Australian ICT Trade Update 2007

by John W. Houghton

Executive Summary

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Preface

This report is part of a series of statistical updates on the information and communication technology (ICT) industries and their markets. The series aims to provide consistent compilations of statistics on a core set of topics, namely: the information industries, the Australian market for ICT products and services, and Australia's international trade in ICT goods and services.

The Australian Computer Society, through its Economic and Industry Policy Board, sponsors these updates. They are compiled by Professor John Houghton of the Centre for Strategic Economic Studies, Victoria University, Melbourne. The Australian Computer Society exercises no editorial control over their content.

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Summary

The recovery from the global 'Dot Com' downturn has brought a new wave of globalisation in the ICT industries since 2000-01, which features increasing specialisation along the value chain and fragmentation of production activities, and the emergence of developing economies as both new production locations and new growth markets (*e.g.* China and India).[1]

Increasingly during the recovery, international investment flows have focused on developing economies, on services rather than manufacturing and, in particular, on a range of IT and IT-enabled business services. As a result, there is a new international division of labour, with the globalisation of services now following a similar path to that previously seen in manufacturing.[2]

What is distinctive about recent developments is the intensity of integration on a global scale and the emphasis on the efficiency of the system as a whole,[3] with international investment now seeking efficiency through the rationalisation of production activities at a global level, rather than simply seeking access to markets and resources.

Placing recent developments in this context, this report presents a detailed statistical update on Australia's information and communication technology (ICT) trade over the decade 1996 to 2006 (inclusive). It explores the composition of ICT services, software, content and equipment trade, and identifies major export markets and import sources. It also examines ICT trade State-by-State.

ICT trade

(Chapter 1)

During 2006 there was a marked upturn of activity, with spending on ICT equipment and services bringing a renewed surge of ICT imports. As a result, the ICT trade deficit reached a new peak.

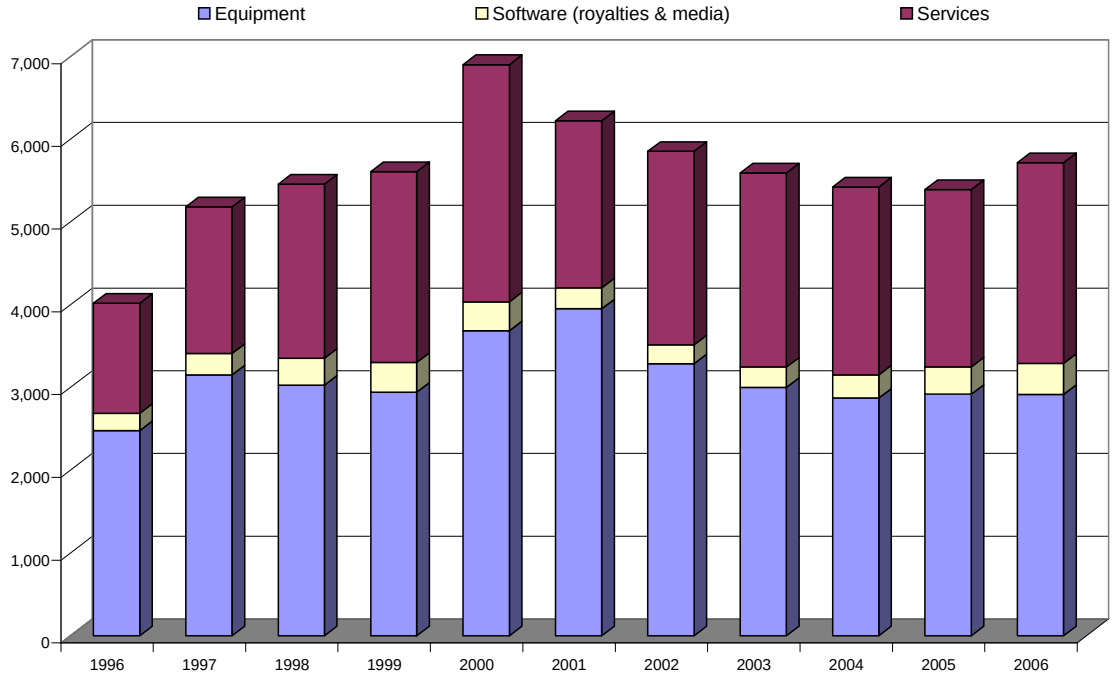
ICT goods and services *exports* from Australia were worth more than $5.7 billion during 2006, down from the peak of $6.9 billion exported during the boom in 2000 (in current prices) (Figure 1). However, with renewed spending, ICT *imports* cost more than $26 billion (Figure 2).

1 OECD (2006) *Information Technology Outlook 2006*, OECD, Paris.

2 Houghton, J.W. (2006) *Global Chains: Australia's challenge in the evolving world economy*, Committee for the Economic Development of Australia, Melbourne.

