

**The Common Challenge - Year 12 outcomes - the international focus on transitions pathways**

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He returned to Australia at the end of 2005 from Paris where he had been Director for Education at the Organisation for Economic Co-operation and Development (OECD). He had previously been Executive Director of the Australian Council for Educational Research (ACER) from 1985 to 1998 and Professor of Education at Murdoch University in Perth Western Australia from 1976 to 1984. He was originally a science teacher in Queensland and was head of the Research and Curriculum Branch in the Queensland Department of Education before moving to the Chair at Murdoch University.

Professor McGaw is a Fellow of the Academy of the Social Sciences in Australia, the Australian Psychological Society, the Australian College of Educators and the International Academy of Education. He received an Australian Centenary Medal in 2003 and was appointed an Officer in the Order of Australia in 2004.

## Outline of presentation

- Education pays off for individuals
  - But too many Australians are missing out
- Education pays off for countries
  - But how do we explain US economic strength in view of the weakness of its school education?
- What are your responsibilities?

You and your agencies play a key role in a very important phase of education, developing the paths through which young people might continue their education beyond the compulsory years.

I will present some of the evidence of the benefits of education for individuals and point to an important deficiency in Australian education

I will present some of the evidence of the benefits of education for countries and then consider whether the case is weakened by the example of the United States where the economy is strong but school education is weak.

Finally, I will consider what your key responsibilities might be.



I turn first to evidence on the benefits of education to individuals.

## Pay-off for individuals

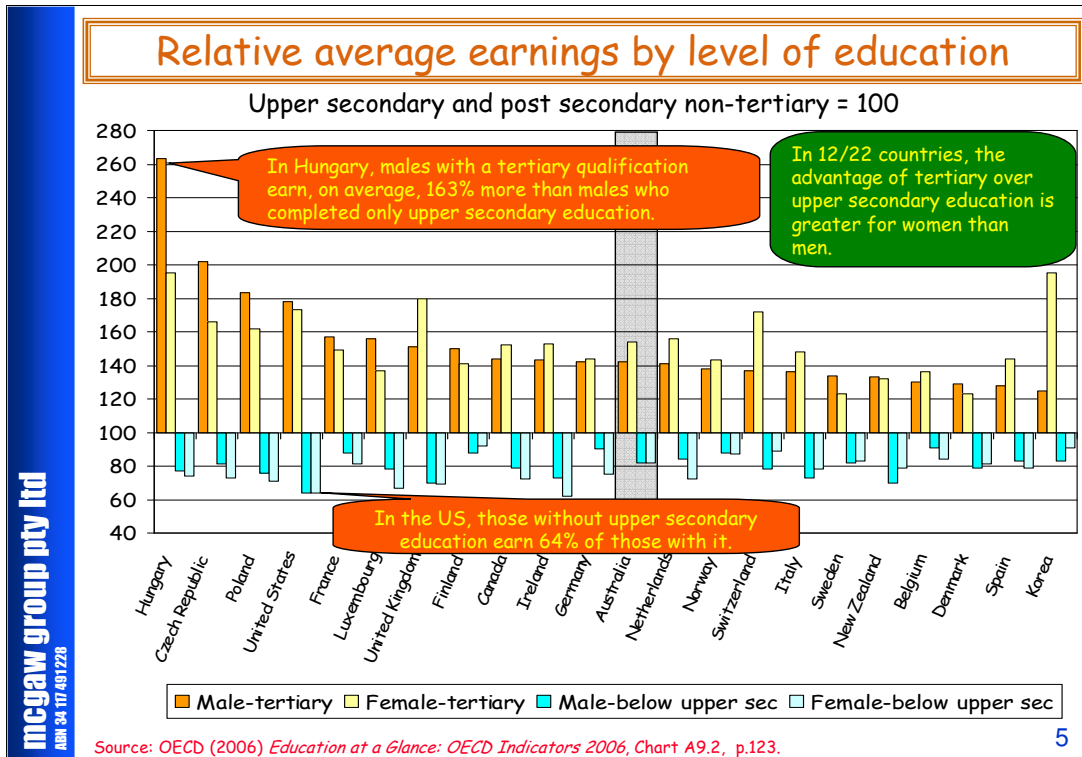
- Those with higher levels of education have
  - Higher employment rates [EAG 2006, Table A8.1a]
  - Lower unemployment rates [EAG 2006, Table A8.2a]
  - Higher average earnings [EAG 2006, Table A9.1a]
  - High internal rate of return [EAG 2006, Table A9.5]
- These benefits have not diminished over time
  - Despite increases in education levels [EAG 2006, Tables A8.3a, A8.4a, A9.3]

