Annex 4. Information and communications technologies

The significance of the New Economy

Despite recent setbacks, the forces driving developments in the New Economy[1] are far from exhausted and the transformation to a 'digital economy' is only just beginning. The New Economy will survive both the collapse of new economy stocks and the cyclical downturn. Technology investments will continue to grow as a host of new technologies are rolled out, including voice recognition, expert systems, wireless systems devices, smart cards; e-books, cheap storage devices; new display devices and video software; intelligent transportation systems and third generation (3G) broadband wireless communication devices, to name a few.

The primary force driving the New Economy is developments in Information and Communications Technologies (ICT). The hardware and software industries covered by the term ICT are set out in Box 4a.1. The impact of ICT is pervasive. Investments in ICT are benefiting 'old' economy firms as well as the high technology, knowledge-intensive industries. They reduce costs, and make possible new forms of work and organisation. Farmers can buy genetically-modified seeds and sow them from a tractor guided by a global satellite positioning system. Textile firms use the Internet to take orders from customers around the world.

As economic activity shifts to employ new technologies and information-based services, the nature of corporate assets is changing. Patents, copyrights, organisational and human capital, customer and employee satisfaction, and other non-material items are becoming increasingly important sources of value in corporations and in the economy. There will be a host of opportunities spawned by these developments. And there are indications that Australia is well positioned to grasp some of these opportunities.

1 For a definition of the term 'New Economy' as used in this report see Chapter 6, footnote 2.

Box 4a.1 Information Communication Technology (ICT) Producing Industries

Hardware Industries

Computers and equipment
Wholesale trade of computers and equipment
Retail trade of computers and equipment
Calculating and office machines
Magnetic and optical recording media
Electron tubes
Printed circuit boards
Semiconductors
Passive electronic components
Industrial instruments for measurement
Instruments for measuring electricity
Laboratory analytical instruments

Communications Equipment Industries

Household audio and video equipment
Telephone and telegraph equipment
Radio and TV communications equipment

Software/Services Industries

Computer programming services
Pre-packaged software
Wholesale trade of software
Retail trade of software
Computer-integrated system design
Computer processing, data preparation
Information retrieval services
Computer services management
Computer rental and leasing
Computer maintenance and repair
Computer related services

Communications Services Industries

Telephone and telegraph communications
Radio and TV broadcasting
Cable and other pay TV services

Source: *Digital Economy 2000*, US Department of Commerce, June 2000, p.23

If Australia is to seize New Economy opportunities in an era of rapid globalisation, it will not be sufficient for Australia to be a middle-ranking competitor in the world economy. Customers are increasingly sourcing products and services globally, making it increasingly necessary to be a world leader with innovative, best-practice technologies, production processes, products and services. The benefit of being more closely linked with the US is that, despite the recent sharp slowdown in growth in the US economy, (from an annual rate of nearly 5 per cent in 1999–2000 to a current rate of just over 1 per cent), it remains at the forefront of developments in the 'New Economy'. The US is still the world leader in many of the technologies that are impacting dramatically on the world economy, including health, biotechnology, financial services and IT. Moreover, the US possesses the sort of characteristics crucial for success in the New Economy, notably entrepreneurship and a culture of innovation. The US is likely to remain the global leader of the New Economy.

Innovation and entrepreneurship are "dynamic efficiency" imperatives in the New Economy and include the ability of a nation's institutions and firms to continuously innovate, learn, and change productively. Indeed, as markets change, technology accelerates, and competition comes not infrequently from unexpected places: such learning, creativity and adaptation have become principal sources of competitive advantage. Enabling and fostering constant innovation becomes crucial[2].

Australia has already demonstrated that it has the aptitude to adapt these new technologies and methods.

The New Economy in Australia and the United States

OECD studies[3] indicate that knowledge-based New Economy industries[4] comprise more than 55 per cent of the business in Germany and the US; between 50 per cent and 55 per cent in Japan, the United Kingdom and Canada; and notably almost half in Australia. Both the US and Australia had growth rates that improved in the 1990s compared with the 1980s. Several factors contributed to the increase in growth rates:

- capital investment, in particular, investment in ICT
- increased use of labour (with improved labour productivity)
- rising quality of labour (as the educational and skill levels rose)
- greater efficiency in how capital and labour are combined, (leading to improvements in multi-factor productivity).