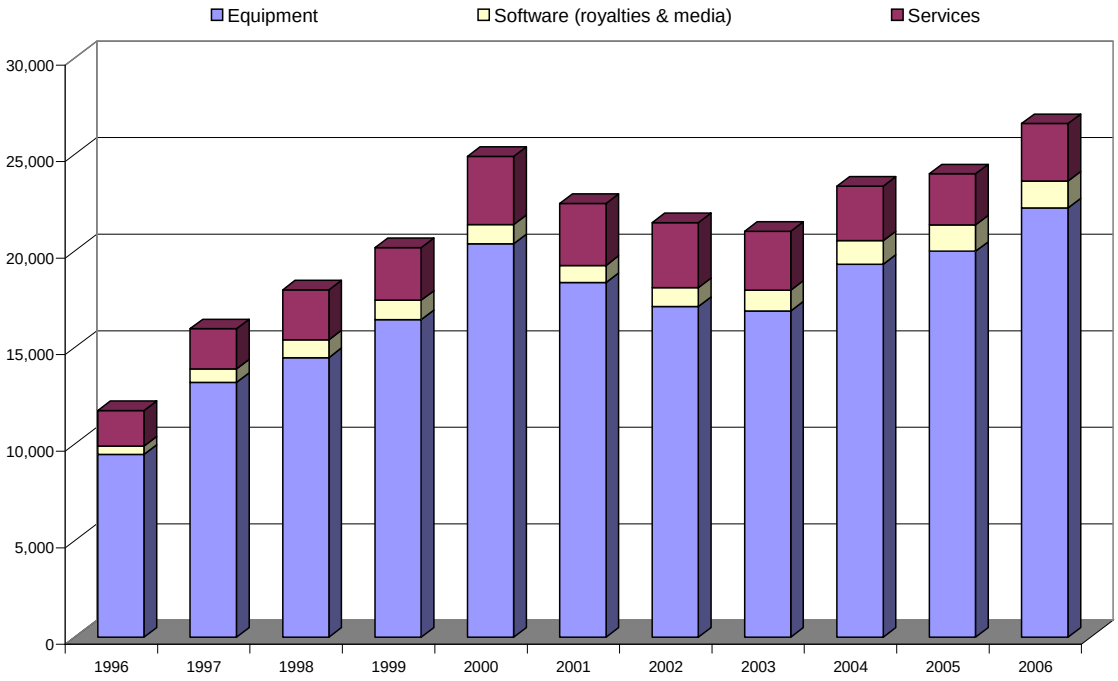
3 Kaplinsky, R. (2000) 'Spreading the gains from globalisation: what can be learned from value chain analysis?' *Journal of Development Studies* 37(2), pp117-146.

Figure 1 Australia's ICT exports, 1996 to 2006 (AUDm)



Notes: Excludes the one-off impact of payments for TV rights to the Sydney Olympics on audiovisual services.
Sources: ABS and TradeData (www.tradedata.net), CSES Analysis.

Figure 2 Australia's ICT imports, 1996 to 2006 (AUDm)



Notes: Computer and information services imports prior to 2000 are likely to be understated.
Sources: ABS and TradeData (www.tradedata.net), CSES Analysis.

Consequently, Australia's ICT trade deficit reached almost $21 billion during 2006 – increasing by more than $2 billion during the year and exceeding the previous peak reached during the height of the 'Dot Com' boom.

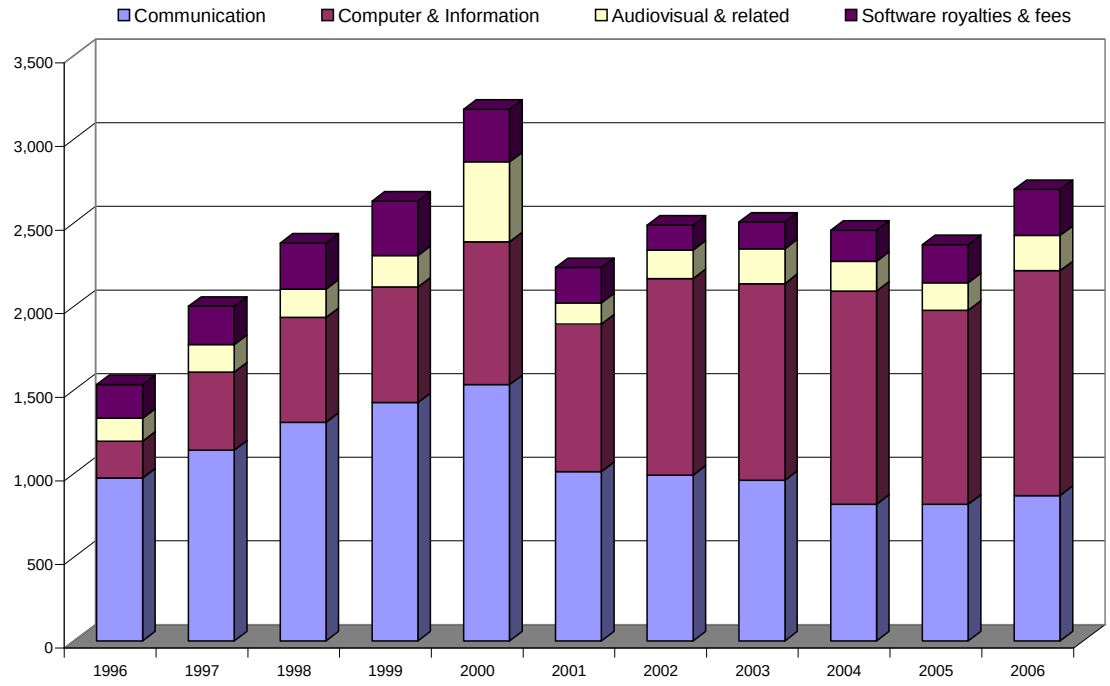
ICT services trade

(Chapter 2)

Australia's ICT *services exports* were worth $2.7 billion in 2006, and accounted for around 6% of total services exports.

