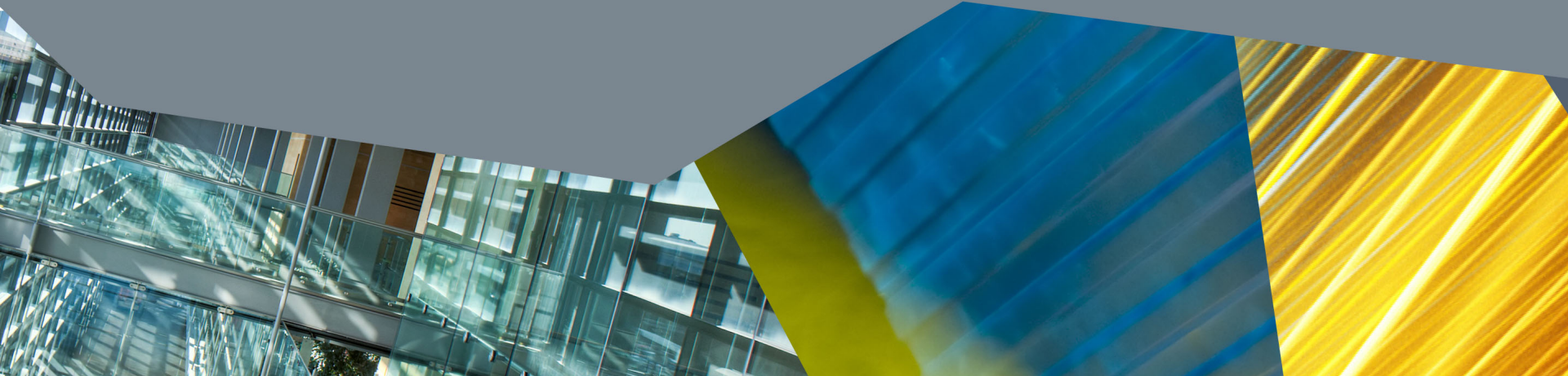




# The Australian Council of Deans Information and Communications Technology (ACDICT)

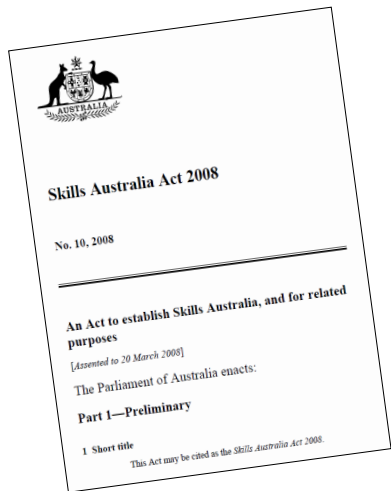
ROBIN SHREEVE  
CEO, SKILLS AUSTRALIA

JULY 2011



# What is Skills Australia?

“Skills Australia will provide the Government with recommendations on current and future skills needs (and) inform Australia’s workforce development needs<sup>1</sup> ...”



- Expert independent Board with expertise in industry, economics, education and academia;
- Provides independent advice to the government on current, emerging and future skills needs and workforce development needs
- Remit expanded in March 2009 to look at full scope of labour market and give advice on HE & VET
- 2011 Budget announcements-extended role as National Workforce and Productivity Agency. Responsible for National Workforce Development Fund



**Back row (L to R):**  
*Keith Spence, Ged Kearney,  
Dr Michael Keating AC,  
Prof. Gerald Burke.*

**Front row:** *Heather Ridout,  
Philip Bullock (Chair),  
Marie Persson.*

**Source:**

1. Julia Gillard, *Second Reading Speech – Skills Australia Bill 2008* (14 Feb 2008)



# Work of Skills Australia

- *Foundations for the Future* – June 2009
- *Australian Workforce Futures: a national workforce development strategy* – March 2010
- *Skills for prosperity: a road map for vocational education and training*
  - discussion paper released October 2010
  - National consultations November/December 2010
  - **Final report released 3 May 2011**
- Advice to Government on Skilled Occupation List – February 2011
- Scenario development - phase II of *Australian Workforce Futures*



# Why all the fuss about skills in Australia ?

- **Skill shortages** - as the economy shifts to recovery and growth, concerns are raised again about constraints due to skills shortages

“... official forecasts of a shortage of 150,000 workers in Western Australia by 2017 <sup>1</sup>...”

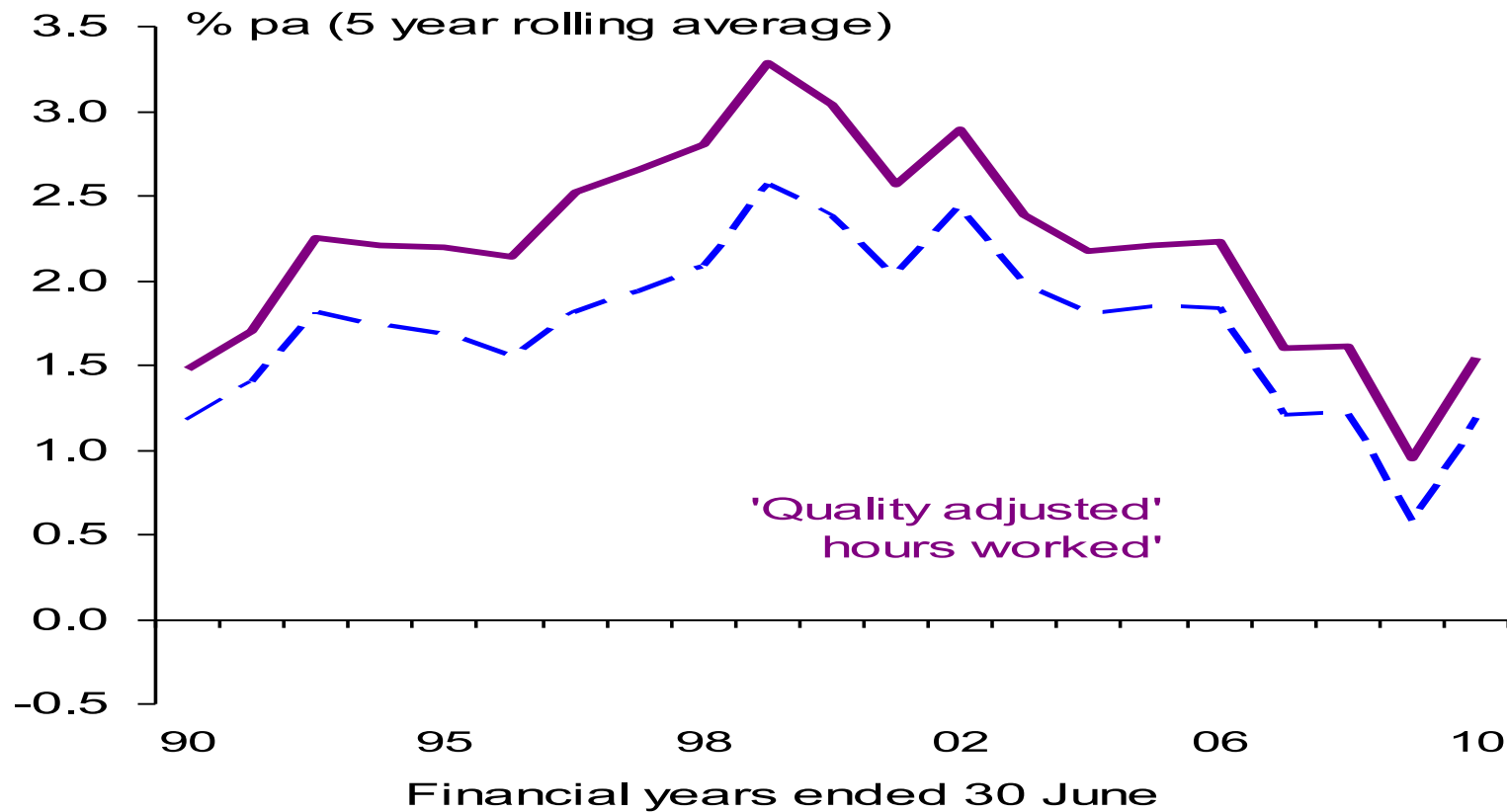
- **Productivity** - the positive growth in productivity earlier this decade has flattened, and turned negative
- **Participation** - Australia ranks only 10<sup>th</sup> out of 34 OECD countries on workforce participation
- **Underemployment** - there are 1.5 million Australians unemployed or underemployed
- **Foundation Skills** - currently 50% of the population has lower language, literacy and numeracy levels than they need for their jobs

1. Australian Financial Review 01 March 2011 *Resource states pitch on skills* page 62.



# Australia's productivity growth has slowed over the last five years, after 15 years of above average growth (*Saul Eslake*)

## Labour productivity



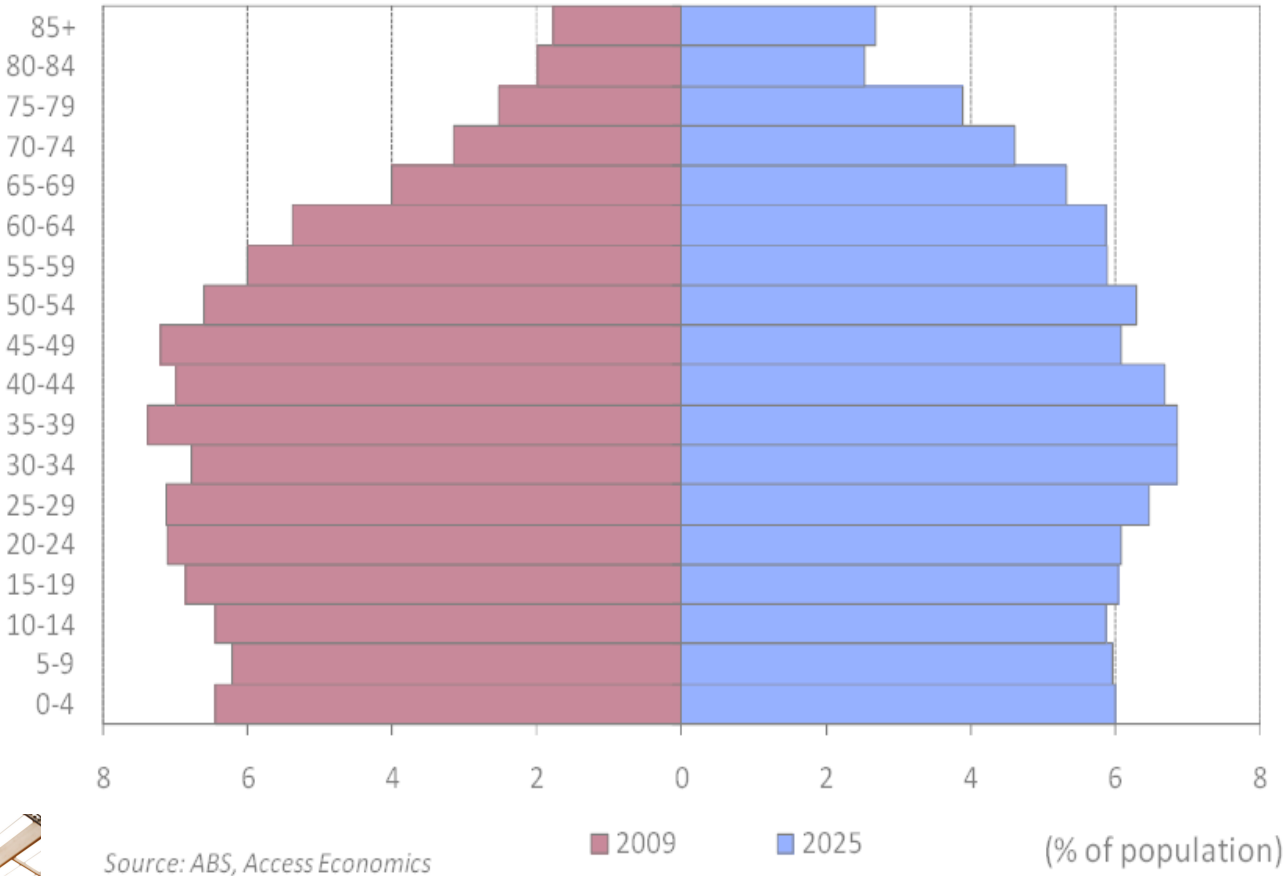
Source: ABS, *Experimental Estimates of Industry Multi-factor Productivity, Australia* (5260.0.55.002). December 2010.