International comparative analyses undertaken by the Organisation for Economic Co-operation and Development (OECD) make clear the extent to which higher levels of education pay off for individuals. These are documented regularly in the annual OECD publication *Education at a Glance*, the most being in the tables indicated in the slide from *Education at a Glance 2006*.

The benefits for individuals lie in:

- higher employment rates,
- lower unemployment rates,
- higher average earnings (on which more is said in slide 5)
- high internal rates of return (on which more is said in slide 6).

Furthermore, now that OECD has accumulated data going back over more than a decade, it can be said that, at least over that period, the benefits have not decreased despite more people reaching higher levels of education.



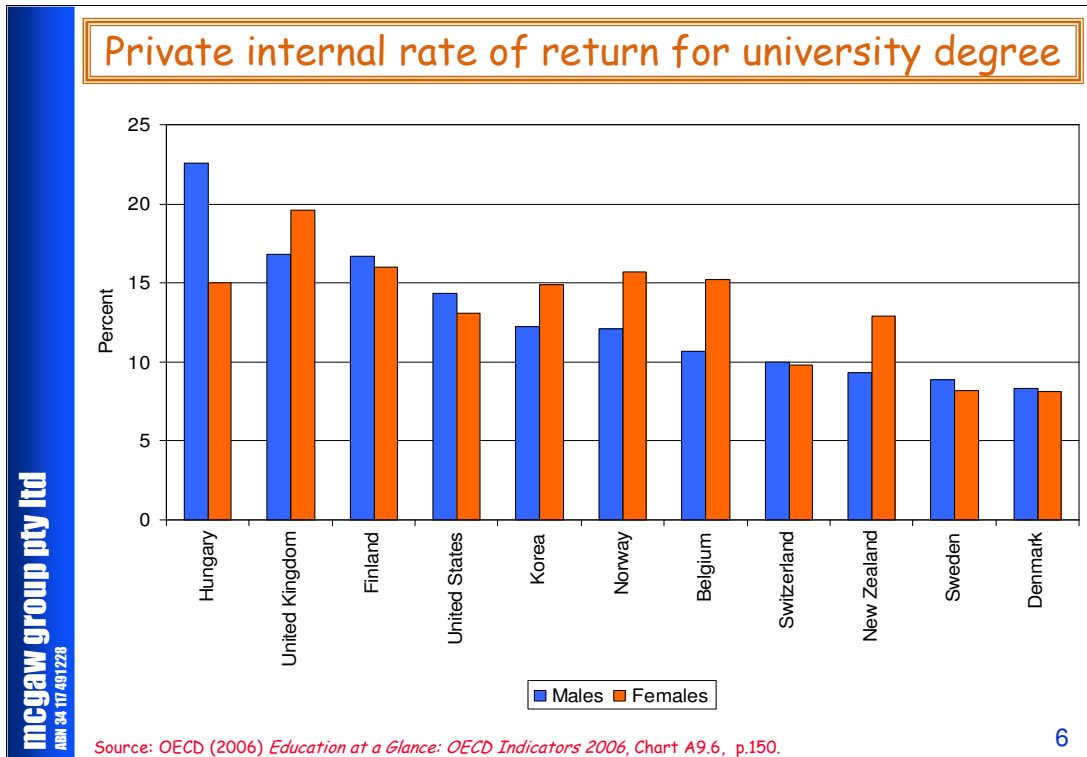
Simple, direct evidence on the economic benefit for individuals of completing a higher level of education is provided by comparisons, for males and females, of the salary benefit associated with higher levels of education. The comparisons in the figure above show:

- The ratio of the mean annual earnings of tertiary graduates to the mean annual earnings of upper secondary and post-secondary, non-tertiary graduates, with the latter indexed to 100.
- The ratio of the mean annual earnings of upper secondary and post-secondary, non-tertiary graduates to the mean annual earnings of those with lower levels of education, with the former indexed to 100.