Computer and information services were the standout, being the largest and fastest growing category of ICT services exports – having increased six-fold over the last decade and now accounting for almost 50% of all ICT services exports (Figure 3).

Figure 3 Australia's ICT services exports, 1996 to 2006 (AUDm)

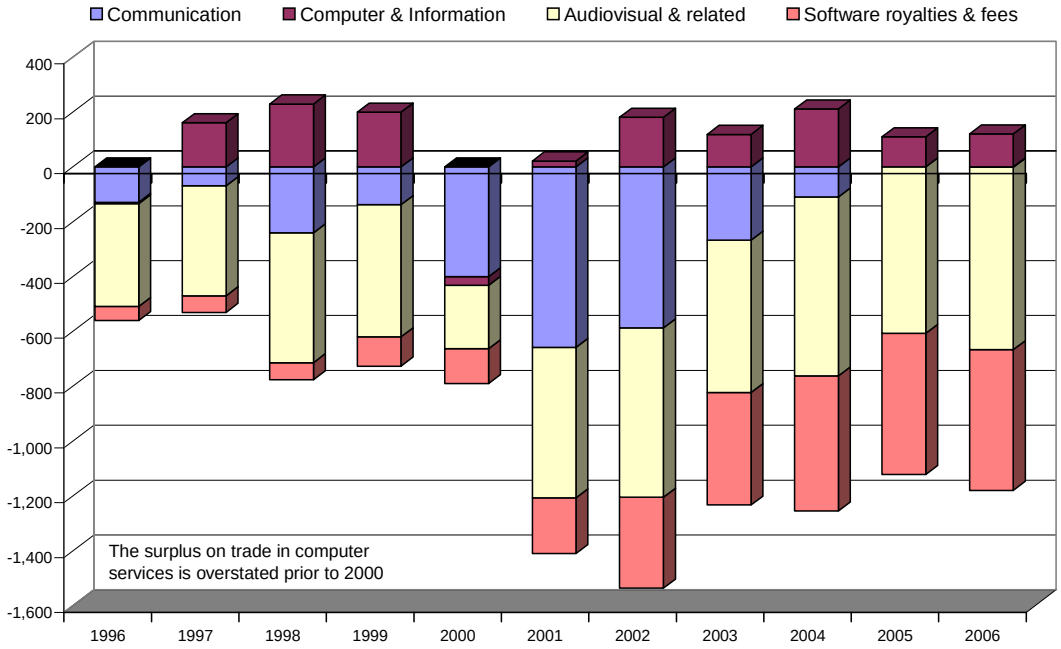


Note: Excludes the one-off impact of payments for TV rights to the Sydney Olympics on audiovisual services.
Sources: ABS, CSES Analysis.

Australia's ICT *services imports* cost $3.8 billion in 2006, and accounted for around 9% of Australia's total services imports. Computer and information services accounted for 33%, audiovisual and communication services each accounted for 23%, and software royalties and license fees for around 20%.

Consequently, there was a deficit on trade in ICT services of just over $1 billion during 2006. Again, computer and information services standout, having traded in surplus since 2002 and being the only category of ICT goods or services to be in surplus (Figure 4).

Figure 4 Australia's ICT services trade balance, 1996 to 2006 (AUDm)



Note: Excludes the one-off impact of payments for TV rights to the Sydney Olympics on audiovisual services. The surplus on trade in computer services is likely to be overstated prior to 2000, and the overall deficit understated.
Sources: ABS, CSES Analysis.

ICT equipment trade

(Chapter 4)

While there are significant areas of export strength, Australia continues to source much of its ICT equipment from overseas, and increasingly from sources in Asia.

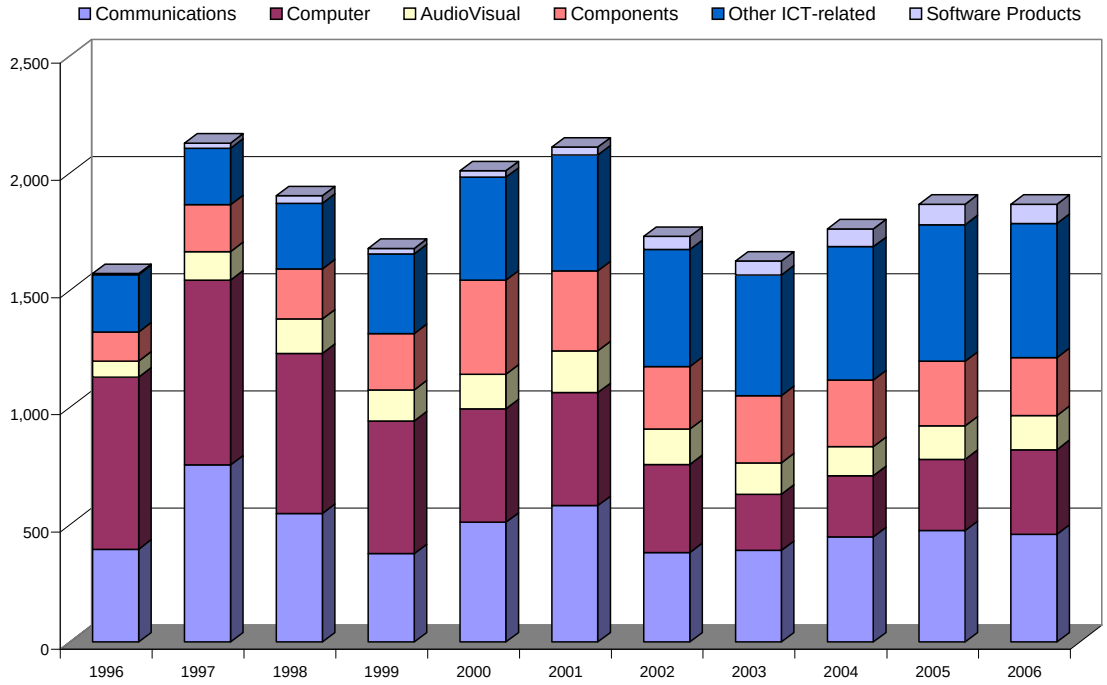
In 2006, ICT *equipment exports* from Australia were worth $3 billion – just under 2% of Australia's total goods exports. By comparison, Australia's wool exports accounted for around 1.6% of total goods exports, motor vehicles for around 3.4%, and coal for 16%.