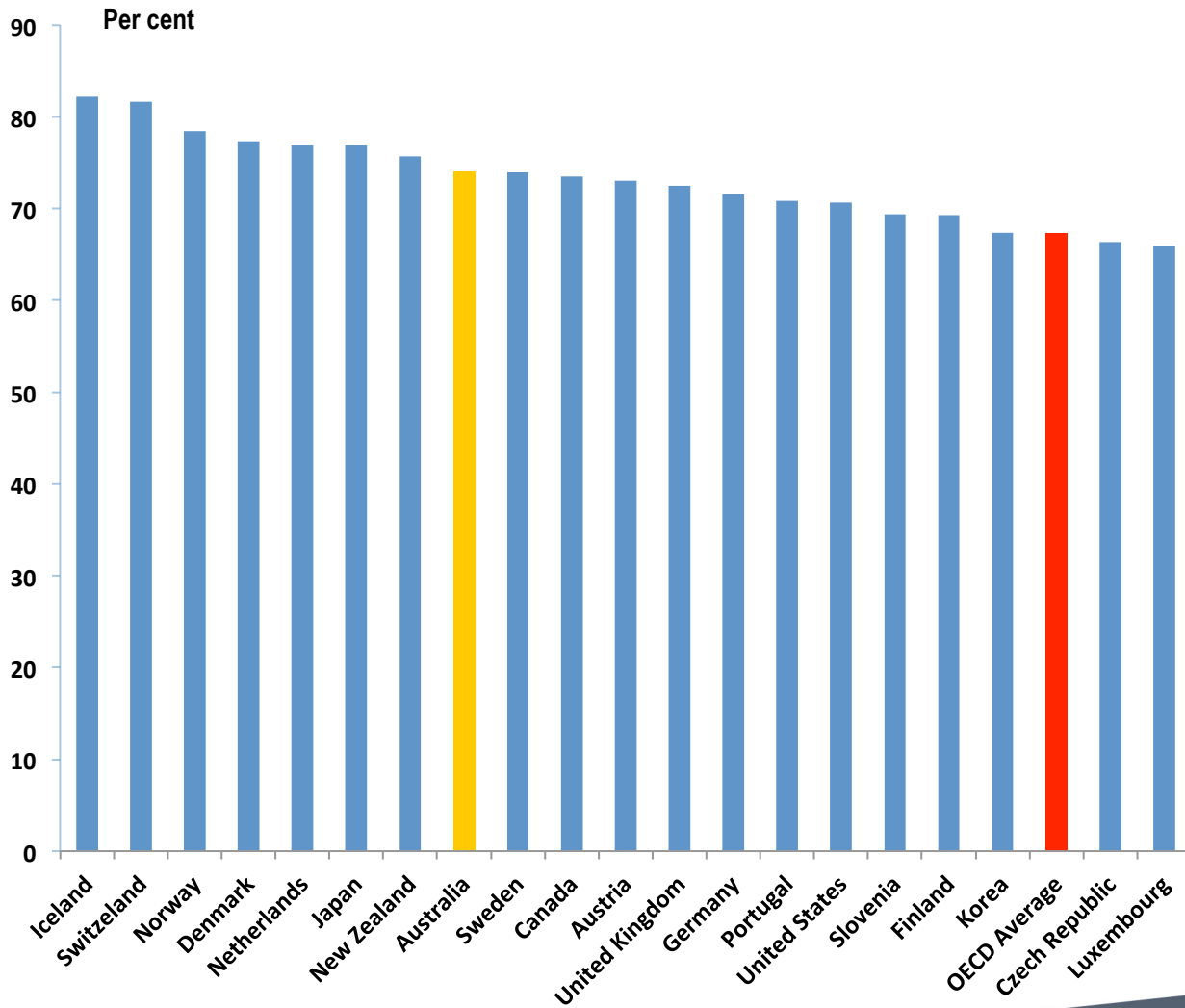
Skills  
Australia

# Future population challenges -

## Baby boomers retiring: an ageing workforce



# Making Better Use of Existing Workforce – Improving Participation



## Groups to target

**Men** of prime working age (25 to 64 years) – ranked 21<sup>st</sup> in OECD

**Women** (aged 25 to 34 years) - 10<sup>th</sup> lowest of OECD countries

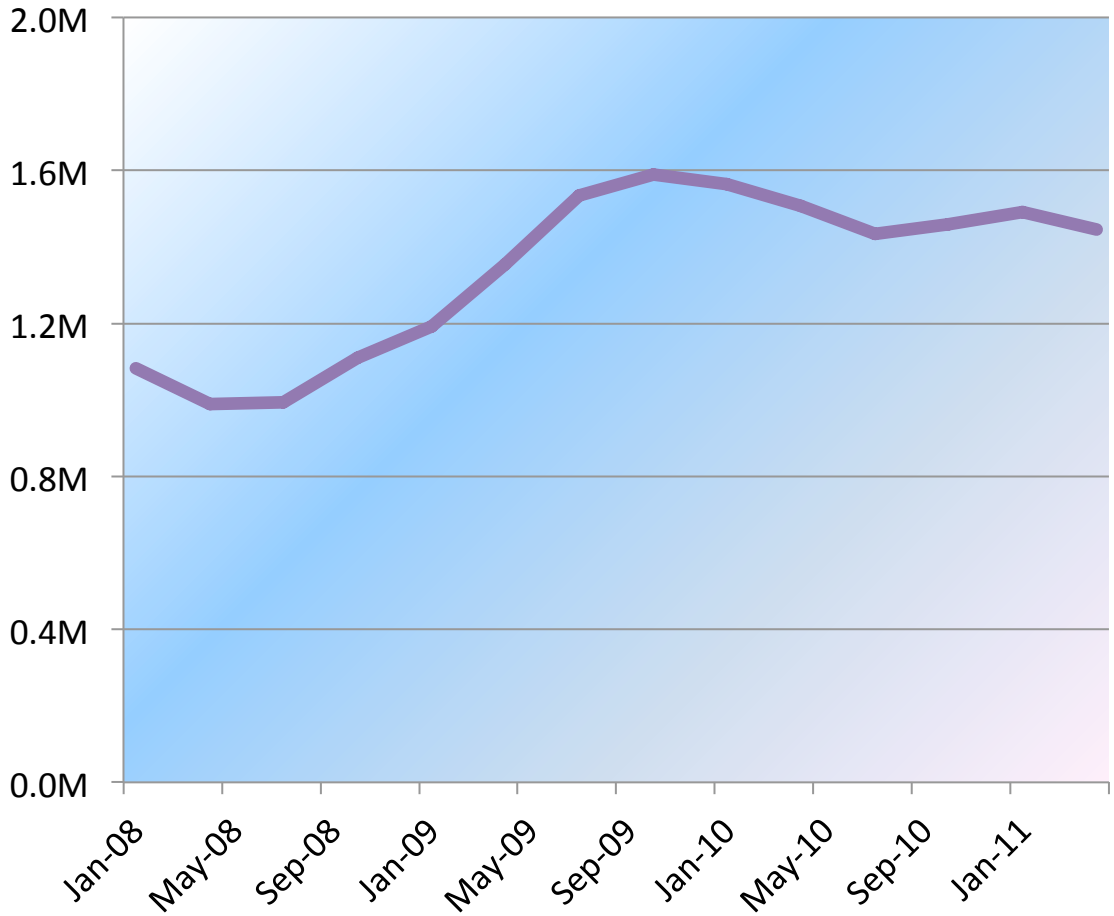
**Older Australians** (55 to 64) - below NZ, UK and the US

**Source:** OECD, Online OECD employment data base statistics for 2009, people aged 15 and over (accessed March 2011)



Skills  
Australia

# Unrealised potential: under-employment



There are approximately an additional 1.3 million Australians who are not in the labour force but wish to be employed at any point in time.

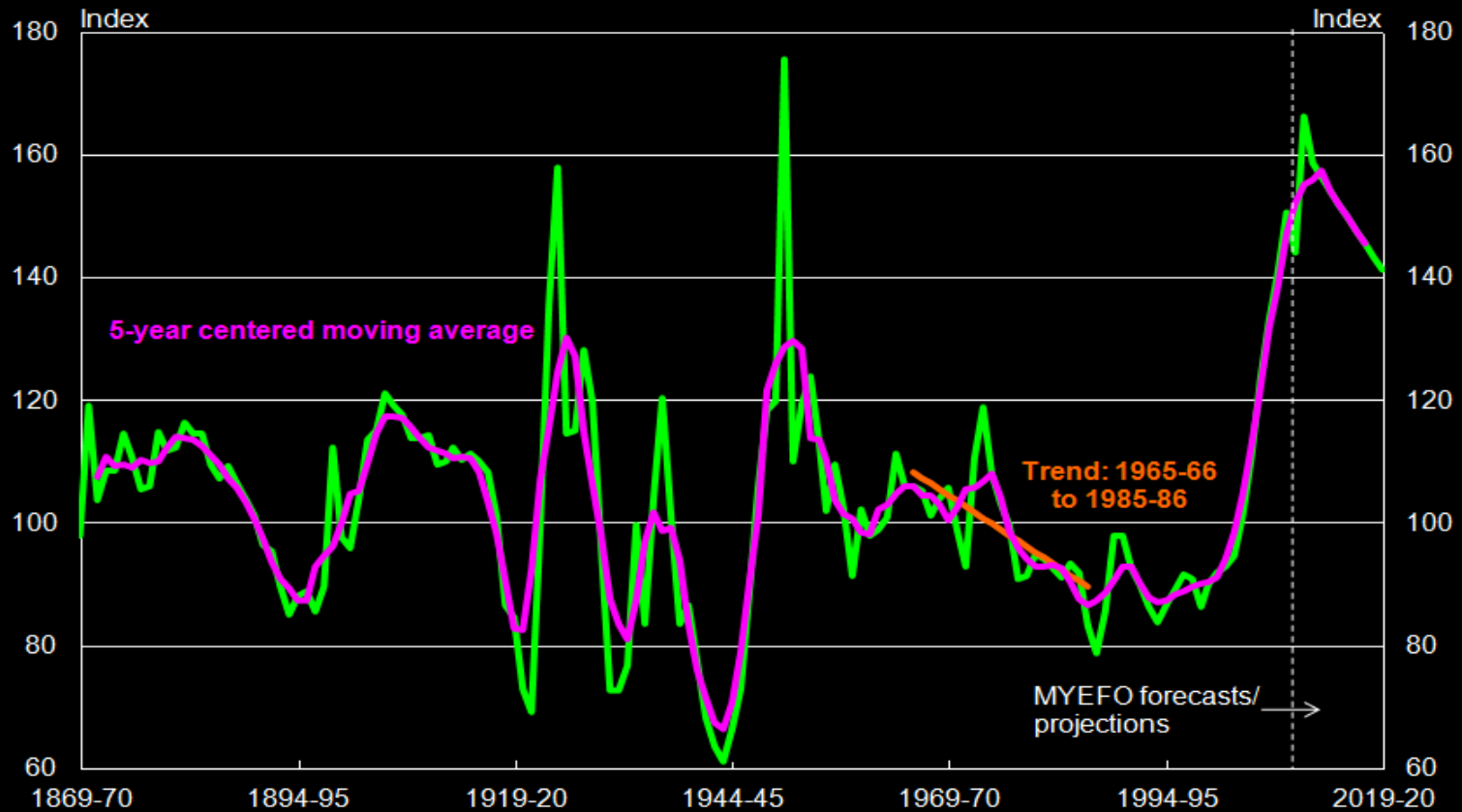
Source: ABS, 6105.0 - Australian Labour Market Statistics, 6220.0  
Persons Not in the Labour Force, Australia, Sep 2010





# Terms of trade

(Index 1900-01 to 1999-00 = 100)



Source: ABS Catalogue Number 5206.0, RBA and Treasury.