In recent years, important structural changes have been occurring in the US as a result of:

- the growth of high technology industries, including the production of ICT products and services[5], as well as industries such as biotechnology, medical services and education;
- growth of the services sector including trade in services; and

2 Progressive Policy Institute: *Economic Development Strategies for the New Economy*, (www.ppionline.org)

3 OECD: *A New Economy? The Changing Role of Innovation and Information Technology in Growth*; Paris 2000, OECD: *A New Economy – Beyond the Hype*; Paris 2001.

4 The OECD defines knowledge-based economies as those that are directly based on the production, distribution and use of knowledge and information. The knowledge-driven economy encompasses the exploitation and use of knowledge in all production and service activities; not just those sometimes classified as 'high-tech' or 'knowledge-intensive'.

5 The OECD classifies a firm as ICT if it produces: office, accounting and computing machinery; insulated wire and cable; electronic valves and tubes; television and radio transmitters and apparatus for line telephony; television and radio receivers, recording equipment; instruments and appliances for measuring, checking, testing or navigating; industrial process control equipment; wholesaling of machinery. Equipment and supplies; renting of office machinery and equipment; telecommunications; and computer and related activities. See OECD, *Measuring the ICT Sector*, Paris 2000.

- the impact of ICT and the Internet on the productivity and operations of traditional industries, with the substantial opportunities and scope this provides for redesigning the structure of firms, markets, institutions, and the economy itself.

In the US, these developments began to yield significant benefits by the mid-1990s by way of a higher growth rate, sharply lower prices and increased efficiency. Work conducted by the US Bureau of Economic Analysis indicates that the direct contributions of high-tech products (such as computers, software, and telecommunications) to real GDP growth in 1995-2000 averaged 29 per cent (or 1.20 percentage points) of the 4.1 per cent growth in real GDP.

Work conducted by the OECD confirms that ICT was a major contributor to economic growth in the US and elsewhere. However, while ICT investment accelerated in most OECD countries, the pace and its impact on growth differed widely. ICT investment accounted for between 0.2 and 0.5 percentage points of growth in GDP per capita over the 1980–1995 period. Over the 1995–1999 period, this contribution increased to between 0.3 and 0.9 percentage points a year, with the US, Australia and Finland receiving the largest boost. The contribution of ICT investment to GDP per capita in Japan, Germany, France and Italy has increased only slightly, and accounted for only about 0.3 percentage points of total growth in the 1995-1999 period. Table 4a.1 compares the contribution of ICT capital to GDP growth for eight countries, differentiating between the role of ICT hardware and software. It shows that ICT contributed 0.9 percentage points to US GDP growth, three times more than in Japan, Germany and Italy. Australia and Finland also received large contributions of ICT investment in GDP growth. A recent report by the OECD[6] highlights Australia, along with the US, Netherlands, Norway, Finland, Denmark and Ireland, as economies that led the way in the 1990s in terms of growth and multi-factor productivity.

Table 4a.1 **ICT percentage points contribution to annual average GDP growth, business sector**

		US	Japan	Germany	France	Italy	Canada	Australia	Finland
IT and communications	1990-95	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2
equipment	1995-99	0.6	0.3	0.2	0.2	0.2	0.4	0.4	0.4
Software	1990-95	0.1	0.1	0.1	0.0	0.0	n.a.	0.1	0.1
	1995-99	0.3	0.0	0.1	0.1	0.1	n.a.	0.2	0.2
Total ICT	1990-95	0.4	0.3	0.3	0.2	0.2	n.a.	0.5	0.2
	1995-99	0.9	0.3	0.3	0.4	0.3	n.a.	0.6	0.6

Note: The estimates are based on a harmonised deflator for ICT investment, adjusting for cross-country differences in methods. The estimates are not adjusted for the business cycle.
Source: OECD.