During 2006, re-exports (*i.e.* things brought into Australia and re-exported with little or no value added) accounted for just over $1 billion, or 38% of Australia's ICT equipment exports. Locally produced equipment exports were worth $1.9 billion.

Locally produced exports of audiovisual equipment, components, communications and other ICT-related equipment have increased over the last decade, while locally produced computer equipment exports have declined (in current prices).

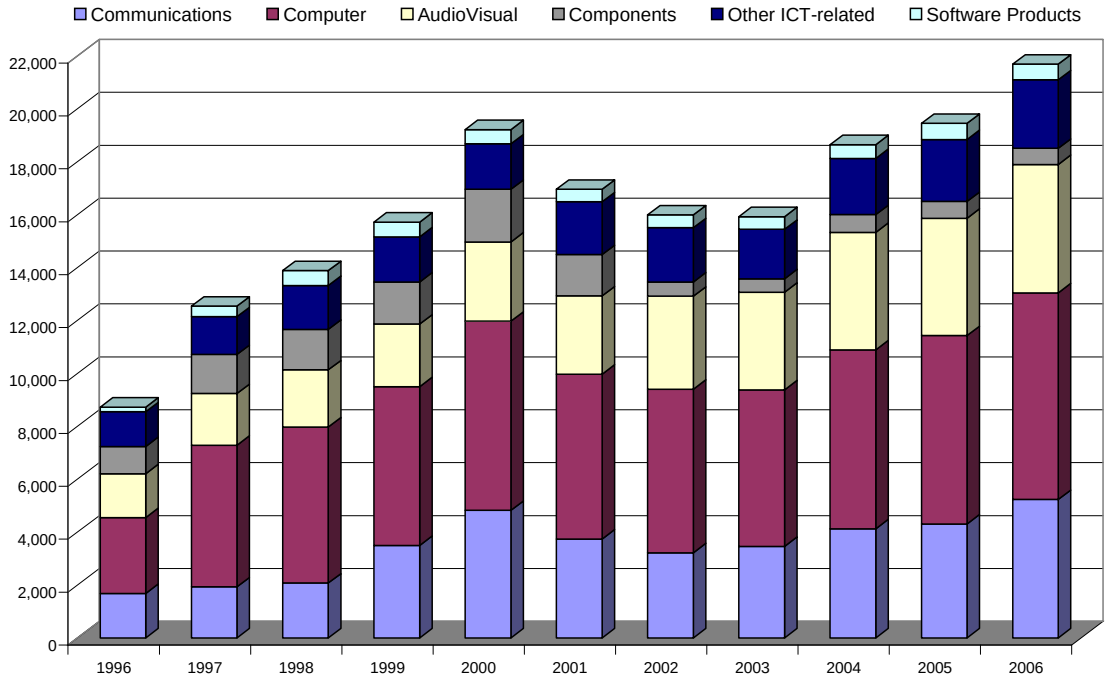
In the mid 1990s, locally produced exports of computer equipment were worth $790 million. By 2006, they had fallen to just $360 million (Figure 5).

Figure 5 Locally produced ICT equipment exports, 1996 to 2006 (AUDm)



Note: Excluding re-exports.
Source: TradeData (www.tradedata.net), CSES Analysis.

Figure 6 ICT equipment imports for domestic consumption, 1996 to 2006 (AUDm)



Note: Excluding re-exports.
Source: TradeData (www.tradedata.net), CSES Analysis.

ICT *equipment imports* into Australia cost almost $23 billion during 2006 – up from less than $10 billion a decade earlier and higher than the previous peak reached during the 'Dot Com' boom (in current prices). ICT equipment accounted for around 13% of Australia's total goods imports during 2006. In comparison, motor vehicles accounted for 8%.

As noted, re-exports were worth more than $1 billion. Hence, imports of ICT equipment for domestic consumption cost a little under $22 billion during 2006, up from less than $9 billion a decade earlier. Computer equipment accounted for 36%, communications equipment for 24% and audiovisual equipment for 22% (Figure 6).