Source: *Economic and Financial trends and globalisation over the next 15 years* Presentation by Dr David Gruen (Executive Director, Macroeconomic Group, Treasury) to Skills Australia/Academy of Social Science Australia Scenario Development Forum 7 February 2011)



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# The challenge of prosperity

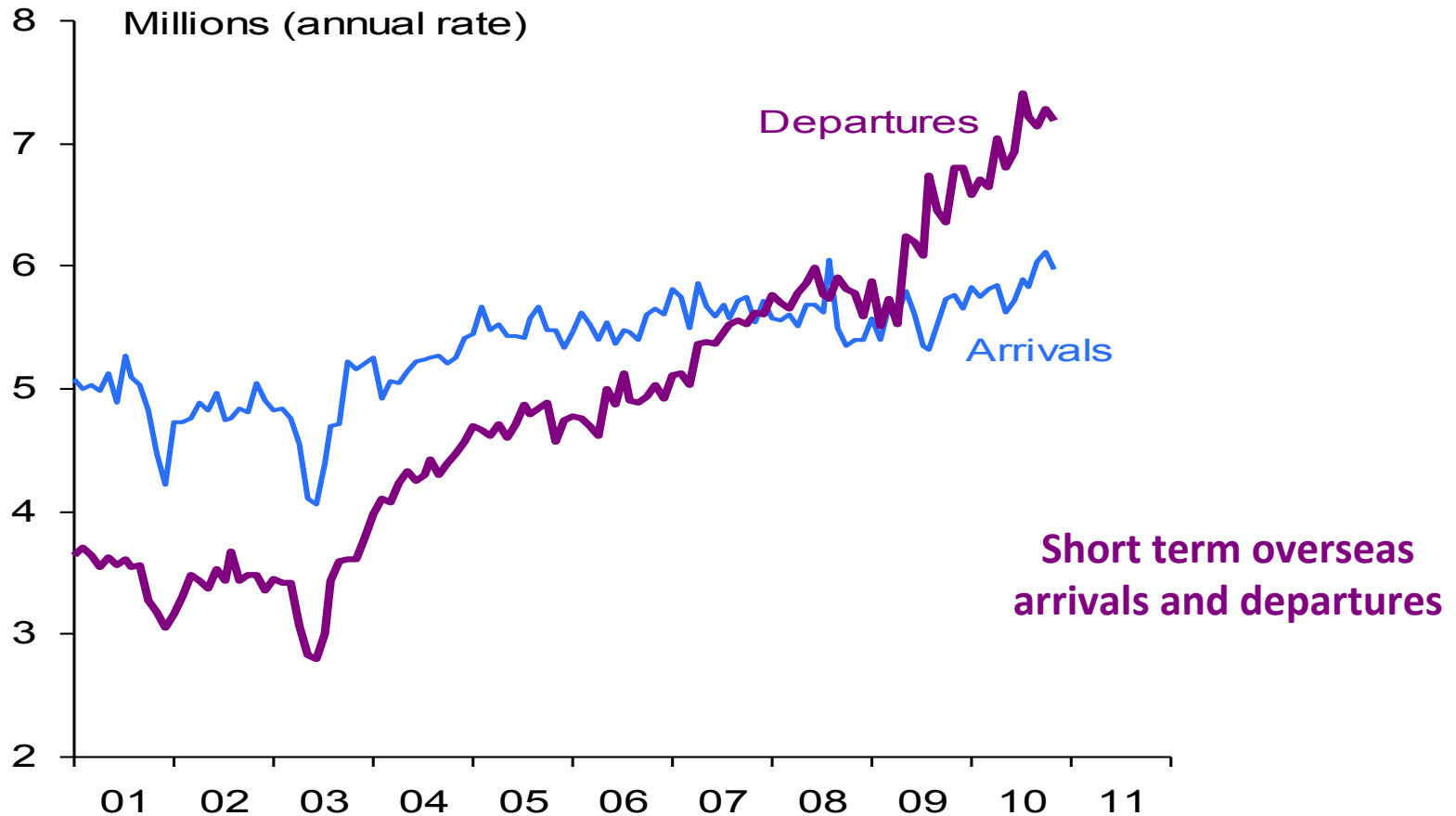
- When the terms of trade are high, the international purchasing power of our exports is high.
- To put it in very (over-) simplified terms, five years ago, a ship load of iron ore was worth about the same as about **2,200** flat screen television sets.
- Today it is worth about **22,000** flat-screen TV sets – partly due to TV prices falling but more due to the price of iron ore rising by a factor of six.



**Glenn Stevens**  
**Governor of Reserve Bank**  
Address to the Committee for  
Economic Development of  
Australia (CEDA) Annual Dinner,  
Melbourne  
29 November 2010



# The strong A\$ will have an adverse impact on 'trade-exposed' non-resource sectors such as tourism

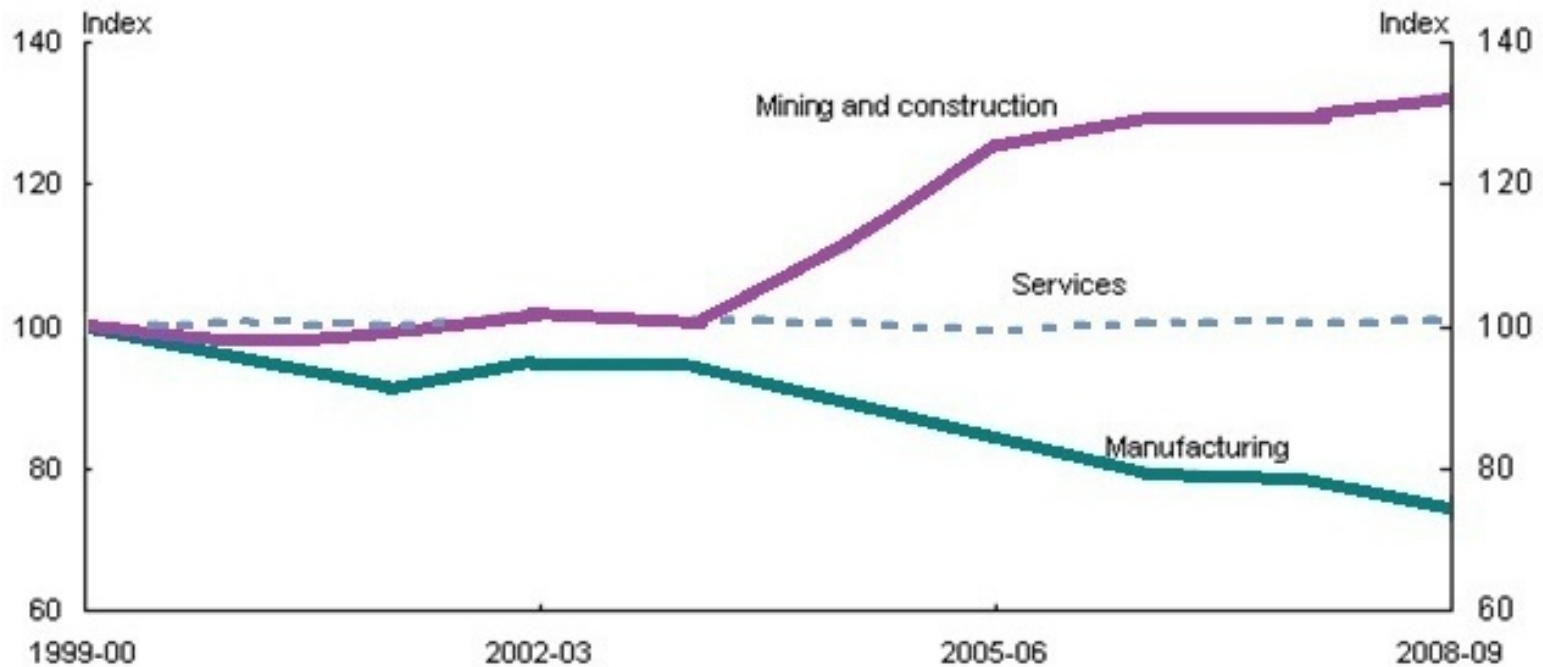


Source: ABS.



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# Three Speed Economy – Output by selected industry

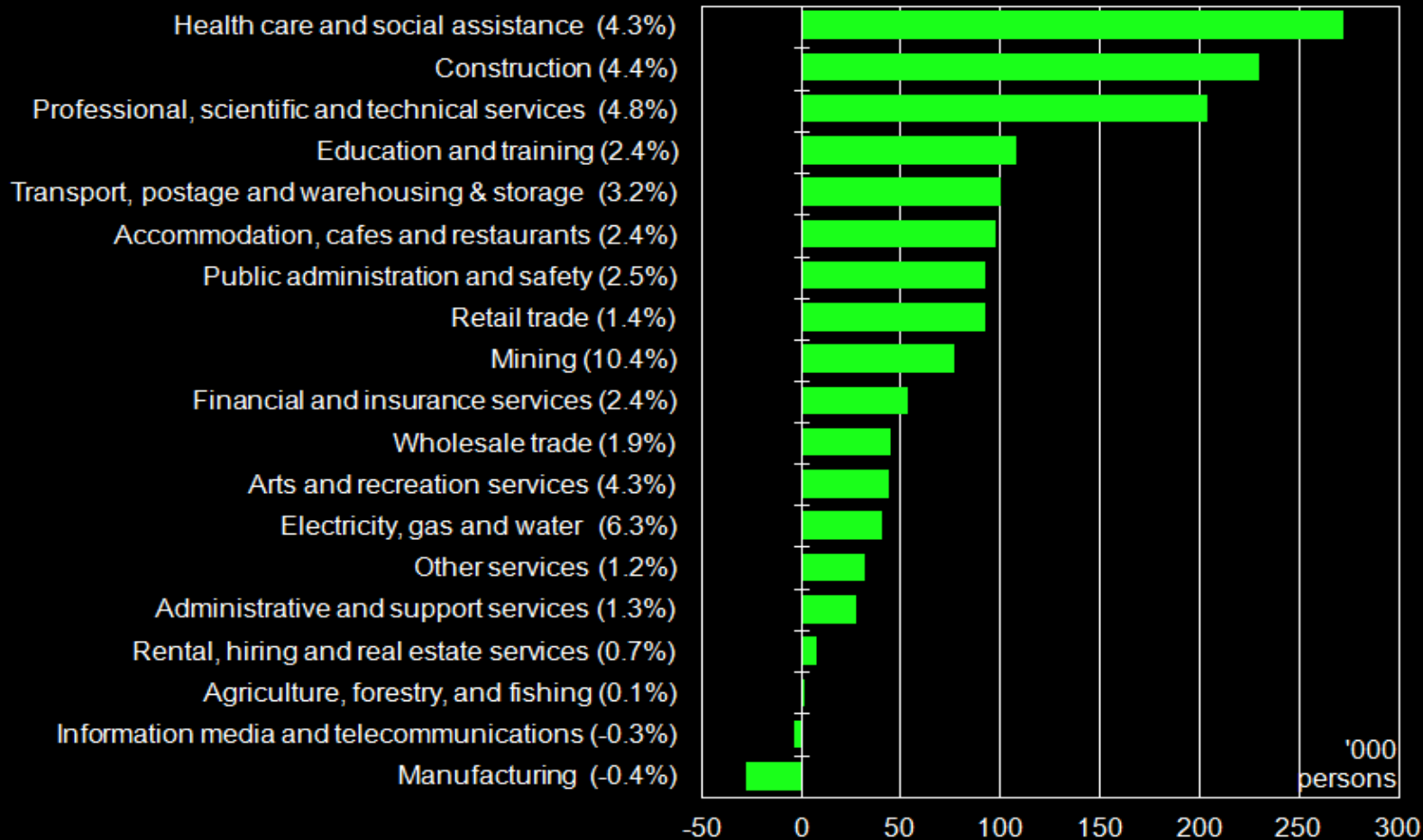


Source: ABS cat. no. 5204.0 and Treasury. Dr Ken Henry, Post Budget address to the Australian Business Economists 18 May 2010



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Australia

# Employment change by industry (2003-04 to 2009-10)



Note: Average annual growth in parentheses.  
 Source: ABS Catalogue Number 6291.0.55.003.