In all 22 countries, tertiary graduates earn more than those whose formal education ends at upper secondary level or post-secondary, non-tertiary level. The premium for males ranges from 25% in the Republic of South Korea (index 125) to 163% in Hungary (index 263). In 12 countries the premium for females is higher than for males (highest in Korea at 95%). These higher premiums do not mean women graduates earn more than men; only that the advantage for women with a tertiary qualification over women with only upper secondary education is greater than that for men with a tertiary qualification over men with only upper secondary education. The Australian figures are 42% for males and 54% for females.

Those who leave before completing upper secondary education are at a disadvantage in economic terms. In the United States, for example, both males and females earn on average only 54% of the average earnings of those who have completed upper secondary or post-secondary, non-tertiary education. The Australian figure is 82% for both males and females.

Variations in relative earnings between countries reflect skill demands in the labour force; minimum wage legislation; strength of unions; coverage of collective bargaining agreements; supply of workers at the various levels of educational attainment; and relative incidence of part-time and part-year work.



A more thorough way in which to examine the benefits of additional education is to consider both the costs and the benefits. These include:

- Costs:
  - Tuition fees paid in obtaining additional education
  - Higher tax paid by those with additional education on higher earnings
- Benefits
  - Public funding of the costs of obtaining additional education
  - Higher pre-tax earnings, though over a shorter working life because of time spent in study
  - Reduced risk of unemployment for those with additional education.

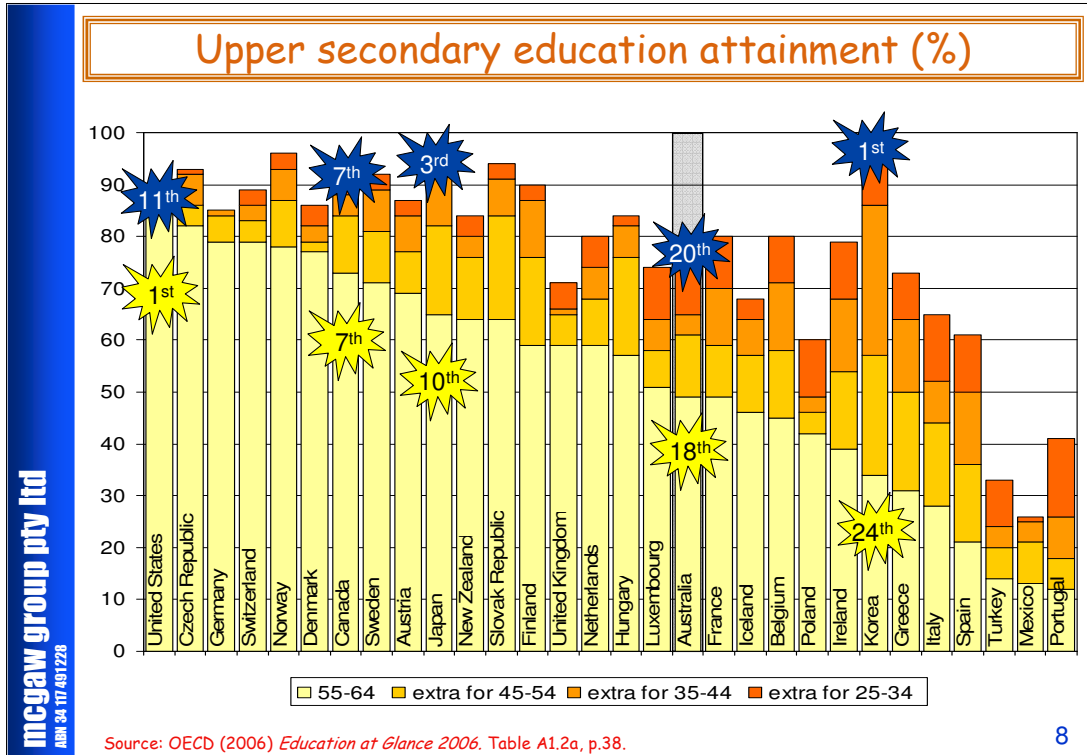
The net benefit can be expressed as an internal rate of return. Among the 11 countries for which the data are available, the highest rate of return to tertiary education occurs in Hungary for males (22.6%) and in the United Kingdom for females (19.6%). The lowest rates are in Denmark – 8.3% for males and 8.17% for females – where salary dispersal is relatively low and income tax rates are more progressive than in many other countries.