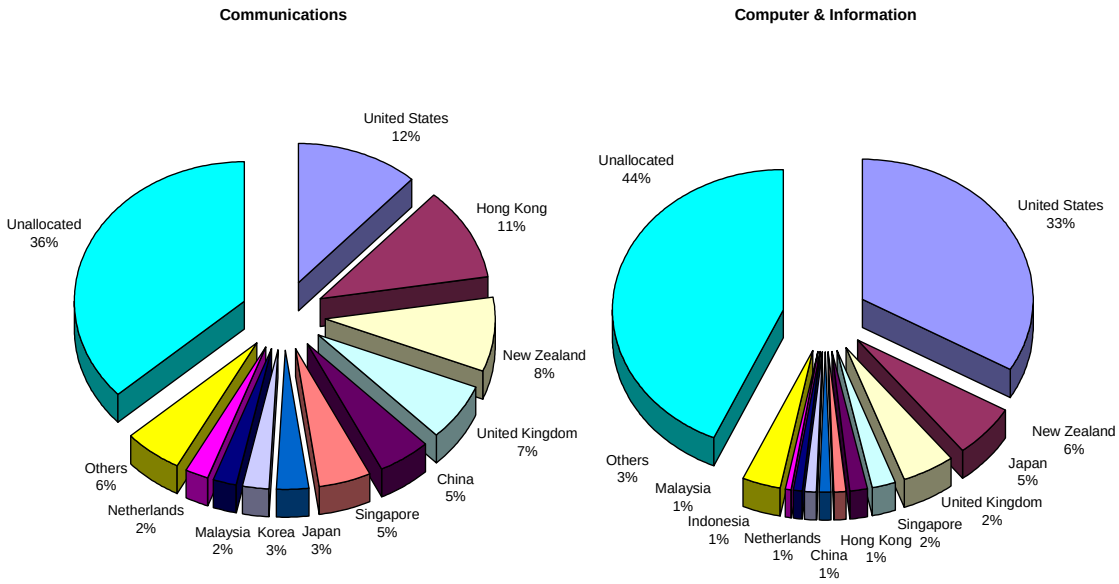
ICT services export markets and import sources

(Chapter 3)

Bilateral services trade data are limited, but among reporting countries major markets for Australia's ICT *services exports* during 2005 included the United States, New Zealand, Hong Kong, Japan, the United Kingdom, China and India (Figure 7).

Among reporting countries, the major export growth markets for *communications services* exports between 2000 and 2005 were China, Hong Kong and Germany, while for *computer and information services* the major export growth markets were India, Germany, South Africa, China and Malaysia.

Figure 7 Australia's ICT services export markets, 2005 (per cent)



Source: ABS. CSES Analysis.

Of the few reporting countries, the United States was by far our largest single source for ICT *services imports* during 2005 at $471 million. The United Kingdom was the source

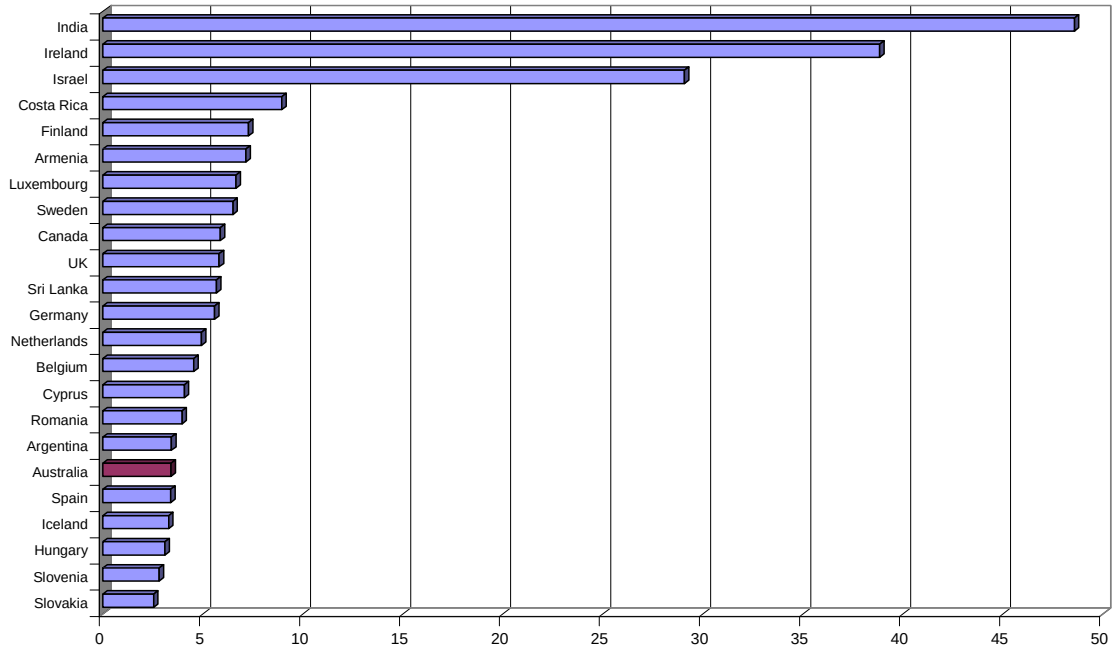
of $129 million, New Zealand $72 million and China $42 million. Unfortunately, India did not report.