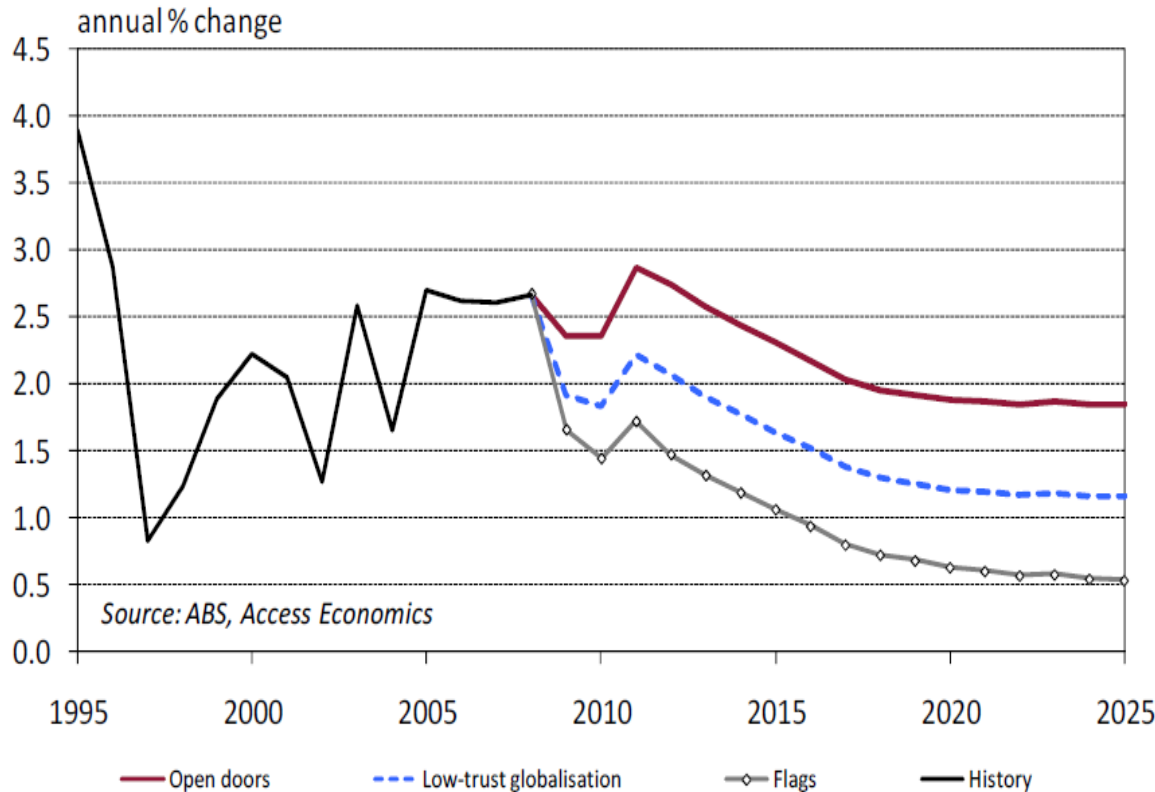
Source: *Economic and Financial trends and globalisation over the next 15 years* Presentation by Dr David Gruen (Executive Director, Macroeconomic Group, Treasury) to Skills Australia/Academy of Social Science Australia Scenario Development Forum 7 February 2011)



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Australia

# Possible Futures: workforce growth to 2025

## Projected total employment growth rates <sup>1</sup>



Number of people in Australian workforce in 2025 (based on three scenarios)

**Open Doors:** 15.3 mill

**Low Trust Globalisation:** 13.7 mill

**Flags:** 12.5 mill

**Current:** 11.3 mill

1. Access Economics Pty Ltd for Skills Australia, *Economic modelling of skills demand* (Oct 2009)



# Qualifications and skill shortfall

	THE THREE SCENARIOS					
	OPEN DOORS		LOW-TRUST GLOBALISATION		FLAGS	
By 2015	Demand	770,000	Demand	646,000	Demand	540,000
	Supply	533,000	Supply	524,000	Supply	506,000
	<b>BALANCE</b>	<b>-237,000</b>	<b>BALANCE</b>	<b>-122,000</b>	<b>BALANCE</b>	<b>-34,000</b>
By 2025	Demand	828,000	Demand	645,000	Demand	500,000
	Supply	659,000	Supply	620,000	Supply	556,000
	<b>BALANCE</b>	<b>-169,000</b>	<b>BALANCE</b>	<b>-25,000</b>	<b>BALANCE</b>	<b>+56,000</b>

However, skilled migration plays a significant role in supplementing the supply of qualifications, and if it remains at current levels, these deficits may be made up through Australia's skilled migrant intake.

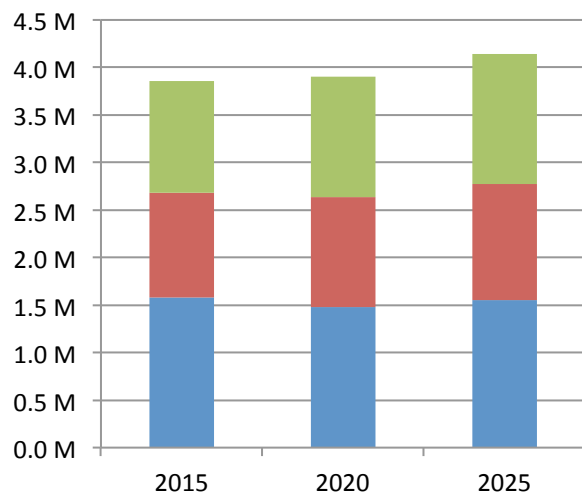
1. Access Economics Pty Ltd for Skills Australia, *Economic modelling of skills demand* (Oct 2009)



# Qualifications and skill demand

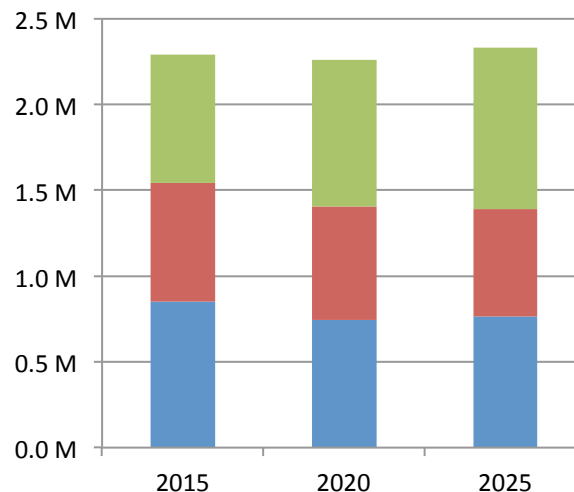
## Additional qualifications required by those employed

- Replacement/Retirement
- Skills deepening
- Employment growth



## Numbers to be trained at Cert III and higher due to

- Replacement/Retirement
- Skills deepening
- Employment growth



Skilled migration plays a significant role in supplementing the supply of qualifications. If supply remains at current levels, deficits may be made up through Australia's skilled migrant intake.

1. Access Economics Pty Ltd for Skills Australia, *Economic modelling of skills demand* (Oct 2009)





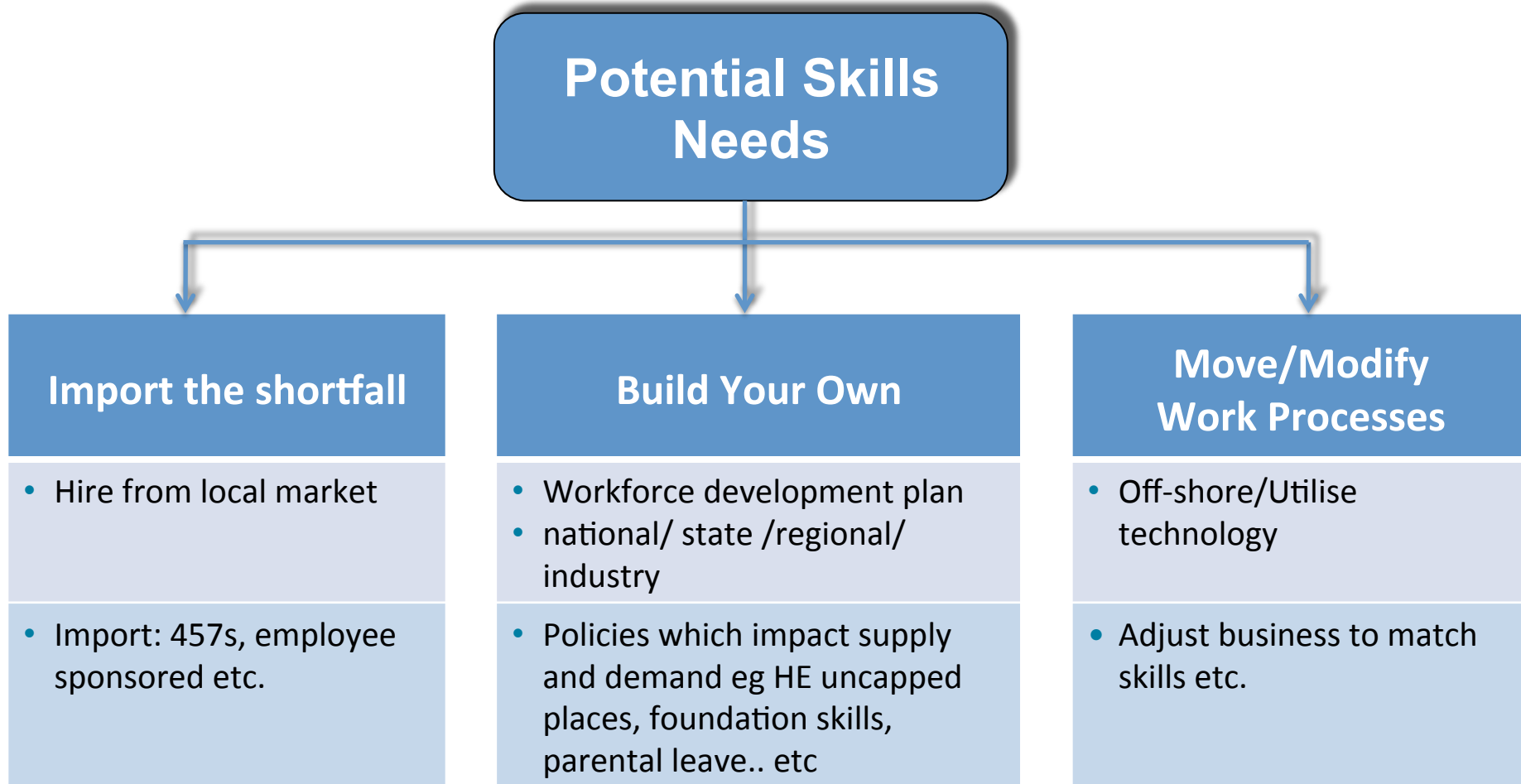
# Average Annual Industry Employment Growth in Three Scenarios 2010-15 and 2010-2025 (%pa)

INDUSTRY	Open Doors		Low-Trust Globalisation		Flags	
	2015	2025	2015	2025	2015	2025
<b>Information media and telecommunications</b>	<b>3.2</b>	<b>2.0</b>	<b>2.5</b>	<b>1.3</b>	<b>2.5</b>	<b>1.1</b>
Publishing (except internet & music pub.)	0.5	-0.5	-0.3	-1.4	3.1	1.5
Motion picture and sound recording activities	2.0	1.2	1.3	0.5	1.7	0.8
Broadcasting (except internet)	1.9	1.1	1.2	0.4	1.8	0.9
Internet publishing and broadcasting	3.0	1.7	2.2	1.0	2.9	1.3
Telecommunications services	4.8	3.1	4.0	2.4	2.8	1.2
Internet service providers, web search portals and data processing services	4.5	3.1	3.8	2.4	2.6	1.2
Library and other information services	4.0	3.1	3.5	2.6	-0.2	-1.0
<b>All industries</b>	<b>2.6</b>	<b>2.1</b>	<b>1.9</b>	<b>1.5</b>	<b>1.3</b>	<b>0.9</b>

Source: Access Economics (2009) *Economic modelling of skills demand*, Table D1, conversion to ANZSIC by CEET (2010)



