australia has a relatively low proportion of businesses introducing or implementing innovations which are "New to the industry", "New to the Economy" or "New to the world".

Innovation involves dynamic interactions and feedbacks among all inter-related processes such as research, product design, production, and marketing. In addition, innovation is not something that happens only in a relatively small group of high technology industries, or something that is driven by a small set of industries or technologies. The significance of innovation is perhaps most obvious in elaborately transformed manufactures and high-technology services, in areas such as electronics, information and communications technologies, transport and defence equipment. However, it is critical across all sectors, including mining, agriculture and other services. This is supported by the data in the ABS publication. In manufacturing industry, innovating businesses represented 41.7 per cent of all businesses. Among these, 26.9 per cent introduced new or significantly improved goods and services during the last two years to 2005. Among all industries, the mining and property and business services industries reported the largest proportion of turnover generated by innovation (about 11 per cent and 10 per cent respectively). The overall turnover attributed to new goods or services in 2004-05 was about 7 per cent².

The services sector is characterised by a growing use of productivity-enhancing technologies, such as Information and Communications Technology (ICT). The need for a more innovative services sector in Australia arises from the growing weight of its economic contribution, accounting for about three-quarters of GDP and around 84 per cent of employment in 2007³. However, investment in innovation in the services sector has not adequately reflected its significance. The services sector accounted for a much smaller proportion of research and development (R&D) activity than the manufacturing sector. In 2005-06, the finance industry accounted for 9 per cent of business R&D and 'property and business services' 17 per cent. The remainder of the services sector accounted for around 15 per cent⁴.

Australia's capacity to innovate will be increasingly important for sustaining economic growth including through our trade with the rest of the world. In particular, innovation in production networks will be particularly important to make global supply chains more accessible to Australian exporters (see Box 1 below). To maximise the potential for the opportunities presented by the increasingly connected global economy, Australia's national innovation system would benefit from the

¹ ABS, *Patterns of Innovation in Australian Businesses 2005*, Canberra, Cat. No. 8163.0, 2007.

² ABS, *Patterns of Innovation in Australian Businesses 2005*, Canberra, Cat. No. 8163.0, 2007.

³ ABS, *Australian National Accounts: National Income, Expenditure and Product, Dec 2007*, Cat. No. 5206.0, Canberra, 2007, and *Labour Force, Australia, March 2008*, Cat. No. 6202.0, Canberra, 2008.

⁴ ABS, *Research and experimental development, Businesses, Australia, 2005-06*, Cat. No. 8104.0, Canberra, 2007.

accumulation of national innovation stock through clustering and associated collaboration among firms. Clusters reflect national patterns of industrial and technological specialisation. They can enable a freer diffusion of advanced/emerging technologies/knowledge among firms in the same line of business and thus increase their exposure to international competitive advantages⁵. In Australia, SMEs account for more than 80 per cent of the number of exporters. Through stronger science-technology interaction in clusters, SMEs can become more internationally competitive in world markets, and thus more attractive to other participants in global supply chains.

Box 1: Australia in production networks

Australia's trade and investment has been altering with the emergence of production networks in Asia and the rest of the world. For example, instead of importing sophisticated manufactures from Europe or North America, increasingly these come from China or elsewhere in developing Asia.

While Australia's traditional commodity-based exports have flowed from its relative resource endowments, there has been an increasing pattern of both imports and exports of manufactures, and in particular parts and components, to come from or be directed to those economies in Asia most engaged in production networks. Many of these manufactures exports are air-freighted. Australia is increasingly linked by both inward and outward FDI to economies in Asia, but also has strong links with the United States and parts of Europe.

There is some preliminary evidence that Australia is providing the services essential to link the various parts of physical production in manufacturing production networks such as logistics or financial planning⁶. As the technological sophistication of the region, reach of information and communications technology and ability of management improve, it may also emerge that production networks become important in services in the Asia-Pacific, and that Australia can have an important role in providing them. The Bureau of Economic Analysis (BEA) has recently pointed out that there is some evidence that multinational enterprises (MNEs) are focusing innovative tradable service activities in Australia⁷.

2. The Importance of an Open Trading and Investment Environment

In a more open trading environment, competition against other firms encourages best international practice across a wide range of areas, including quality of firm output,

⁵ Clusters can create an innovative environment that promotes collaboration and competition. For example, the Australian wine industry, through collaboration and competition, has been innovative at a higher level than might otherwise have occurred (for more information, see Gans, J and Stern, S 2003, *Assessing Australia's Innovative Capacity in the 21st Century*, IPRIA, University of Melbourne, and ABS, *Measuring Innovation: Towards Developing a Scorecard*, Cat. No. 8163.6, Canberra, 2008).