Offshoring and trade in off-shored services involves both computer and information services (*i.e.* IT services) and a range of IT-enabled business services.

Of reporting countries, the major growth suppliers of these *IT-enabled services imports* between 2000 and 2005 were South Africa, Papua New Guinea, India, the Philippines, Germany, Canada, China and Singapore – a mix of those countries building exports from a very low base (*e.g.* PNG) and those that are already major offshore services providers (*e.g.* India and Canada).

Of reporting countries, the major growth markets for Australian *exports* of these 'other business services' were Belgium and Luxembourg, Canada, Taiwan, Switzerland, Hong Kong, Netherlands, Singapore, the Philippines and Korea.

Figure 8 Share of IT services in total services exports, 2004 (per cent)



Source: UNCTAD, CSES analysis.

Exploring offshoring intensity we find that in only three countries did computer and information services account for more than 10% of total services exports during 2004 – India, where they accounted for almost 50%, Ireland (39%) and Israel (29%). Among other countries, Australia's 3.4% is relatively high, and ranks 18th among reporting countries (Figure 8).

It is immediately apparent from these data that India, Ireland and Israel are major IT services offshoring locations. The other countries listed (including Australia) are also

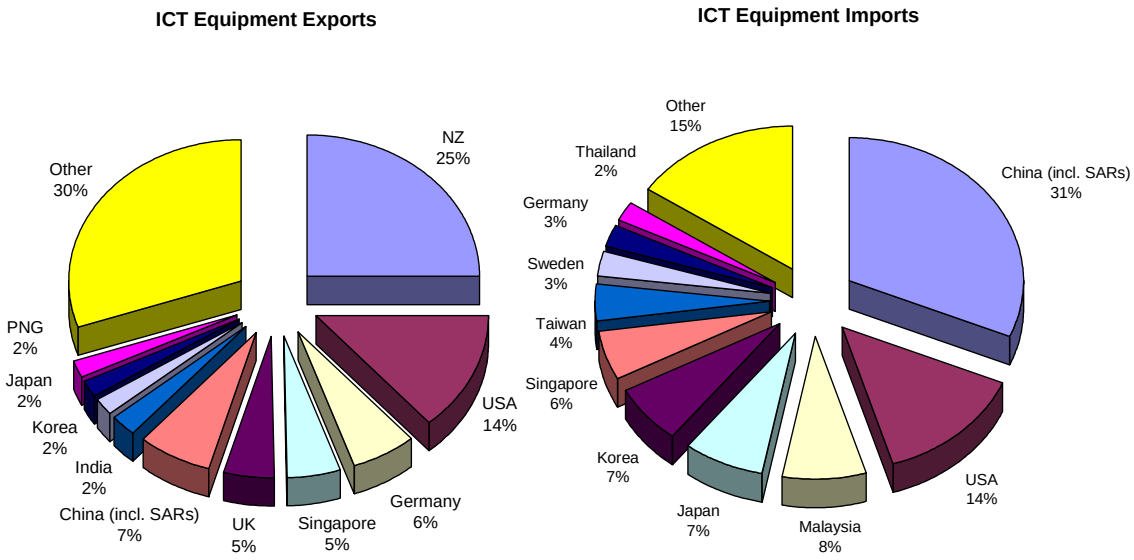
significant exporters of IT services and, *prima facie*, have the potential to become offshoring locations.

ICT equipment export markets and import sources

(Chapter 5)

Throughout the last decade New Zealand and the United States have been the largest markets for Australia's ICT *equipment exports.* In 2006, other major markets included Germany, Singapore, the United Kingdom, China, India, Korea and Japan (Figure 9). The United States, New Zealand, Germany and the United Kingdom were also the largest markets for our locally produced equipment exports.

Figure 9 Australia's ICT export markets and import sources, 2006 (per cent)



Note: Includes re-exports and re-imports.
Sources: ABS and TradeData (www.tradedata.net), CSES analysis.

A decade ago the United States and Japan were the two main sources of ICT *equipment imports* into Australia, but Asian countries, including China and Hong Kong, Malaysia, Korea, Singapore and Taiwan, are now major suppliers (Figure 9).

The biggest change has been in imports from China, which is now the largest supplier – with ICT equipment exports to Australia in excess of $7 billion during 2006 (approaching one-third of Australia's total ICT equipment imports).

ICT trade State-by-State

(Chapter 6)