# How do we supply skills for future growth?



# Key Recommendations:

- The current capacity of our **tertiary education system will need to increase by 3% p.a.**, to deliver the qualifications and skills Australia needs.
  - **Government Actions (examples):**
    - **Uncapped University Places by 2012**
    - **Additional funding to VET – Productivity Places program**
- Forecasting for all occupations is both impossible and impractical. Our focus should be on **‘specialised occupations’** which we can and should plan for. The 80/20 rule applies.
  - **Government actions (examples)**
    - **Use of Skilled Occupation List (SOL) for General Skilled Migration Program (2010)**
    - **National Workforce development fund for priority industries and occupations (\$500m from 2011)**



# Matching skills and jobs in a fluid labour market

People may not seek or find careers in their field of learning



40% end up in jobs which match their VET study

Initial education or training becomes less relevant over time



45% workers change jobs every three years

Skills are more than qualifications



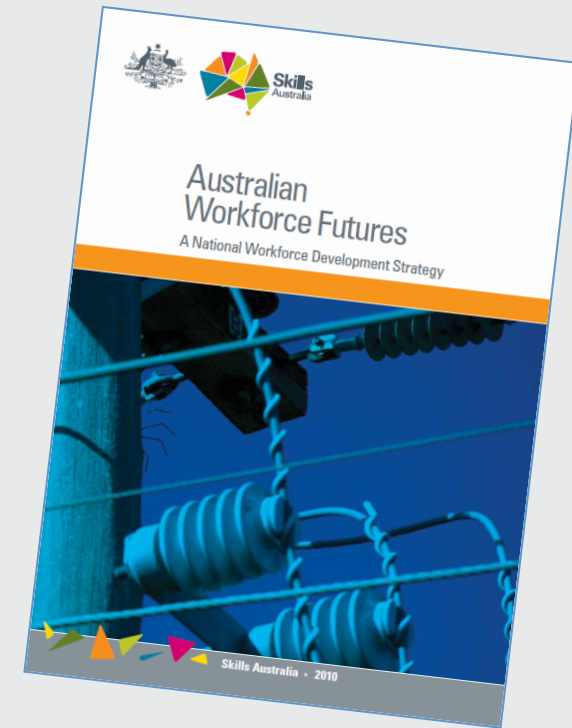
Importance of generic, cognitive and interpersonal skills in a service-based economy



Skills  
Australia

# Specialised occupations

- **Focusing on all occupations is impossible and impractical - only applies to 20% of the occupations:**
  - **Long lead time** – those skills which are highly specialised and require extended learning and preparation time
    - 4 years or more for HE courses; 3 years or more to achieve VET qualification
  - **High use** – those skills which are deployed for the uses intended (that is, there is a good occupational ‘fit’)
    - There is a more than 50% match between the training and the destination occupation
  - **Significant disruption** – where the opportunity cost of the skills being in short supply is high (eg registered nurse or doctor)
  - **High information** – where the quality of information about the occupation is adequate



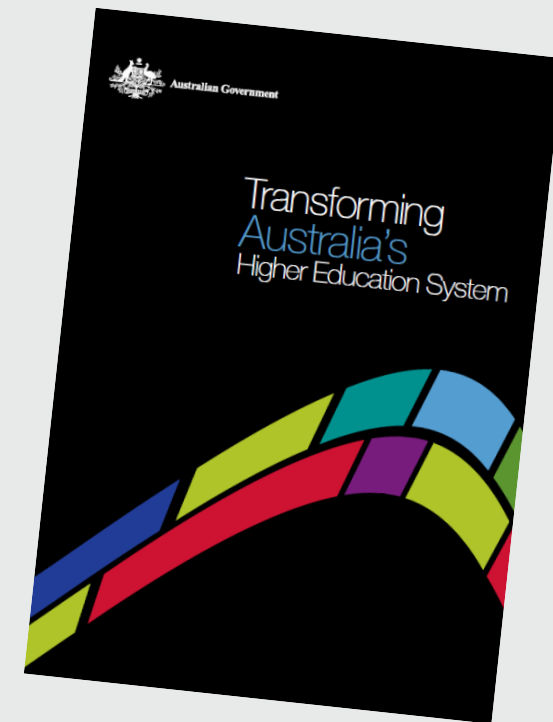
# Potential mismatch between student choice & workforce needs

- For demand driven system, students need to be able to make informed choices about what, where and when to study.
- Other interventions to help align student choice with labour market needs could include:
  - Targeted purchase of fee-for service places by the Commonwealth, a state government or employer
  - Incentives for students to enter and remain in occupations in demand (i.e. capping of high priority professions)
  - Possible exclusion of certain courses of study from the demand driven arrangements



# Transforming Higher Education, an “uncapped” approach to a student demand model..

- Increasing participation
- ***A student centred funding system***
- Revised indexation arrangements
- Sustainable investment for Research
- Investment for tertiary sector and research infrastructure
- New quality arrangements
- Redirect assistance through changes to Income Support for Students payments
- Greater investment in regional Australia
- Building stronger connectivity between VET and higher education
- Introduction of mission-based Compacts



# Increased student demand in VET and HE (all disciplines)

<b>VET students and hours</b>					
	2006	2007	2008	2009	<b>2010</b>
students '000	1676	1665	1700	1707	<b>1799</b>
% Annual increase		-0.70%	2.10%	0.40%	<b>5.40%</b>
hours '000	372100	390071	409217	438900	<b>472186</b>
% Annual increase		5%	5%	7%	<b>8%</b>

Source: NCVET Students and Courses 2010

<b>Higher Education Commonwealth supported places - postgraduate and undergraduate 2005-2011 (EFTSL)</b>					
	2008	2009	2010*	2011*	Estimated Growth 08-11
Undergraduate places	415,320	439,859	469,428	488,000	<b>17.5%</b>
Postgraduate places	20,628	25,173	30,276	33,000	<b>60.0%</b>
Total places	435,948	465,032	499,704	521,000	<b>19.5%</b>

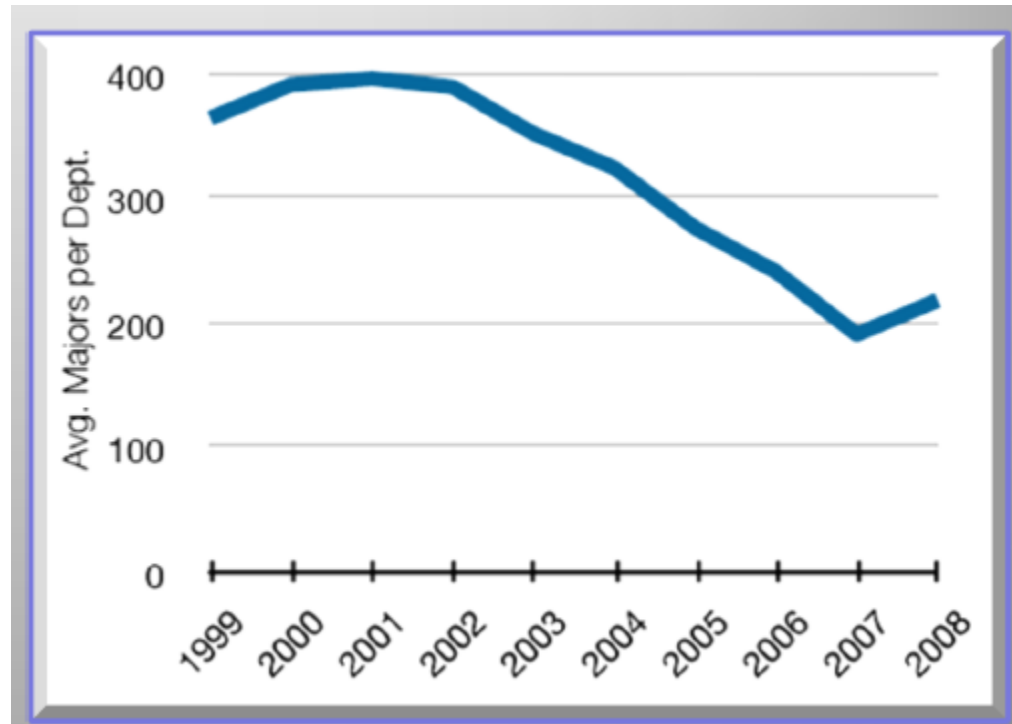
\*2010 and 2011 are estimates only; published in 2011 DEEWR PBS p91





# US Higher Education ICT Enrolments

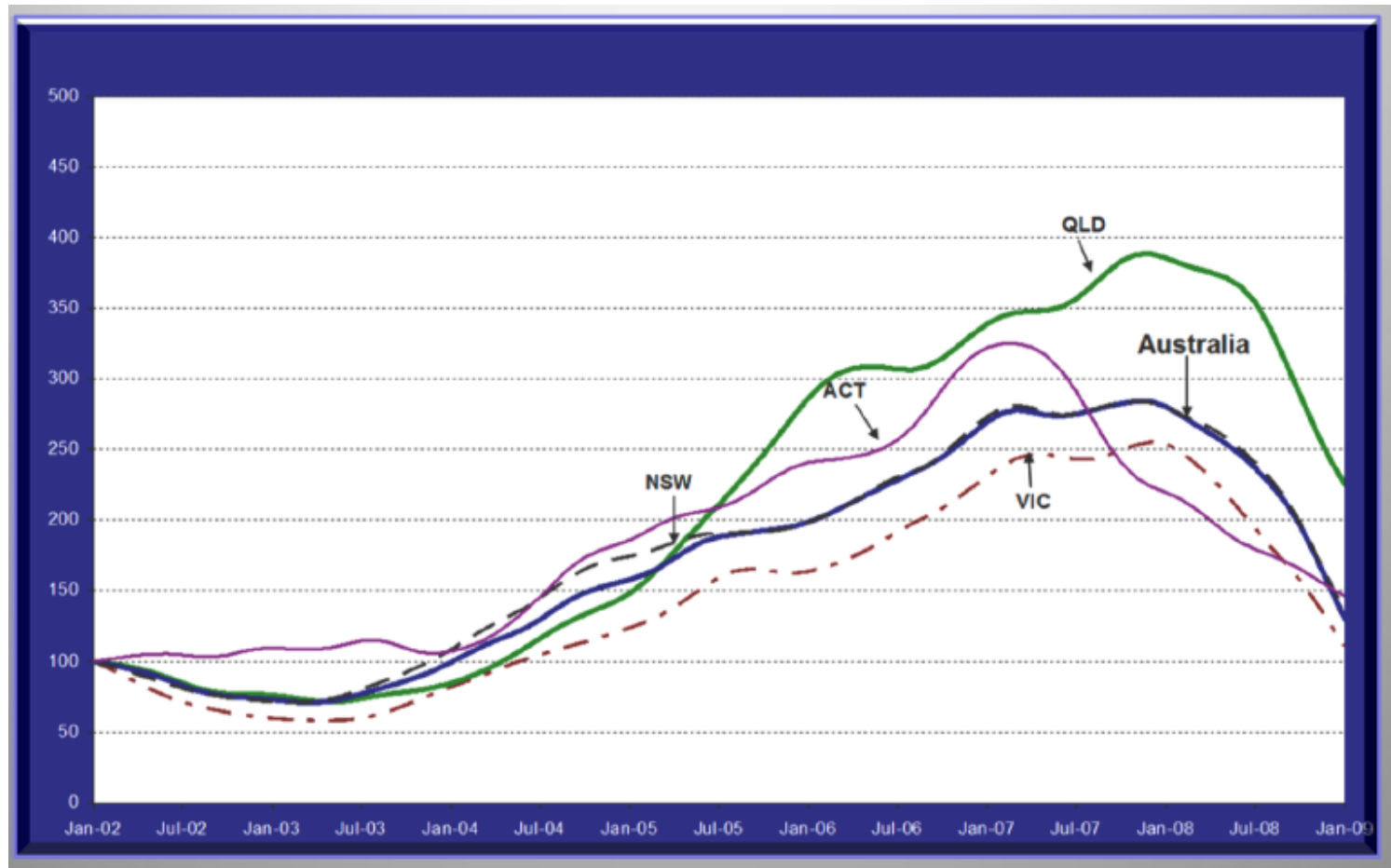
(Source Gary Robertson of Wintec)