⁶ For more information, see Dodgson, Mark and Innes, Peter, "Australian Innovation in Manufacturing: Results from an International Survey", Australian Business Foundation, July 2006, and Australian Industry Group, *Manufacturing Futures: Achieving Global Fitness*, North Sydney, April 2006.

⁷ For more information, see Ibarra, Marilyn & Koncz, Jennifer, "Direct Investment Positions for 2006: Country and Industry Details", *Survey of Current Business*, BEA, July 2007.

use of resources and management. The impact is felt not only on firms in goods and services sectors which are directly traded, but also in firms which supply them.

Research by the Productivity Commission has found that the more open trading environment brought about by reforms in the 1980s and 1990s contributed importantly to explaining the surge in productivity growth in Australia in the 1990s⁸. The experience of particular industries that have faced significant cuts in industry protection, such as the automotive industry and dairy industry, also suggests that they have responded by significantly increasing productivity. A number of studies have provided quantitative estimates of the relationship between greater openness to trade and investment and productivity or income growth (see Table 1 below). Closed economies (such as the former Soviet Union) are less innovative.

Table 1: Selected empirical studies finding dynamic gains from greater openness to trade and investment

Study	Country	Sector	Year	Results
Chand (1999)	Australia	Manufacturing	1967-95	A 1 per cent reduction in nominal rate of assistance produces a 0.18 to 0.50 per cent increase in total factor productivity
Chand and Vousden (1996)	Australia	Manufacturing	1970-91	A 1 per cent increase in an independent measure of assistance led to a 0.3 per cent decline in manufacturing industry output
Frankel and Romer (1999)	63 countries	Across all sectors	1985	Increasing the ratio of trade to GDP by 1 per cent raises income per person by between 0.5 and 2 per cent
MacDonald (1994)	US	Manufacturing	1972-87	A 5 per cent increase in market import share is associated with a 3.7 per cent increase in annual labour productivity growth for highly concentrated industries
Chuang and Lin (1999)	Taiwan	Manufacturing	1991	A 1 per cent increase in FDI produces a 1.4 to 1.88 per cent increase in domestic firm productivity
Antoine C. El Khoury and A. Savvides (2006)	Low- and high-income countries	Services (Telecommunication and financial services)	1990 & 2000	Low-income economies benefit from greater openness in telecommunication services and high-income economies from financial services openness.
Rao, B. Bhaskara and Singh, Rup (2007)	East Asia	Across all sectors	1971 - 2004	About 95 per cent of the growth of total factor productivity (MFP) in East Asia is due to trade openness.

Source: The Centre for International Economics (CIE), *Australia-Japan trade and investment liberalisation*, 2005, p. 86; Antoine C. El Khoury and A. Savvides, *Openness in Services Trade and Economic Growth*, Oklahoma State University; Rao, B. Bhaskara and Singh, Rup, *Contribution of Trade Openness to Growth in East Asia: A Panel Data Approach*, Munich Personal RePEc Archive (MPRA) Paper No. 6337, 2007.

The growing tradability of services in international cross-border trade has increased the incentives for firms to use advanced knowledge/technologies, which have

⁸ D. Parham, *Microeconomic reforms and the revival in Australia's growth in productivity and living standards*, Productivity Commission, Canberra, 2002.

promoted innovation and productivity growth. There are no official statistics measuring the extent of international competition in services, but recent OECD estimates⁹ suggest that internationally competing services companies tend to be more innovative or possess higher capability to innovate. The national innovation system thus needs to reflect the growth of competition in services sectors, and should aim to foster the growth and new entry of firms that are particularly innovative and successful in meeting emerging global demands.

Innovating firms are collaborating firms. Recent Australian empirical research¹⁰ suggests that companies that collaborate with foreign partners have a stronger likelihood of achieving a 'new to the world' innovation than pure companies that do not. The model developed as part of this research predicts that collaboration is associated with approximately a 70 per cent increase in the chance of achieving 'new to the world' innovation or 'creative innovation'. Businesses with more than 10 per cent foreign ownership are 60 per cent more likely to achieve 'new to the world' innovation than businesses that are 100 per cent domestically owned. Utilisation of diffused knowledge/technologies from foreign sources creates opportunities for a higher level of innovation, and provides a strong positive effect on the performance of the participating businesses. The benefits from foreign collaboration can be maximised when diffused knowledge/technologies "spill over" between different sectors. So, a policy environment that promotes foreign collaboration promotes innovation.

3. The Importance of World Trade Rules and an Enabling Environment for Innovation

An open trading and investment environment that encourages innovation is essential to a sound and widely accepted multilateral rules-based system.