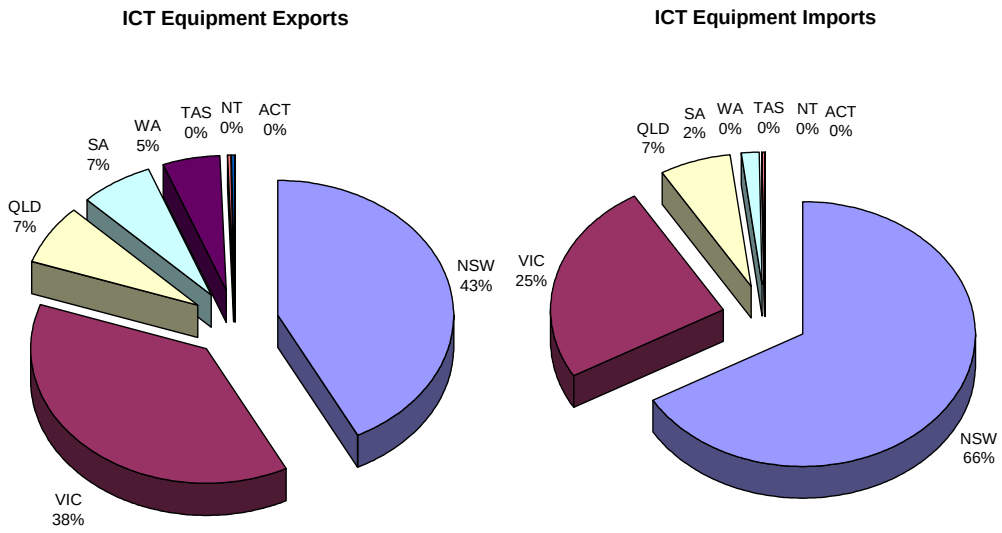
New South Wales and Victoria dominate ICT *equipment* exports and imports – with NSW being the largest exporter and importer of ICT and related equipment during 2006. In addition to Victoria, ICT equipment exports from Queensland, South Australia and Western Australia were also significant (Figure 10).

NSW attracted no less than 66% of all ICT *equipment imports* during 2006 – although almost $1 billion worth were re-exported, with Sydney acting as a regional distribution hub (Figure 10). NSW also accounted for 57% of Australia's State-attributed ICT *services exports* and 69% of ICT *services imports*.

During 2006, NSW exported $674 million worth of domestically produced ICT *equipment*, down from more than $1 billion in 1997. In contrast, Victoria exported $600 million worth, up from $586 million a decade earlier (in current prices).

Queensland, South Australia and Western Australia each accounted for 5% to 7% of Australia's locally produced ICT equipment exports, while the contribution of the other States and Territories to ICT trade is relatively small.

Figure 10 State ICT equipment trade shares, 2006 (per cent)



Note: Exports exclude re-exports, but imports include them.
Source: TradeData (www.tradedata.net), CSES Analysis.

During 2006, the major markets for locally produced ICT equipment exports from NSW were New Zealand, the United States and China (incl. SARs), while for Victorian

equipment exports the major markets were Germany, the United States, the United Kingdom and New Zealand.

Queensland's ICT equipment exports went primarily to the United States, Papua New Guinea, New Zealand, the United Kingdom, Indonesia and South Africa; South Australia's to the United States, New Zealand, the United Kingdom, Singapore, Peru and China (incl. SARs); and Western Australia's to Singapore, the United States, New Zealand, the United Kingdom and the United Arab Emirates.

The composition of the State's ICT equipment exports also varied. NSW accounted for 61% of computer equipment exports during 2006 and Victoria 23%, but just 42% of communications equipment exports compared to Victoria's 32%. Victoria accounted for more than 50% of all exports of audiovisual and other ICT-related equipment. Western Australia accounted for a relatively large 13% of all communications equipment exports.

What are Australia's strengths?

Trade and specialisation are beneficial. Not all countries will have a comparative advantage in all areas of ICT production, but the ICT producing industries are highly diverse. Comparative and competitive advantages in areas like electronic equipment assembly are very different from those in such areas as consulting services. Given the enormous range of the ICT industries, and the diversity of their underlying inputs and cost structures, one could reasonably expect almost all countries to have strengths in some aspect of ICT production, and comparative advantage in some part of the ICT industries.

In Australia's case, rapid export growth and surpluses on trade in computer services stand out. It is the only area of ICTs in which Australia has a surplus on trade. Clearly, computer services are an important area of local strength. And, despite the overall picture, there are also areas of electronics production in which Australia is competitive and actively participating in global production systems.[4] The challenge in both manufacturing and services is to build on these local strengths.

The challenge of offshoring

Offshoring may deliver cost savings, but it may also involve job losses. On the one hand, cost savings and efficiency gains provide the foundation for productivity growth and the creation of new employment opportunities. They enable firms to compete, win new business, gain market share and grow. On the other hand, some of the jobs lost may be difficult to replace, and there is some concern that labour conditions will be eroded through competition with locations without equivalent labour and social welfare provisions – leading to a 'race to the bottom'.[5]

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4 Houghton, J.W., Rose, M., Humphreys, J., Morris, P. and Liston, J. (2005) *Electronics Industry Capability Mapping Report*, Department of Industry, Tourism and Resources, Canberra.

5 OECD (2004) *OECD Information Technology Outlook 2004*, OECD, Paris.

A protectionist response that forfeits the potential benefits of offshoring is unlikely to be the most constructive. A more measured response would be to take advantage of the benefits while managing the adjustment process, compensating for adjustment costs where necessary, and enabling workers to seize new job opportunities. One of the keys to maximising the benefits will be to ensure that they flow to the consumer as quickly as possible through continued attention to competition policy. There may also be a need to adjust education and training, not only to account for the types of jobs being lost and created, but also for the possible loss of traditional career paths (*e.g.* offshoring the lower rungs of traditional career ladders). In the long run, further trade liberalisation and development in developing countries, and the harmonisation of minimum labour and welfare conditions, will reduce the opportunities for wage arbitrage and one of the motivations for offshoring.