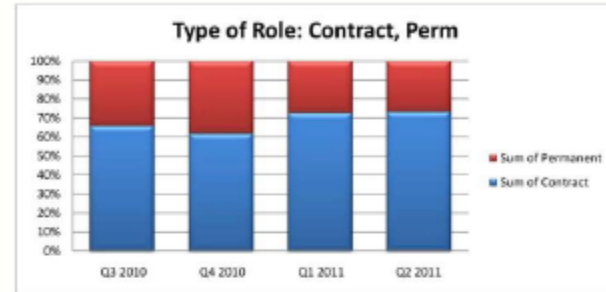
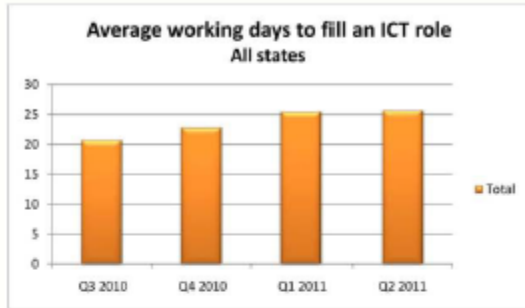
Skills  
Australia

# Australian ICT Vacancies 2002-2009

(Source Skillsinfo and Gary Robertson of Wintec)

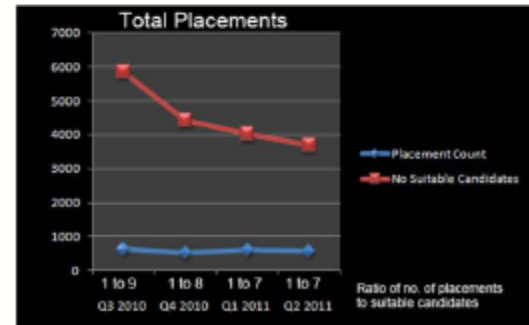


# SKILLSMATCH Dashboard July 2011



The gauge shows how ICT recruitment has performed in comparison to Australian Labour Market  
(as reported in ABS Labour Market Report)

Top 10 Skills Available	Top 10 Skills in Demand
1 COM	1 Help Desk
2 Training	2 Project Management
3 Support	3 Java
4 Email	4 SQL
5 Documentation	5 Windows
6 ISO	6 Windows XP
7 Project	7 Business Analysis
8 MS Office	8 C#
9 SQL	9 Active Directory
10 Windows	10 Windows 2000



## Information Media and Telecommunications

<b>Employment</b>	<b>This industry</b>	<b>All industries</b>
Employment (number)	215 300	11 390 100
Employment change (past 5 years) %	-9.9	13.1
Working part-time %	20	30
Female %	44	45
Aged 45 years or older %	31	38
Employment outside state capital cities %	22	37
<b>Education</b>		
Without post-school qualifications %	34	39
With VET qualifications (Cert III or higher) %	26	30
With a Bachelor degree or higher %	37	26



# Occupational Data from DEEWR's *Australian Jobs 2011*

Occupation	Job Prospects	Employ't	Employ't		Unemp 2010	Gender Females	Median Age	F-T	Median Earnings 2009	Future Employment Change
		Nov 2010	Change 5 years	Share of Employ't 2010						
		'000	'000	%			%	decile		
ICT Business and Systems Analysts	above average	26.3	3.7	16.4	below average	25	39	94	10	★★★★
ICT Sales Professionals	average	16.0	7.7	93.5	above average	26	37	94	7	★★★★★
ICT Security and Database & Systems Administrators	above average	32.5	3.8	13.4	below average	25	37	88	8	★★★
ICT Support and Test Engineers	above average	7.9	-	-	below average	23	37	96	8	★★★★
ICT Support Technicians	above average	46.8	7.0	17.5	above average	19	33	86	6	★★★★
ICT Trainers	below average	2.7	-1.4	-34.6	average	55	45	59	8	★



# Primary 457 visa applications: top 20 sponsored occupations 2009-10

Occupation	Subclass 457 visa grants 2009-10	3 year change in grants (%)	5 year change in grants (%)	Employ't Feb 2010 ('000)	Employ't change 5 years to Feb 2010 (%)	Unemp 2010
<b>2613 Software and Applications Programmers</b>	<b>4 720</b>	<b>-32.5</b>	<b>30.7</b>	<b>85.2</b>	<b>20</b>	<b>Avg</b>
2544 Registered Nurses	2 620	-22.5	0.4	212.8	22.1	Low
2531 Generalist Medical Practitioners	2 330	-29.6	37.1	38.5	19	Low
1399 Other Specialist Managers	1 190	-16.8	20.2	42.7	56	Avg
2247 Management and Organisation Analysts	940	-6.9	-5.1	45.1	52	Avg
2249 Other Information and Organisation Professionals	850	-64.1	-40.6	17.8	80.9	Avg
2211 Accountants	770	-18.1	40	172	25.3	Avg
2332 Civil Engineering Professionals	730	-47.1	5.8	40	52.7	Avg
2231 Human Resource Professionals	570	-47.7	612.5	59.1	31.6	Avg
3125 Mechanical Engineering Draftspersons and Technicians	550	-9.8	61.8	8	68.8	Avg
2335 Industrial, Mechanical and Production Engineers	530	-50.9	-32.9	21.8	-18.8	Avg
1311 Advertising, Public Relations and Sales Managers	490	-40.24	-31	135.7	23.5	Avg
1332 Engineering Managers	460	-16.4	24.3	17.9	-	Below
<b>2611 ICT Business and Systems Analysts</b>	<b>450</b>	<b>136.8</b>	<b>200</b>	<b>27.4</b>	<b>31.4</b>	<b>Below</b>
2339 Other Engineering Professionals	430	-51.1	-31.8	6.3	-12.1	Low
2344 Geologists and Geophysicists	380	-48	40.7	8.2	11.8	High
<b>Total/average all occupations</b>	<b>34 790</b>	<b>-35.6</b>	<b>-12</b>	<b>10971.6</b>	<b>12.3%</b>	<b>3.3%</b>



# ICT Business and Systems Analysts, employment and subclass 457 visa use

Primary subclass 457 visa grants	2005-06 (total 39 530)	150
	2007-08 (total 54 050)	190
	2009-10 (total 34 790)	450
3 year change in grants (%) (average -35.6)		136.8
5 year change in grants (%) (average -12)		200
Employment Feb 2010 (000)		27.4
Employment change 5 years to Feb 2010 (%)		31.4
Future employment growth		Strong
Unemployment 2005-06 to 2009-10		Below average or average.
IVI for ICT Professionals July 2006 (average 108.5)		122.1
IVI for ICT Professionals July 2008 (average 135.6)		138.7
IVI for ICT Professionals July 2010 (average 85.6)		98.5
HE Aus Enrolments	2009	2 458
	5 year trend (average 21%)	-27.3
H E Internat Enrolments	2009	3 809
	5 year trend (average 42 %)	24



# Software and Applications Programmers - employment and subclass 457 visa use

Primary subclass 457 visa grants	2005-06 (total 39 530)	3 610
	2007-08 (total 54 050)	6 990
	2009-10 (total 34 790)	4 720
3 year change in grants (%) (average -35.6)		-32.5
5 year change in grants (%) (average -12)		30.7
Employment Feb 2010		85.2
Employment change 5 years to Feb 2010 (%)		20
Future employment growth		remain relatively stable
Unemployment 2005-06 to 2009-10		Consistently below average or average, rising since 2008-09.
IVI for ICT Professionals July 2006 (average 108.5)		122.1
IVI for ICT Professionals July 2008 (average 135.6)		138.7
IVI for ICT Professionals July 2010 (average 85.6)		98.5
HE Aus	2009	5 898
Enrolments	5 year trend (average 21%)	24.2
HE Internat	2009	8 195
Enrolments	5 year trend (average 42 %)	14.1





# ICT occupations on the Skilled Occupations List

## 2611 ICT BUSINESS AND SYSTEMS ANALYSTS

ICT BUSINESS AND SYSTEMS ANALYSTS work with users to formulate system requirements, develop system plans and documentation, review and evaluate existing systems, and design and modify systems to meet users' business needs.

**261111 ICT BUSINESS ANALYST** Identifies and communicates with users to formulate and produce a requirements specification to create system and software solutions.

**261112 SYSTEMS ANALYST** Evaluates processes and methods used in existing ICT systems, proposes modifications, additional system components or new systems to meet user needs as expressed in specifications and other documentation.

## UNIT GROUP 2613 SOFTWARE AND APPLICATIONS PROGRAMMERS

SOFTWARE AND APPLICATIONS PROGRAMMERS design, develop, test, maintain and document program code in accordance with user requirements, and system and technical specifications.

**261311 ANALYST PROGRAMMER** Analyses user needs, produces requirements documentation and system plans, and encodes, tests, debugs, maintains and documents programs and applications.

**261312 DEVELOPER PROGRAMMER** Interprets specifications, technical designs and flow charts, builds, maintains and modifies the code for software applications, constructs technical specifications from a business functional model, and tests and writes technical documentation.

**261313 SOFTWARE ENGINEER** Designs, develops, modifies, documents, tests, implements, installs and supports software applications and systems.



# ICT LABOUR MARKET INDICATORS

This presentation provides an overview of the demand and supply sides of the ICT labour market in Australia

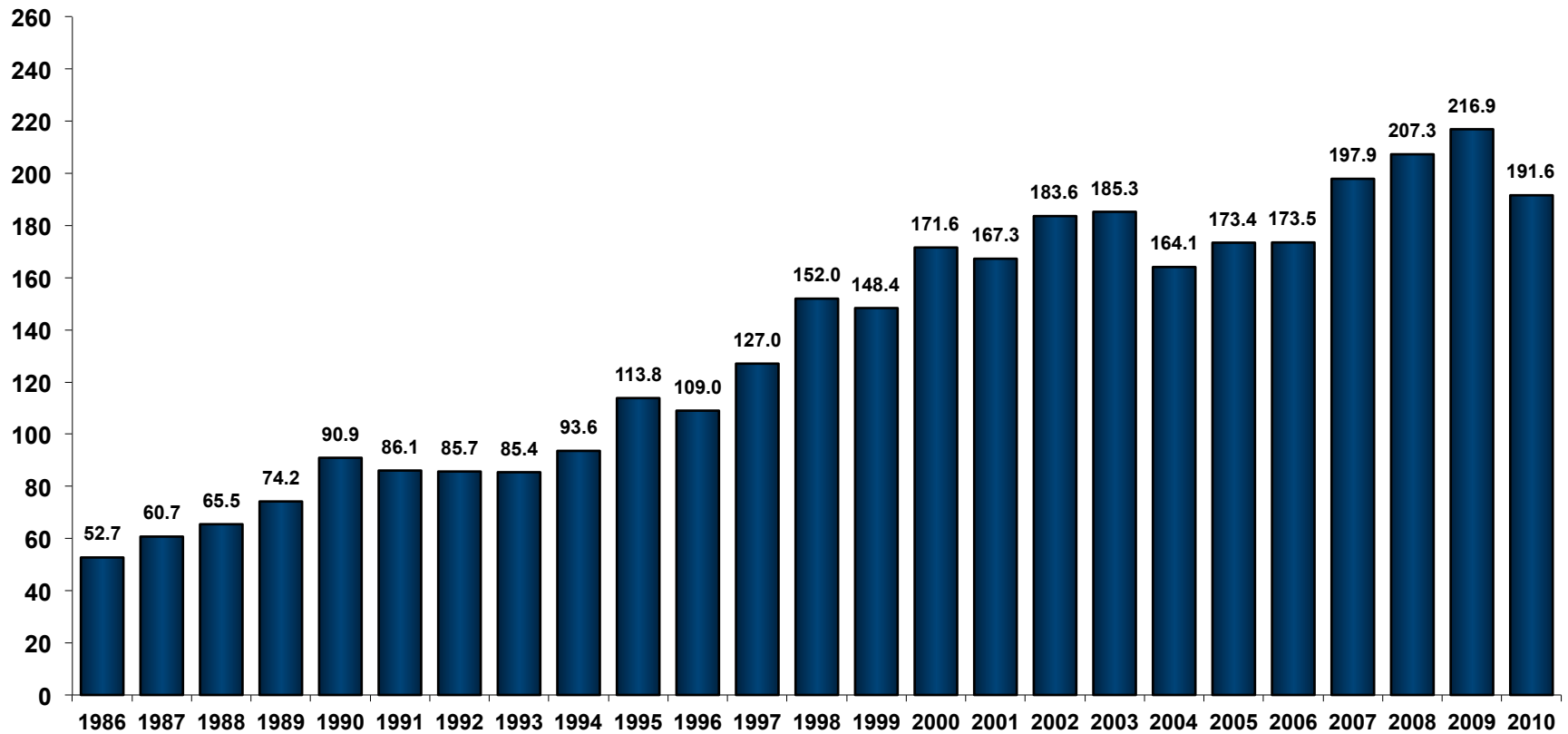
If you have any queries please contact: [colleen.mate@deewr.gov.au](mailto:colleen.mate@deewr.gov.au)