6 OECD; *The New Economy - Beyond the Hype*; Paris 2001.

As Table 4a.2 indicates, Australia has not proven to be quite as adept at *producing* ICT. The OECD considers[7] that while the use of ICT is important for growth, having an ICT producing sector is not a prerequisite. While some OECD countries owe part of their expansion to ICT hardware production, others (like Japan) with a strong ICT sector, recorded sluggish overall growth. Indeed, the OECD pointed to several countries with high productivity growth that do not have large ICT sectors. Moreover, only a few countries will have the necessary comparative advantages to succeed in ICT output. The OECD considered that the key to benefiting from ICT is to focus on policies to foster its use, rather than its production.

Some express concern that Australia's ICT 'import bill', could cause problems in the future. Certainly imports of automatic data processing machines have increased steadily as a proportion of total imports from 3.7 per cent in 1991 to 4.7 per cent in 2000. Items included in this category are personal computers, storage units (disk drives) and visual display units (monitors). On the other hand, Australia is a traditional importer of capital and consumer goods and has no trouble meeting its import bills.

The US remains Australia's main source of automatic data processing machines. The value of imported computer parts and accessories has increased by 91 per cent from $1 317 million in 1991 to $2 518 million in 2000. However, their importance as a proportion of total imports has decreased from 2.7 per cent in 1991 to 2.2 per cent in 2000. The US has maintained its position as market leader, even though there has been an increase in competition from Asian countries.

7 OECD: *The New Economy: Beyond the Hype; Final Report on the OECD Growth Project*, Meeting of the OECD Council at Ministerial Level, 2001.

Table 4a.2 **Australia's ranking as a producer of ICT goods — world production of ICT goods in 1997. (In millions of US Dollars)**

	Electronic data processing	Office equipment	Radio comm. Incl mobiles and radar	Telecommun -ications	Consumer audio & video	Components	Total ICT
Greece	106	44	66	92	55	37	400
South Africa	174	6	137	434	229	52	1 032
Norway	243	0	322	354	7	146	1 072
Denmark	103	8	291	231	186	758	1 577
Portugal	399	19	137	211	617	608	1 991
Austria	430	47	64	578	658	1 239	3016
Australia	1 045	30	746	784	230	376	3 211
India	771	70	554	506	1 689	999	4 489
Israel	830	8	930	1 650	77	1 163	4 658
Belgium	1 927	85	534	969	796	925	5 236
Switzerland	697	83	310	490	2 739	1 202	5 521
Finland	925	5	2 259	1 748	161	624	4 722
Indonesia	1 100	77	437	400	2 139	1 680	5 833
Philippines	800	22	350	320	484	4 608	6 584
Spain	1 536	73	288	2 606	1 247	1 010	6 760
Netherlands	3 436	959	731	718	221	1 921	7 986
Hong Kong (China)	1 895	337	297	568	2 655	2 695	8 447
Canada	3 623	118	1 884	2 826	243	591	9 285
Sweden	218	16	5 124	2 612	7	1 472	9 449
Ireland	7 879	33	318	686	47	1 679	10 642
Thailand	5 732	264	414	541	1 786	3 323	12 060
Italy	5 637	290	1 950	3 623	645	3 940	16 085
Brazil	8 150	268	1 300	1 800	4 734	3 132	19 384
Malaysia	7 544	136	996	1 637	6 355	12 667	29 335
France	7 226	521	9 846	4 743	1 898	6 915	31 149
Chinese Taipei	17 885	51	764	1 473	863	10 331	31 367
Germany	8 423	913	4 968	6 624	2 343	11 217	34 488
UK	15 246	762	7 595	2 826	2 987	7 766	37 182
Singapore	25 000	335	1 284	419	2 357	13 361	42 756
Korea	7 915	339	3 903	2 297	5 669	28 187	48 310
Japan	67 686	6 215	19 248	21 752	18 711	84 380	217 992
United States	82 391	5 058	57 551	36 151	6 435	79 212	266 798

Source: Reed electronics Research as reported by OECD, *Information Technology Outlook 2000*, Paris 2000.