Australia's participation in global ICT manufacturing has declined as manufacturing activity globalised. With the emergence of offshoring and globalisation of services, the challenge is to ensure that the same thing does not happen with IT services, or with related IT-enabled business services, R&D, design and technical services.[6]

What could be done?

The globalisation of the ICT producing industries and the emergence of international production systems reflects the responses of multinational firms to technological change, policy and trade liberalisation, and increased competition. In the post-'Dot Com' recovery, there is a new wave of globalisation transforming the ICT industries – with the rise of developing economies as both producers and new growth markets (*e.g.* China and India), and a rapid globalisation of services that is focused on IT and a range of IT-enabled business services.[7]

In many of these areas, as in manufacturing, the focus of globalisation is shifting from 'market seeking', driven by the need for market access, towards 'efficiency seeking', driven by competition and the need for global rationalisation of production. As a result, production of both goods and services is becoming increasingly fragmented and geographically dispersed. These trends raise very real challenges for Australia. Isolated for world markets, it is likely to become increasingly difficult to connect with, and participate in, global production systems.[8]

The challenge for Australian policy makers is to take a more 'fine-grained' view of local capabilities, competitive and comparative advantages than has hitherto been the case, take account of the emergence of global production systems, and focus coherent

6 Houghton, J.W. (2006) 'Innovation in ICT: A changing landscape,' *Telecommunications Journal of Australia* 56(3/4), pp93-105 (December 2006).

7 OECD (2006) *OECD Information Technology Outlook 2006*, OECD, Paris.

8 Houghton, J.W. (2006) *Global Chains: Australia's challenge in the evolving international economy*, Committee for Economic Development of Australia (CEDA), Melbourne, November 2006.

and consistent policy attention on developing local capabilities and shaping policies that further engage local producers in global production systems.

Globalised services activities, depend on local education and skills. Potential opportunities for Australian participation as a major venue for 'on-shoring' (*i.e.* being a major services exporter) will depend on education and skills, as well as IT and communications infrastructure (*e.g.* high speed broadband), the regulatory environment, and the ability of local suppliers to link into global production systems. Hence, policies in these areas will be an important influence on Australia's continuing success as an exporter of IT services.

Environmental and regulatory demands for the removal of 'materials of concern' and increased whole-of-life 'product stewardship' in electronics, and for adherence to international standards and procedures in relation to security, privacy and accounting practices in services, demand much higher levels of integration and coordination than in the past. So, it may be useful to find ways to support the development new business models that support increased firm and regional specialisation and better use of internet-based technologies and e-business applications that support increasingly globalised supply chain participation, coordination and integration.

It may also be useful to shift the emphasis of export support and investment attraction activities from exporting products and introducing local suppliers to inward investors, towards increasing support for services exports and introducing local suppliers to the key players in global production systems, wherever they may be.

Cluster development policies have been popular at the local level, but as global competition intensifies, global production systems rationalise and multinational enterprises increasingly permeate economies around the world, we need to shift the emphasis from the creation of *local* linkages and clusters, towards the creation of *global* linkages and participation in global production systems (*i.e.* from cooperating locally in order to compete globally, towards cooperating globally in order to compete locally, or, perhaps, in order to compete at all).[9]

9 Houghton, J.W. (2006) *Global Chains: Australia's challenge in the evolving international economy*, Committee for Economic Development of Australia (CEDA), Melbourne, November 2006.

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Outline of this report

This report presents a detailed statistical update on Australia's Information and Communication Technology (ICT) trade built on the conceptual framework of the ICT Map first proposed in Houghton *et al.* (1996) *Mapping the Information Industries*.[10] An outline of the mapping framework and definitions can be found in Appendix I.

Chapter 1 presents a brief summary of the global context, and then brings together Australia's ICT equipment and services trade into a single overview. It includes analyses of exports, imports and the overall balance of Australia's trade in ICT goods and services, and a brief description of major export markets and import sources for both ICT equipment and services. More detailed analysis of each of these topics is presented in the subsequent chapters.

Chapter 2 presents a detailed analysis of ICT *services* trade. It includes analyses of ICT related services credits (*i.e.* exports), debits (*i.e.* imports) and the balance of trade in ICT services. It also examines software trade and the impacts on ICT trade of the US-FTA.

Chapter 3 explores the direction of ICT services trade, identifying the major markets for Australia's ICT services exports and major sources of our ICT services imports. It also examines trade in IT-enabled services (*i.e.* offshoring) and explores some possible implications and responses.

Chapter 4 explores the composition of trade and trends in ICT *equipment* trade. It includes detailed analyses of exports, imports and the balance of trade in ICT equipment, and compares trends in trade values and volumes.

Chapter 5 examines the direction of trade in ICT equipment, identifying the major markets for Australia's ICT equipment exports and major sources of our ICT equipment imports.

Chapter 6 presents a detailed State-by-State breakdown of ICT related trade. It includes analyses of ICT equipment and services exports and imports for all States and Territories. It also explores state re-export and re-import of ICT equipment in order to shed light on Australia's participation in ICT production and distribution systems.

Chapter 7 presents some international comparisons as a way of putting Australia's ICT trade performance into perspective.

Appendix I presents a brief summary of the ICT Map used as the framework for data collection and analysis, and outlines the definitions used.

[10] Houghton, J.W., Pucar, M. and Knox, C. (1996) *Mapping the Information Industries*, Productivity Commission, Canberra.

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