Department of Education, Employment and  
Workplace Relations

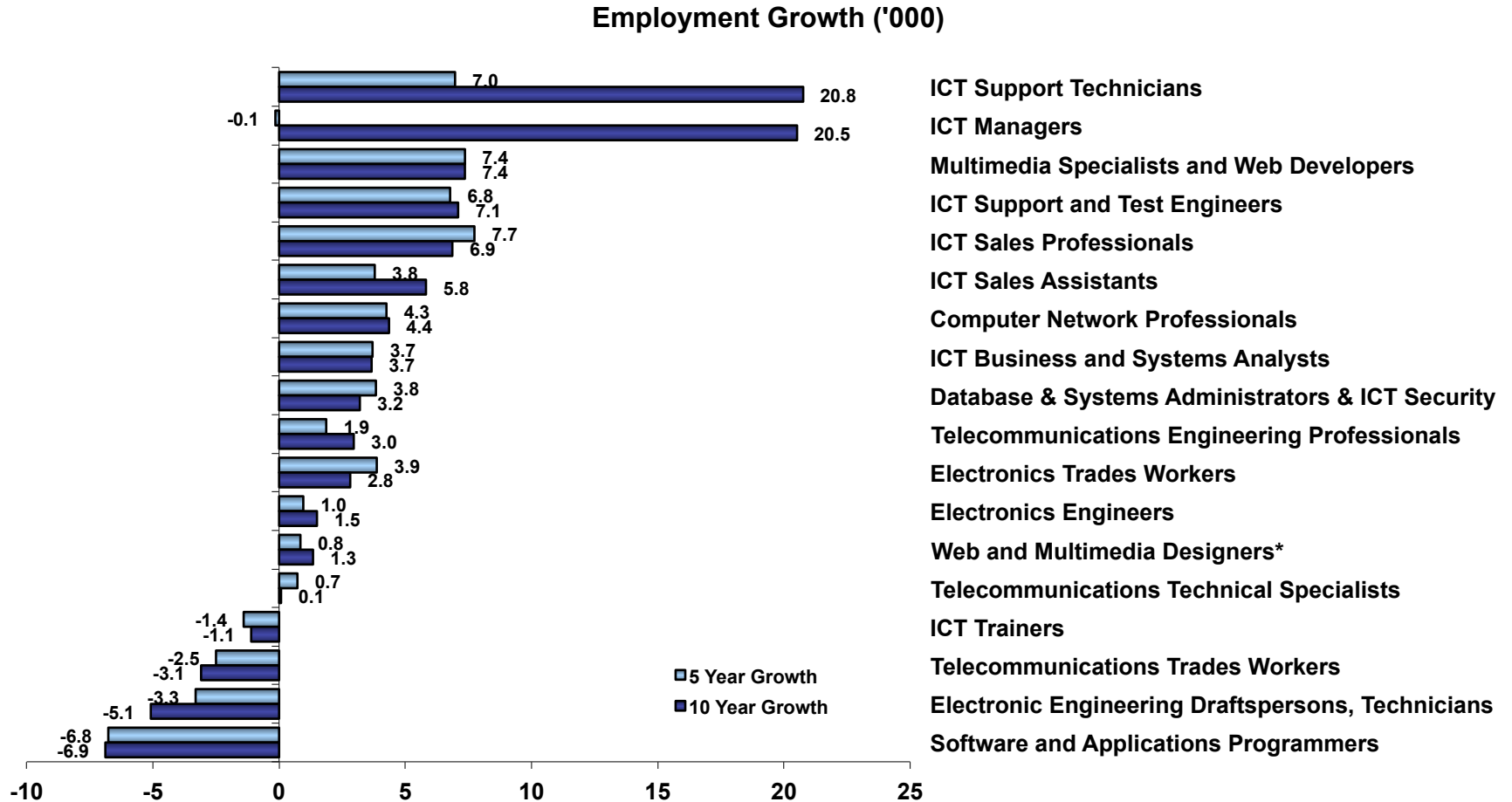
**February 2011**

# ICT Professionals – employment level (1987 to 2010)

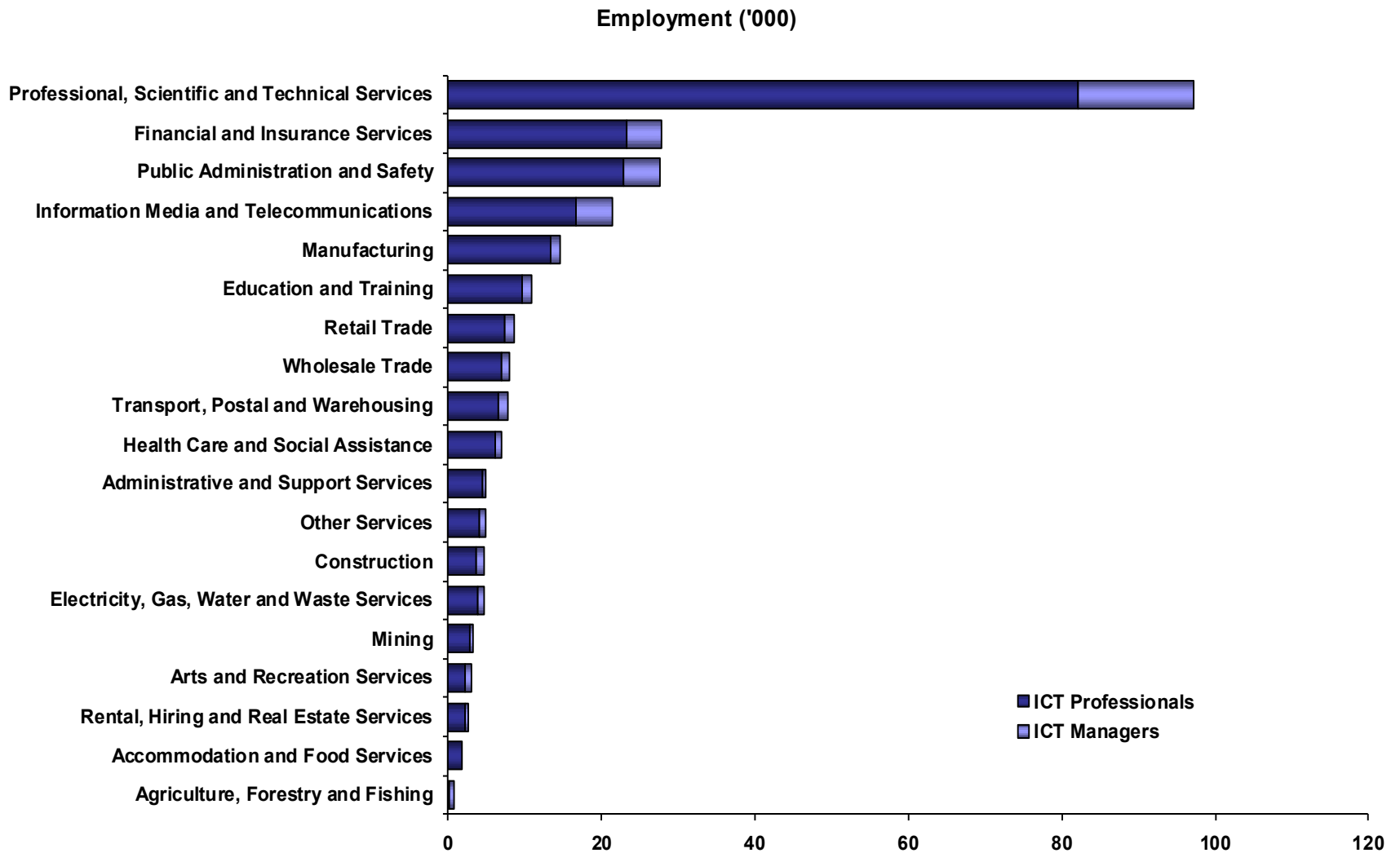
Employment (000's)