These are, of course, only average returns. They would not be achieved by all individuals because of:

- differences in their courses of study,
- differences in the employment choices and opportunities among individuals,
- differences among the individuals in other characteristics that influence remuneration.



Benefits accrue only if additional education is completed and, in that respect, many more Australians miss out than in other OECD countries. The rates at which Australians complete upper secondary education (or equivalent) and tertiary education are relatively low in comparison with other OECD countries.



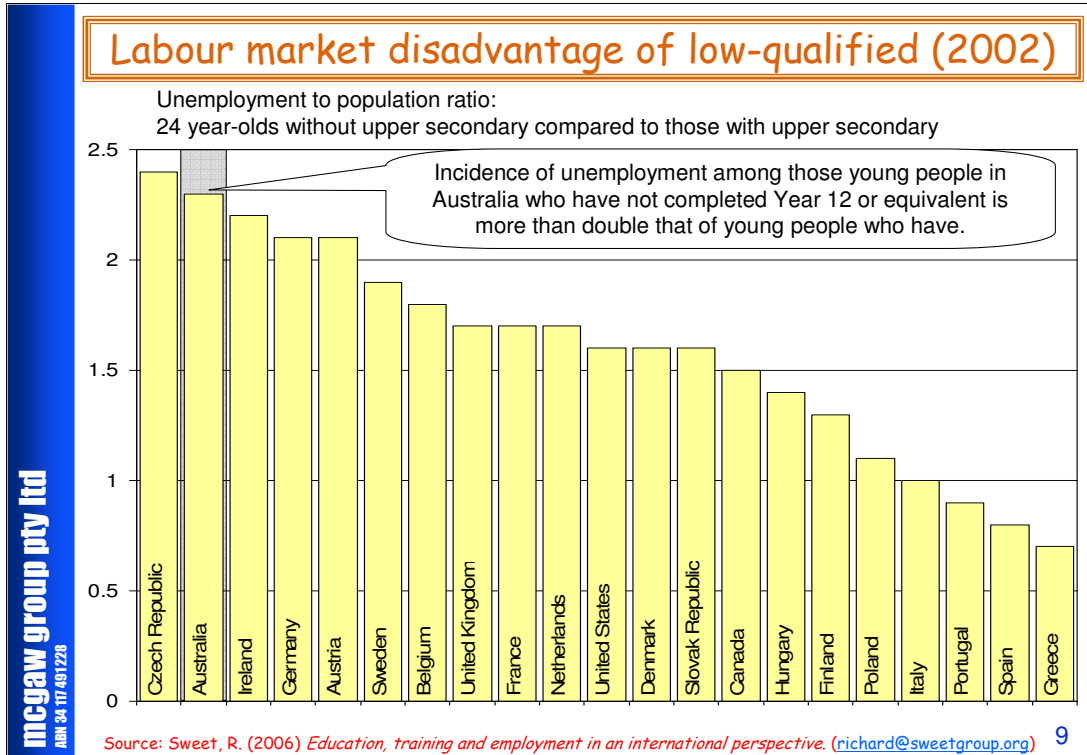
There are no internationally comparable data on trends in completion rates for upper secondary education but a picture for past decades can be obtained from the percentages of the population in different age brackets that have attained this level.

The percentage of 55-64 year-olds who have attained upper secondary education indicates completion rates 37-46 years ago. The picture is only approximate because some will have attained this level as adults, long after having left initial education, and also because some of the population will not have survived to this age-group. Younger groups provide corresponding pictures for more recent decades.