Table 4a.3 **Australia's Ranking in ICT traded goods in terms of export/import ratios for OECD countries, 1997**

Country	Population (millions)	Electronic Industry	Rank	Office Machinery and Computer Industry	Rank
Iceland	0.3	00.1	27/28	0.27	20/28
Ireland	3.7	2.00		1.66	
New Zealand	3.8	0.16	26/28	0.07	26/28
Norway	4.4	0.46		0.26	22/28
Finland	5.1	1.97		0.75	
Denmark	5.3	0.87		0.43	
Switzerland	7.1	0.51		0.33	
Austria	8.1	0.79		0.35	
Sweden	8.8	1.94		0.30	
Portugal	9.9	0.61		0.13	24/28
Belgium	10.2	0.93		0.71	
Hungary	10.2	0.77		1.35	
Czech Republic	10.3	0.32		0.24	23/28
Greece	10.5	0.18	25/28	0.08	25/28
Netherlands	15.6	1.14		0.91	
Australia	18.5	0.20	24/28	0.27	20/28
Canada	30.3	0.55		0.55	
Poland	38.7	0.39		0.04	27/28
Spain	39.3	0.55		0.39	
Korea	46.0	1.58		1.74	
Italy	57.5	0.61		0.56	
France	58.66	1.05		0.75	
United Kingdom	59.0	0.93		0.96	
Turkey	63.7	0.23		0.03	28/28
Germany	82.1	1.09		0.59	
Mexico	93.6	1.03		2.19	
Japan	126.2	2.45		1.69	
United States	266.8	0.80	12/28	0.60	10/28
Average		**0.86**		**0.65**	

Source: *Main Science and Technology indicators 1999*, p.56, OECD 2000.

There has been a very large increase in imports of telecommunications equipment and parts and accessories, particularly since 1998. By 2000, telecommunications equipment accounted for 5.5 per cent of Australia's total imports, compared with only 2.2 per cent in 1991. This can be attributed to the increased use of mobile phones, modems and apparatus for digital line systems and networks.

The Prime Minister's Science, Engineering and Innovation Council[8] (PMSEIC) argues that if Australia is only a purchaser of these technologies then it may not get first access to the latest technology. As a non-producer, Australia will miss out on the benefits of the trade growth in the sector. PMSEIC contends this despite the undoubted improvements being achieved through using ICT in diverse sectors such as banking, stock broking, mining and manufacturing.

Australia *does* produce computing hardware, about $3.3 billion worth in 1999, but it is not a significant producer by international standards. In fact, it has the lowest ICT manufacturing intensity of all OECD countries. It does however have significant strengths in applications software and services. As indicated in Table 4a.4, there are about 18 000 ICT firms in Australia, mostly small and medium sized businesses, and they earned a combined $62.6 billion in 1999.

Table 4a.4 also indicates that the number of firms manufacturing ICT fell from 473 in 1996 to 294 in 1999. However, telecommunications companies increased from 410 to 869 and firms engaged in providing computer services increased in number from 9 673 to 14 731.

Table 4a.4 **Australia's ICT Sector, 1996 and 1999**

	No. of businesses		No. employed		Income ($m)	
	1996	**1999**	**1996**	**1999**	**1996**	**1999**
Manufacturing	473	294	19,295	10,542	4,765	3,306
Wholesale trade	2,979	2,177	36,629	39,936	17,326	22,752
Telecommunications	410	869	91,701	74,467	18,733	26,083
Computer services	9,673	14,731	55,028	74,395	8,087	10,474
Total	**13,535**	**18,072**	**203,653**	**199,341**	**48,913**	**62,616**

Source: Australian Bureau of Statistics 2000, 8126.0

8 Report of the Prime Minister's Science, Engineering and Innovation Council: *Australia's Information and Communications Technology (ICT) Research Base – Driving the 'New Economy'*, 30 November 2000.

Australia's ICT firms are said to have particular strengths in software and services related to mass media (including advanced audio, and animation and cartooning technology), photonics, quantum computing, Internet software, health and education software, and telecommunications applications.

One problem Australia faces in generating home grown ICT firms is scale. Some smaller countries have shown that this is evidently not an insurmountable barrier since Israel, Singapore, Taiwan, Finland, Sweden, Ireland and Scotland have been successful in creating competitive advantages in high technology industries. Several factors are involved. They include government subsidization of IT industries, proximity to large markets, low labour cost advantages and educated and skilled workforces.

Australia's overall performance in the New Economy

Australia is in many respects well equipped to benefit from developments in the new knowledge-based economy. And Box 4a.2 ranks Australia number two in 'e-readiness' behind only the US on the basis of criteria explained in Box 4a.3.