# ICT occupations - employment growth (five and ten years to August 2010)

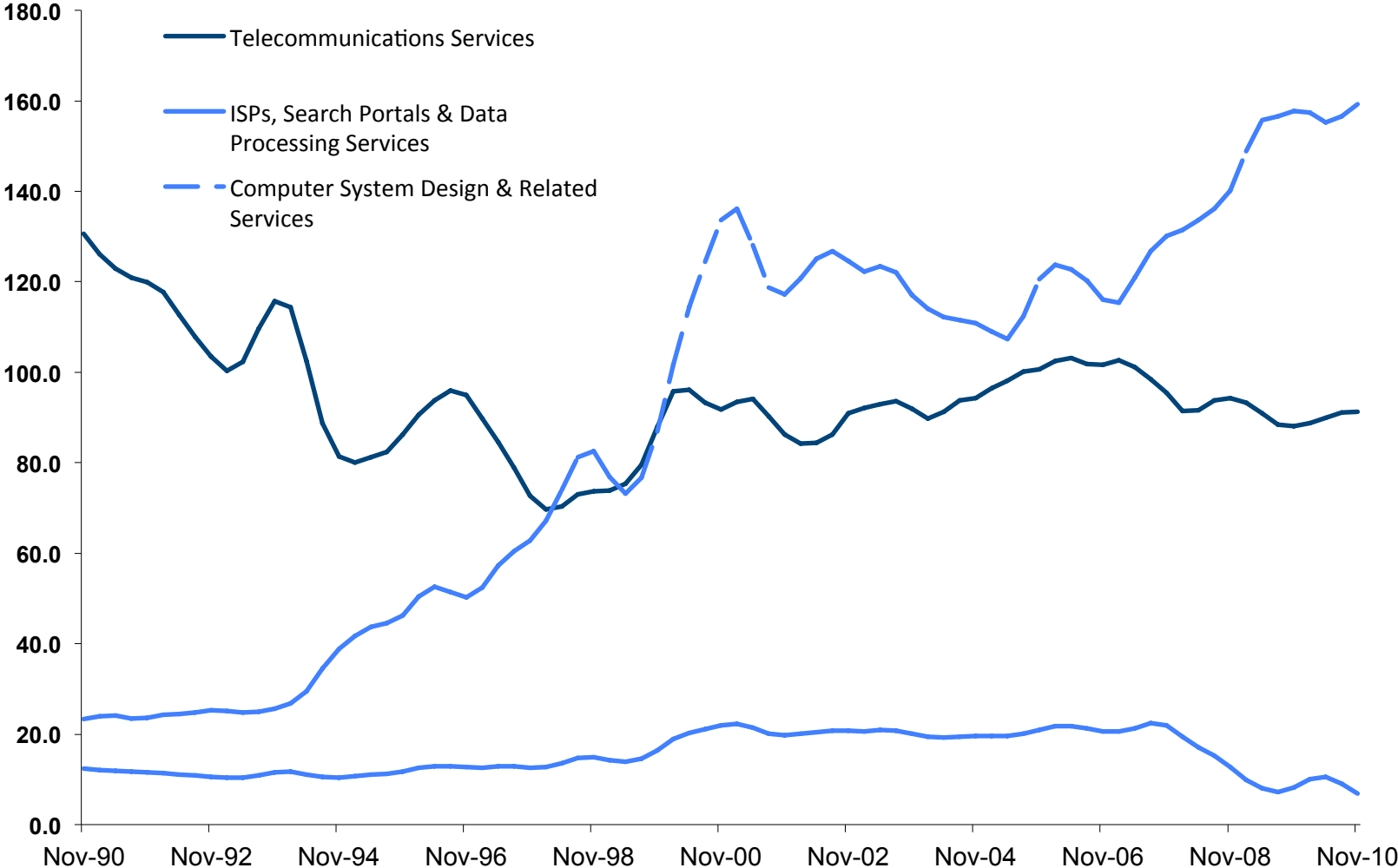


# ICT Professionals & Managers- employment by industry (2009)



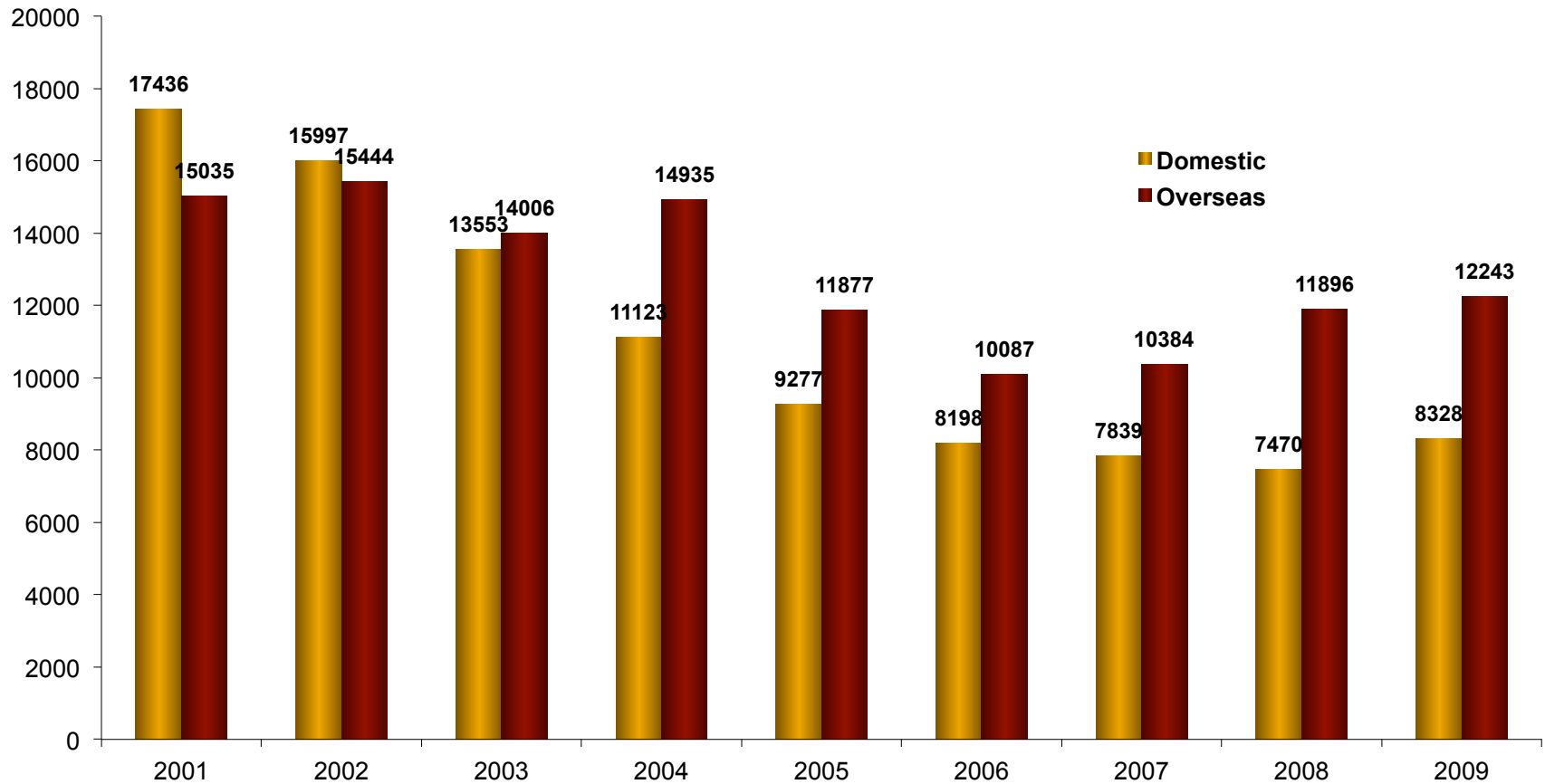
# ICT industries – trends in employment (1990 to 2010)

Employment ('000)



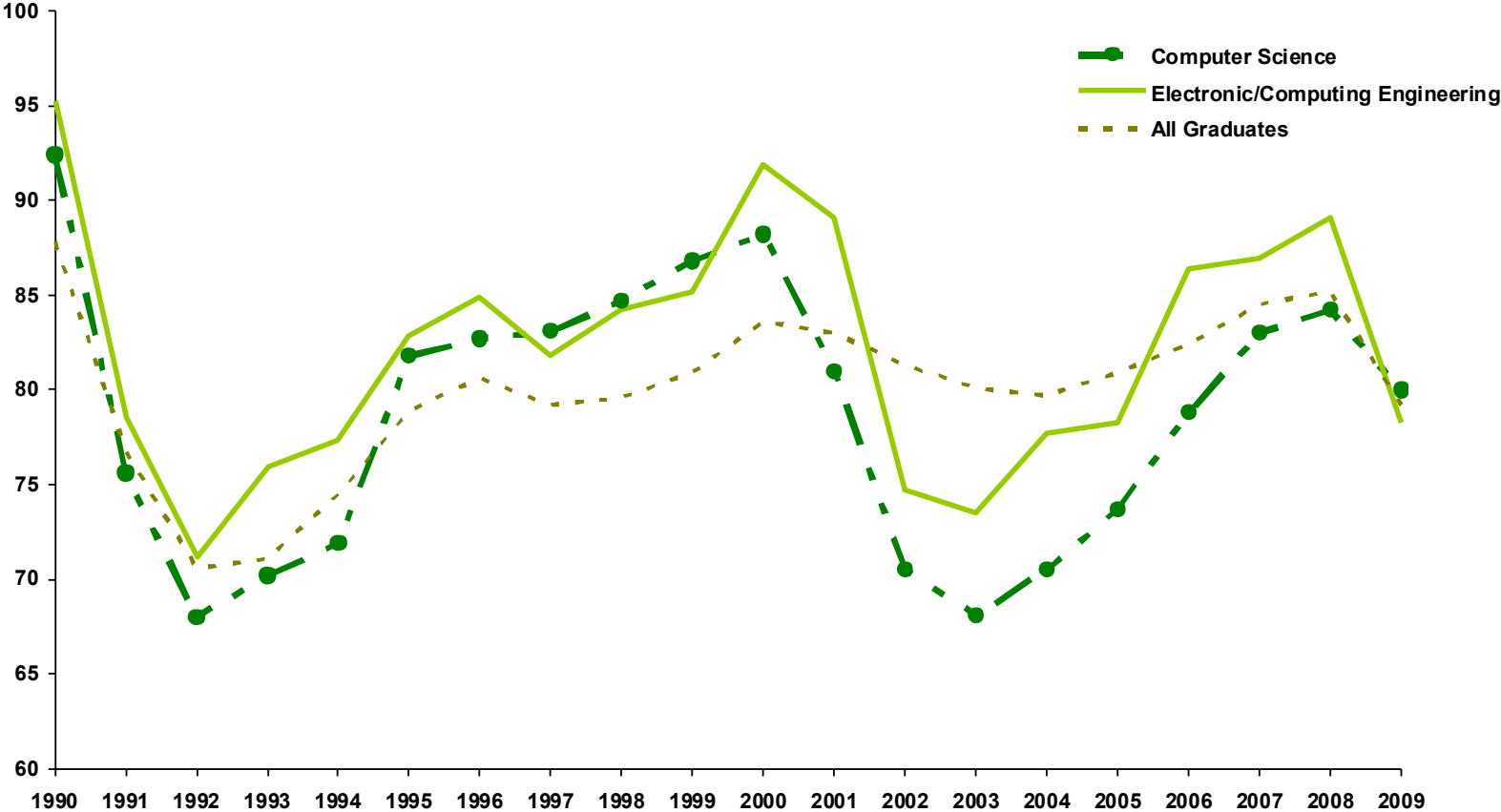
# ICT Professionals – higher education commencements (2001 to 2009)

## Bachelor Degree and Higher Level Award Course Commencements in the Field of Information Technology



# ICT Professionals - employment outcomes of recent ICT graduates (1990 to 2009)

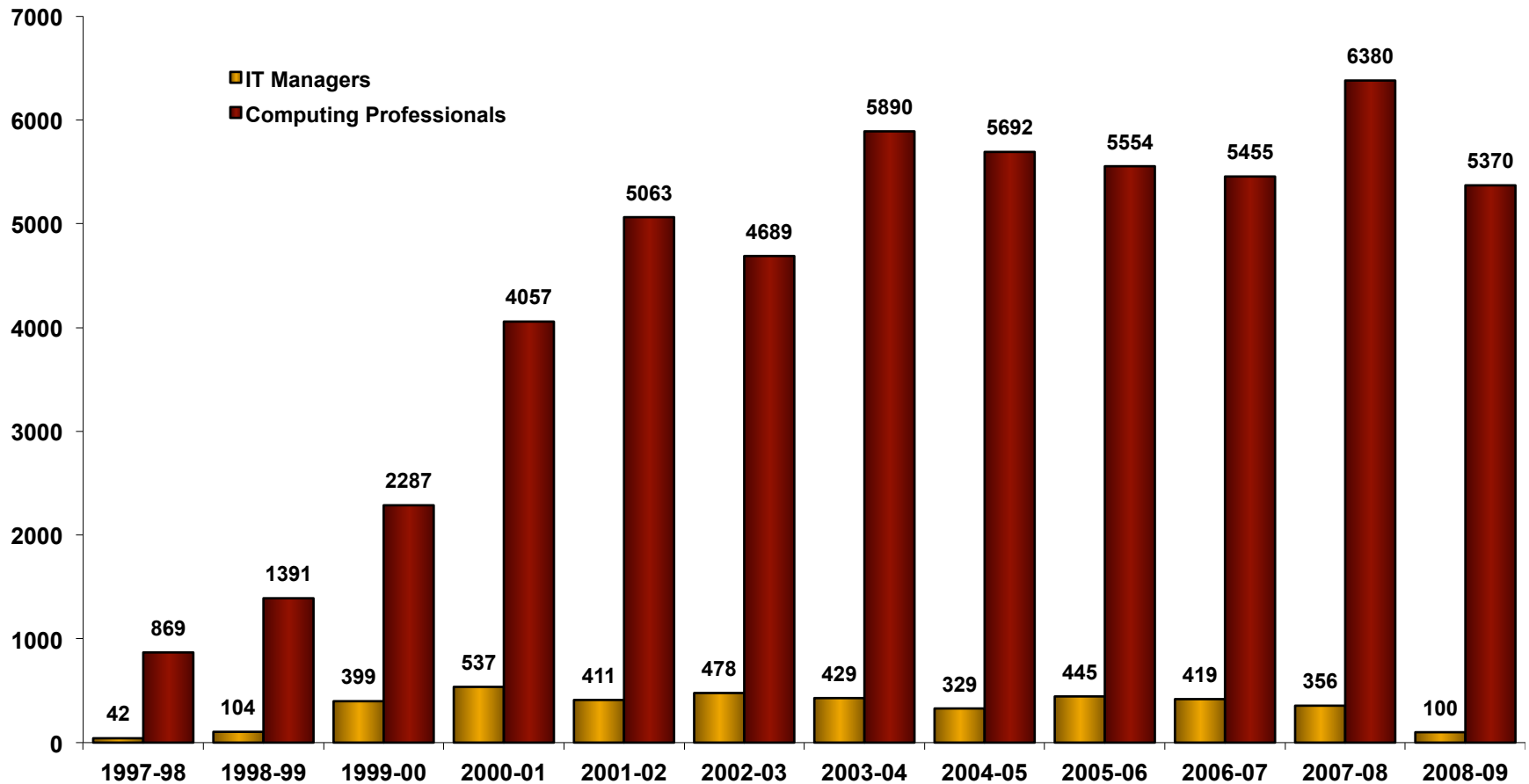
Full-time employment four months after course completion (per cent share)





# ICT Managers & Professionals - net migration of skilled workers (1997-98 to 2008-09)

Count of persons



# Thank you