The World Trade Organization (WTO) provides a rules-based trading system that has supported Australian and global economic growth since the Organization's creation in 1995. These rules seek to ensure transparency and fairness in treatment and cover all aspects of international trade. These rules also cover industry assistance and provide that any assistance must not be contingent on export performance. Underpinning these rules is the WTO dispute settlement system which allows WTO Members to challenge alleged breaches of the rules and to ensure that Members' rights and obligations are upheld. These rules provide important legal certainty for Australian exporters, including in relation to protection of intellectual property which crucially underpins innovation.

Australian trade policy seeks to build on these rules by engaging in bilateral and regional trade agreements that support and complement multilateral trade policy by increasing certainty and transparency of behind-the-border regimes with our strategic trading partners.

⁹ OECD, *Growth in Services: Fostering Employment, Productivity and Innovation*, Paris, 2005.

¹⁰ The Department of Industry, Tourism and Resources (DITR) (now, the Department of Innovation, Industry, Science and Research, DIISR), *Collaboration and other factors influencing innovation novelty in Australian Businesses*, Canberra, 2006.

Bilateral example – Australia-United States Free Trade Agreement and Innovation

The Australia - United States Free Trade Agreement (AUSFTA) is an example of a bilateral agreement that is supportive of, and draws upon, the multilateral trade rules to provide a stronger enabling environment for innovation.

By providing an open and secure investment environment, AUSFTA promotes high levels of investment, including in innovation, between Australia and the United States. It also provides an open and non-discriminatory environment for Australian service suppliers in the US market, binding liberal access for services trade across a wide range of sectors and thereby encouraging innovation in sectors such as educational, financial and professional services. The Professional Services Working Group established under the AUSFTA has put in place a framework to work towards the mutual recognition of professional services. This provides both the opportunity of greater market access for Australian professionals and cross-fertilization of ideas and experiences between Australian and US professionals contributing to innovation in their fields.

Australia and the United States have also implemented robust intellectual property protection that has set a high benchmark internationally. This greater harmonisation of our IP protections facilitates innovation by providing business and individuals with increased confidence and certainty that their goods and services will be protected.

Multilateral example – Intellectual Property, Innovation and TRIPS

World trade rules, when implemented through national systems, provide an enabling environment for innovation. Though Australia is a net importer of IP-related goods, we also have a long history of innovative research and development. The IP-related components of Australian exports cannot be quantified fully. It is for instance, often embedded in the contents and processes for producing our exported goods and services. One obvious measure, however, is the amount of royalties and licence fees attached to audiovisual, cultural and recreational services which were worth over \$1 billion to Australia in 2006-07.

An IP system should be balanced to allow access to ideas for the purpose of R&D and allow knowledge diffusion domestically and internationally. This is underpinned by the principles and objectives of the *WTO Trade Related Aspects of Intellectual Property Rights Agreement* (TRIPS).

IP rights encourage and promote further innovation by rewarding creators a monopoly economic right for a limited period of time. In effect, IP rights offset the risks faced by innovators of products such as pharmaceuticals, medical devices or car parts which require large investments to fund research and development with little certainty of success in the market. One of the core complexities in IP policy is finding the optimal balance in an IP system: too little protection may not attract the investment required for innovation; too much protection may stifle competition, and unduly restrict the public's access to important information and products.

Box 2: The TRIPS Agreement

The WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) was agreed to by all WTO Members as part of a single undertaking. The TRIPS Agreement introduced protection for intellectual property rights such as patents, trade marks and copyright into the multilateral trading system for the first time, coming into force at the same time as the WTO – on 1 January 1995.

The object and purpose of the TRIPs Agreement is to establish principles and standards concerning aspects of intellectual property rights that affect, or are affected by, international trade so as to reduce varying standards between Members' domestic IP regimes in a manner that balances the rights and obligations of holders and users of IP and promotes the transfer and diffusion of technology.

As a medium-sized, innovative country that is a net-importer of IP, Australia advocates a sensible balance of rights between the “users and producers” of innovation, to encourage diffusion of technology to achieve social gains and provide more common knowledge from which to innovate, while providing sufficient economic returns to innovators.

4. The Importance of IP Protection for Australian Innovators in Overseas Markets

Export markets

Australia has a limited market for IP-intensive products (such as pharmaceuticals). Access to overseas markets is necessary to grow businesses and recover the often significant development costs for innovative products. Market expansion can also lead to economies of scale, making the provision of goods and services cheaper, thereby allowing more funds to be reinvested in R&D and creating the incentive to do so.