Box 4a.2 **E-Readiness Rankings**

E-readiness ranking (of 60)	Country	E-readiness score (of 10)
	E-Business leaders	
1	US	8.73
2	Australia	8.29
3	UK	8.10
4	Canada	8.09
5	Norway	8.07
6	Sweden	7.98
7	Singapore	7.87
8	Finland	7.83
9	Denmark	7.70
10	Netherlands	7.69
11	Switzerland	7.67
12	Germany	7.51
13	Hong Kong	7.45

E-readiness ranking (of 60)	Country	E-readiness score (of 10)
	E-Business contenders	
14	Ireland	7.28
15	France	7,26
16(tie)	Austria	7.22
16(tie)	Taiwan	7.22
18	Japan	7.18
19	Belgium	7.10
20	New Zealand	7.00
21	South Korea	6.97
22	Italy	6.74
23	Israel	6.71
24	Spain	6.43
25	Portugal	6.21

Source: The Economist Intelligence Unit/Pyramid Research. "e-readiness Rankings", E-business forum, 2001

Box 4a.3 Economist Intelligence Unit E-readiness ranking criteria

The six categories that feed into the EIU rankings (and their weighting in the EIU model) are:

- *Connectivity (30 per cent)*: E-business cannot function without adequate telecommunications and Internet Infrastructure. "Connectivity" measures the access that individuals and businesses have to basic fixed and mobile telephony services, including voice and both narrowband and broadband data. Affordability and availability of service (both a function of the level of competition in the telecommunications market) also figure as determinants of connectivity.
- *Business environment (20 per cent):* In evaluating the general business climate, the EIU screens 70 indicators covering criteria such as the strength of the economy, political stability, the regulatory environment, taxation, and openness to trade and investment. The resulting business environment rankings measure the expected attractiveness of the general business environment over the next five years.
- *E-commerce consumer and business adoption (20 per cent):* Payment and logistics systems form the backbone of this set of criteria. The extent of credit-card ownership is evaluated as well as the existence of secure, reliable and efficient electronic payment mechanisms, the ability of vendors to ensure timely and reliable delivery of goods, and the extent of website developments by local firms.
- *Legal and regulatory environment (15 per cent):* The legal framework governing e-business is a vital factor that can enhance or inhibit the development of electronic trading. The extent of legal support for virtual transactions and digital signatures is considered. Ease of licensing and the ability of firms to operate with a minimal but effective degree of regulation are other criteria.
- *Supporting e-services (10 per cent):* No business or industry can function efficiently without intermediaries and ancillary services to support it. For e-business markets, these include portals and other online intermediaries, web-hosting firms, service providers (ISPs), as well as web site development and e-business consultants. The rankings assess the extent to which local companies and organisations have access to these services.

Box 4a.3 continued

- *Social and cultural infrastructure (5 per cent):* Education and literacy are necessary preconditions to a population's ability to navigate the web and drive future domestic Internet development. Because entrepreneurship and risk-taking play such an important role in building new e-commerce models, we also assess the national proclivity to business innovation and receptiveness to web content.
- *E-business leaders:* These countries already have most of the elements of e-readiness in place, though there are still some concerns about regulatory safeguards.
- *E-business contenders:* These countries have both a satisfactory infrastructure and a good business environment. But parts of the e-business equation are still lacking.
- *E-business followers:* These countries – the largest group featured in the rankings – have begun to create an environment conducive to e-business, but have a great deal of work to do.
- *E-business laggards:* These countries risk being left behind, and face major obstacles to e-business growth, primarily in the area of connectivity.

The OECD has made a more comprhensive analysis of Australia's performance in Factors relevant to the Knowledge-based economy. It is set out in Box 4a.4.