The figure above shows the attainment rates for 55-64 year-olds in OECD countries and, for successively younger age groups, the increase in the rate compared with the next oldest group. The rates for 25-34 year-olds reveal that, by 7-16 years ago, 17 of the 30 OECD countries had achieved attainment rates of 80% or higher. Australia was not among them.

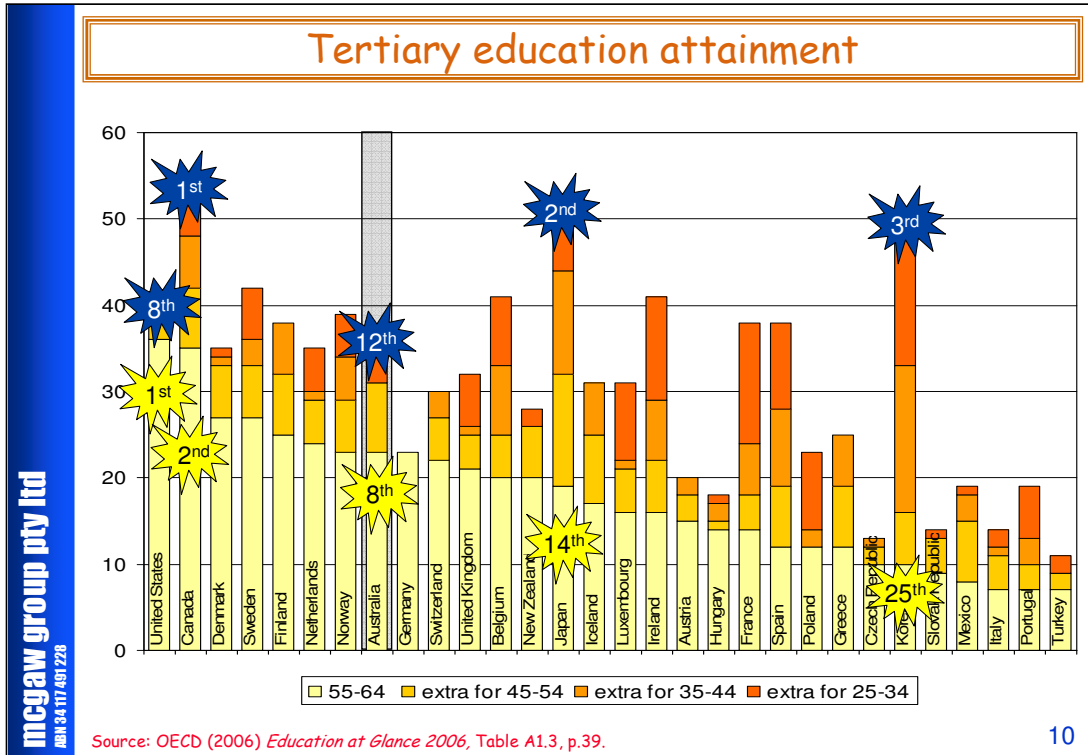
The Republic of South Korea started from a low base but grew quickly, rising from 24th to 1st. Over the same period, Japan rose from 10th to 3rd. The US started from a high base but grew quite slowly, slipping from 1st to 11th. Australian rates have grown relatively slowly from a comparatively low base, with the rank slipping marginally from equal 18th to 20th. Meanwhile Canada held its ranking at 7th.

In the mid-1960s, South Korea had a GDP per capita equivalent to that of Afghanistan and behind all the countries of Latin America. South Korea is now a Member of the OECD, with a GDP per capita that just below the top two thirds of the Members. Education reform and a deep national commitment to education and skill development are recognised as key drivers of this remarkable economic growth.



The negative impact of failing to complete upper secondary education or its equivalent is evident in the labour market consequences, as Richard Sweet recently documented in the graph above. In the Czech Republic, the unemployment rate for 24-year-olds who have not completed upper secondary education or its equivalent is 2.4 times the rate for those who have. In Australia, the ratio is 2.3. Sweet concludes:

“There is normally an inverse relationship between the incidence of low qualifications and the penalty that those with low qualifications suffer in the labour market. In countries where nearly all complete upper secondary education, the cost of being one of the handful not to do so is normally high. Where many do not complete high school, the labour market consequences are generally less. However Australia seems to have the worst of both worlds: both a relatively high number of young people without an upper secondary qualification or better, and these young people being at a significant disadvantage in the labour market. The result ... is that the penalty for not completing Year 12 or its equivalent is one of the highest in the OECD.” [Sweet, R., *Education, training and employment in an international perspective*, Paper presented at a Brotherhood of St Laurence Seminar, *New Transitions: Challenges Facing Australian Youth*, Melbourne, August 2006.]