As economies develop and become more ‘knowledge’ and ‘information’ based, IP regulation and enforcement issues become more prominent. As high-tech products are traded, the owners of embedded IP become more interested in the IP regimes of trading partners. For example, a number of industry submissions to DFAT on prospective free trade agreements have made the point that Australian exporters seek enforcement of IP rights in third markets so that they can export their innovations to overseas markets with the certainty of adequate protection, transparency and enforcement.

Global supply chains

Global supply chains arise when companies have elements of their business arrangements located abroad to produce or manufacture products more cost effectively, thus making them more competitive. Internationally consistent IP regimes enable Australian producers – in services industries as well as in manufacturing - to take advantage of global supply chains by protecting important IP in foreign markets when parts of their business operations are located offshore. Australian exporters

require certainty that their IP-embedded information will be protected before taking this information off-shore.

Engaging in global supply chains generally requires commercial presence, and the engagement of local labour. This kind of foreign direct investment (FDI) allows for technology to be diffused in these countries. If IP protection is strong in these countries, they are more likely to attract this FDI, and benefit from an environment which fosters further innovation domestically.

Emerging global developments

The Department of Foreign Affairs and Trade engages in discussions in international fora and encourages other countries to adopt a balanced approach to intellectual property protection that would provide sufficient return to innovators while yielding social returns. The following developments in international IP fora may affect innovation:

Traditional knowledge

Traditional knowledge (TK) generally refers to the body of knowledge developed over time in communities, often indigenous, using traditions and customs that lead to innovation. TK may be used, for example, as the basis for pharmaceutical patents. Discussions are progressing in the World Intellectual Property Organisation (WIPO) for traditional knowledge to be recognised within an IP system as part of the WIPO Development Agenda. Developing countries strongly argue for recognition of traditional knowledge. These countries often combine arguments for TK with access and benefit sharing of genetic resources (below) and advocate a system that would result in revocation of existing patents if TK or genetic resources are not acknowledged. Australia, with others, seeks a balanced approach, emphasising that recognition of traditional knowledge should be implemented in a manner that would not stifle innovation.

Genetic Resources

At the request of developing countries, there is ongoing discussion in various fora (including WIPO, the Convention on Biological Diversity (CBD), and the WTO TRIPS Council) to include access and benefit-sharing of genetic resources in the international intellectual property regime. Some suggestions include disclosing the genetic resource origin in patent applications, and cancelling patents that do not contain this disclosure. There have, however, been suggestions that such regimes may deter innovation because of the lack of certainty of patent ownership in return for investment of resources. Australia supports a regime that would not create a disincentive to innovate by creating burdensome compliance procedures on patent applicants that have no demonstrable benefit.

Innovation and renewable technologies and public health

Parallel discussions are also taking place in the TRIPS Council and other fora, including the World Health Organisation and the United Nations Framework Convention on Climate Change (UNFCCC), on allowing greater flexibilities,

including suspension of IP rights to allow developing countries access to important technologies aimed at environment or health goals. Following from the TRIPS Protocol and the TRIPS public health amendment, which allows countries to export pharmaceuticals under compulsory licence in certain circumstances, there is greater pressure from developing countries for further flexibilities in other non-health related areas. Australia supports access to needed technologies, but is concerned to ensure a balance of rights that would not impede innovation in the areas that flexibility is sought.

Proposed Anti-Counterfeiting Trade Agreement

Enforcement is clearly an important element of IP rights, as IP rights are of little use if unenforceable. Some countries, such as the US and Japan, have been frustrated with the international uptake and implementation of enforcement of IP rights, particularly in developing economies, and are proposing an Anti-Counterfeiting Trade Agreement (ACTA). Australia has participated in preliminary discussions and will engage in the negotiation of a draft text, on a without prejudice basis, later in 2008. Australia's interest is to use the ACTA to promote enforcement of IP rights in a manner conducive to innovation, but mindful of the need to balance interests of users and holders of IP rights.

Conclusions

In a more open trading environment, innovation not only directly increases economic efficiency, but also creates investment opportunities which translate into further economic growth, higher productivity and greater competitiveness in world markets. An open environment that promotes collaboration and competition can raise innovation and consequently the rate of productivity growth.

A robust IP system is an important factor in the enabling environment to stimulate innovation as well as to facilitate trade. Australia has developed a robust intellectual property regime which is balanced to allow access to ideas for the purpose of R&D and knowledge diffusion. Australia has also actively engaged in both bilateral and multilateral efforts to establish a robust international regime that allows intellectual property holders to export their innovations to overseas markets with the certainty of adequate protection, transparency and enforcement laws, and also to take advantage of global supply chains. Australia will continue to encourage a balance of IP rights between users and holders of IP through multilateral and bilateral relationships, to facilitate an enabling environment for innovation and trade.