Box 4a.4 OECD Overview of Australia's Performance in the Context of the Knowledge Based New Economy

Metric	Australia's status
General macro-economy	
GDP – average annual growth rate 1989-98	>3% exceeded OECD, EU averages and also Canada, UK, Germany, US and Japan; ranked 9/29
Employment growth – 1989-98	Similar to US and exceeds OECD, EU, Germany, UK, Japan; ranked 13/29
Knowledge based industries and services	
Real value added growth rates 1985-96	Growth rate for knowledge-based industries ~ 4% Exceeded OECD, EU, UK, US, Germany, and Japan, ranked 3/20
Information and communication technology	
(ITC) expenditures as %GDP 1997 (eg., hardware/software & telecommunications)	~8% of GDP, exceeding OECD, EU, US, UK, Japan, Canada, Korea. Ranked 3/27
Computers, Internet and Communications	
Cost of Internet access – July 2000	Ranked 4th lowest of 29; behind Finland, Korea and Italy
No Internet hosts per 1000 people – Sept 1999	Ranked 9/29
Cellular phones per 1000 people – June 1999	Ranked 12/29
Secure Web servers per 100,000 people – March 2000	Ranked 3/29
Human resources	
Flow of graduates Science & Engineering 1996 as a % of total employment	>0.2% of total employment, ranked 2 of 29
R&D effort	
Gross domestic expenditure on R&D as % GDP	Mid-ranked of 29 countries
% business expenditure on R&D to total R&D	Mid-ranked of 29 countries
All researchers per 10,000 labour force 1997	Ranked 7/29 countries, behind 6th placed US
Researchers in government and higher education per 1,000 labour force 1997	Ranked 1/29, above all other nations
Total basic research expenditure as % GDP 1997	Ranked 4/18, one above US
R&D expenditure by government plus higher education as % GDP	>0.8% of GDP, better than EU, OECD, Japan, US, Canada, UK, Korea, ranked 7/29
Tax treatment of R&D	
Tax subsidy per one US$ of R&D 1998	>0.1$ subsidy had Australia ranking 4/29

Box 4a.4 continued

Metric	Australia's status
Other types of metric reported:	
Investment in venture capital as % GDP and growth rate of venture capital; high technology industries (eg., chemicals, food, drugs, computers) in international trade; share of intermediate (eg., value added components) in trade with EU countries; foreign direct investment, mergers and acquisitions, shares of foreign affiliates in high technology manufacturing and industrial R&D; international high technology alliances between firms; cross border ownership of inventions; international cooperation in science and technology, etc	Australia scored higher than average or mid-range with most competitor nations in respect of these metrics. The metrics indicate performance on globalisation in high technology or knowledge-based industries. Of interest is the presence of research-performing foreign affiliates eg., manufacturing R&D enabling the host country to benefit from technology transfer. Best performing was Ireland with some 68% of its total manufacturing R&D done by foreign affiliates. Australia was ranked 4/17.

Source: OECD, Science Technology and Industry Scoreboard 1999: Benchmarking Knowledge Based Economics, (1999).

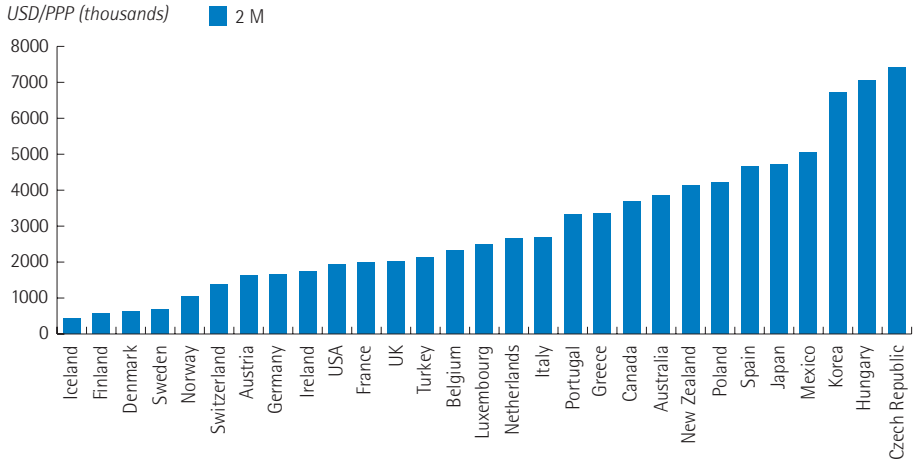
Communications infrastructure

The investment and diffusion of ICT depends not just on the cost of the investment goods themselves, but also on the associated costs of communication and use once the hardware is linked to a network. The US and Australia have developed extensive domestic and international communications networks that facilitate fast, reliable and cost effective access. The relatively earlier liberalisation of the telecommunications sector in the US and Australia resulted in a boost to infrastructure investment and lower prices and consequently a wider usage and diffusion of ICT technologies than those countries that followed later.

Leased lines

The rapid availability of leased lines at market-oriented prices is important, not least for the provision of cheaper Internet services and the development of e-commerce services. As Figure 4a.1 indicates, an OECD comparison of leased line tariff baskets for November 2000 (adjusted for purchasing power) ranked prices in the US 10th and prices in Australia 21st among 29 OECD countries.

Figure 4a.1 **Comparison of OECD Leased Line Tariff Baskets, November 2000 (in USD/PPP)**



Note: VAT is excluded.
Source: OECD, *Communications Outlook 2001*, Paris 2001.

Growth in Internet use

Table 4a.5 below indicates that the US is well ahead in terms of growth in Internet use and predicted to remain so. The table compares Internet use among Asia Pacific economies. New Zealand ranks second and a cluster of countries ranks third, including Australia, Canada and Singapore.

Looking ahead, 3G mobile broadband service will be important and will further stimulate changes in the New Economy by providing mobile Internet access. Australia has avoided very high auction prices and should seize the opportunity for first mover advantages by accelerating service provision. In Japan there are 24 million subscribers to NTT DoCoMo's i-mode service. This is evidence that there is consumer interest in the sort of service 3G mobile will provide.

Table 4a.5 **Growth in Internet Use in the Asia Pacific 2000–2003**

Projected Internet Penetration for Individuals 2000–2003 (per cent)

	2000	2003
Australia	34.3	62.1
Brunei	1.5	2.5
Canada	40.9	62.1
Chile	3.1	5.8
China	0.7	1.6
Taiwan	21.7	47.1
Hong Kong	23.7	47.5
Indonesia	0.2	0.6
Japan	15.4	27.1
Korea	20.2	58.6
Mexico	1.3	2.7
Malaysia	5.6	17.5
New Zealand	29.8	65.3
Papua New Guinea	0.1	0.2
Peru	1.5	4.0
Philippines	4.0	1.8
Russian Federation	1.8	6.9
Singapore	39.7	62.3
Thailand	1.3	3.2
United States	44.5	71.0
Vietnam	0.1	0.5
Total Number of Users (millions)	**197**	**388**

Source: Australian Department of Foreign Affairs & Trade (DFAT) based on projections made by DFAT, ITU and Goldman Sachs.

A recent OECD study[9] shows that the US had the highest number of secure servers per million inhabitants with Australia in third ranking (behind Iceland). The study indicates that barriers to entrepreneurship are lower in Australia and in the US than in many other OECD countries.

The OECD also reports that in purchasing power parity terms, Internet access prices were 3rd lowest in the US, and 8th lowest of all OECD countries in Australia. The report demonstrates a correlation between the price of Internet access and Internet host penetration. The US has low Internet charges and the highest penetration, while Australia also has low prices and ranks about middle in terms of penetration.

Conclusion

The structural changes taking place in technology intensive industries including those occurring in telecommunications and biotechnology, the Internet, ICT, and the development of knowledge-intensive industries are having a profound effect on both the US and Australian economies. The US is leading global change in these areas. Australia is one of the handful of countries where change is occurring at a similar rate.

9 OECD: *The New economy - Beyond the Hype*; Paris 2001.

It is apparent that Australia is tracking closely trends in the US and is among a select group of countries which are similarly following suit. These countries have identified themselves as contenders for economic leadership in the New Economy.

On the other hand, it is clear that in a number of areas which are key to the New Economy, Australia's position is mid-pack rather than at the forefront. Increasingly the New Economy indicators such as cost of leased lines and ease of access to the Internet will be the basemarks for competitiveness in the New Economy.

Australian business has already demonstrated that it can learn from the US and upgrade to world's best practice. An FTA will accelerate that process.

Australia exhibits the preconditions to quickly adopt technologies and processes developed in the US. By keeping abreast of such developments, Australia will be better positioned to develop products and services that are competitive in various markets. During the past two decades, the composition and direction of Australia's trade has changed as a result of domestic economic reform and global trends.