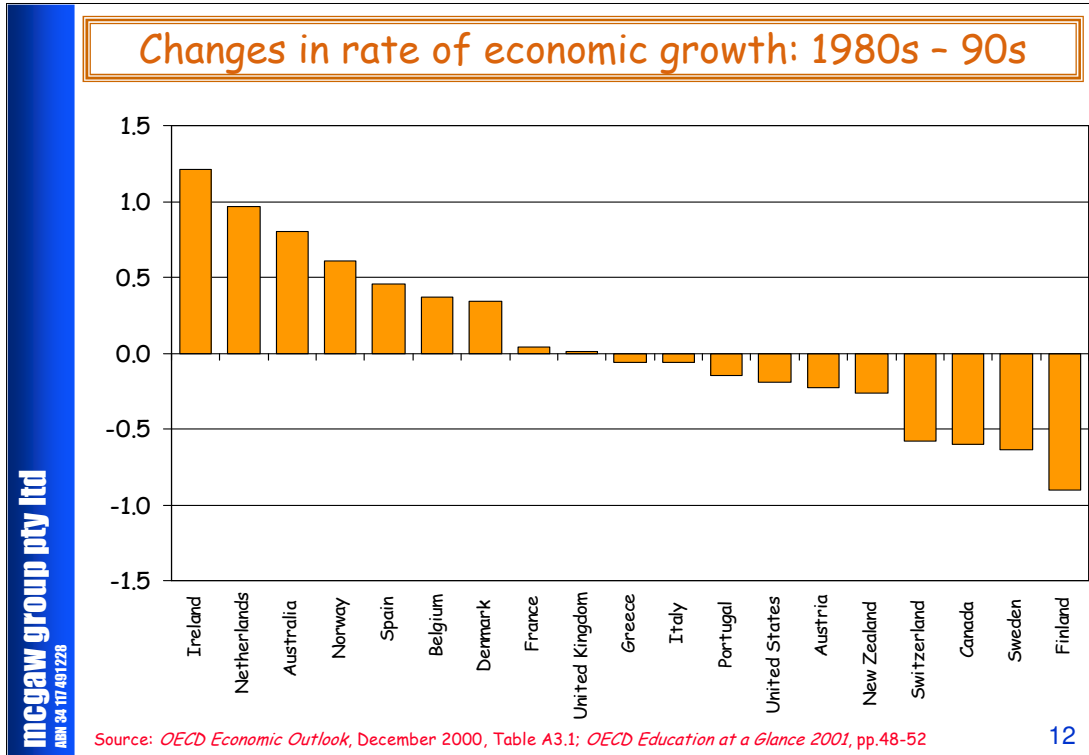


Changes in completion rates of tertiary education can also be estimated using current information on different age groups in the population.

As with completion rates for upper secondary education or its equivalent, Korea and Japan have increased dramatically over the period, in this case rising to 2<sup>nd</sup> and 3<sup>rd</sup> among OECD countries and behind only Canada. The United States dropped from 1<sup>st</sup> to 8<sup>th</sup> and Australia dropped from 8<sup>th</sup> to 12<sup>th</sup>.



I turn now to evidence on the benefits of education to countries.



There were marked differences among OECD countries in changes in growth rates from the 1980s to the 1990s, as shown in the figure above. Some countries (e.g. Ireland, Netherlands, Australia) grew faster in the 1990s than in the 1980s while others (e.g. Finland, Sweden, Canada, New Zealand) grew more slowly. The growth rates in the UK were essentially unchanged between the two periods.

In order to understand better the drivers of economic growth, the OECD Growth Study investigated the sources of these differences.

## Factors influencing economic growth

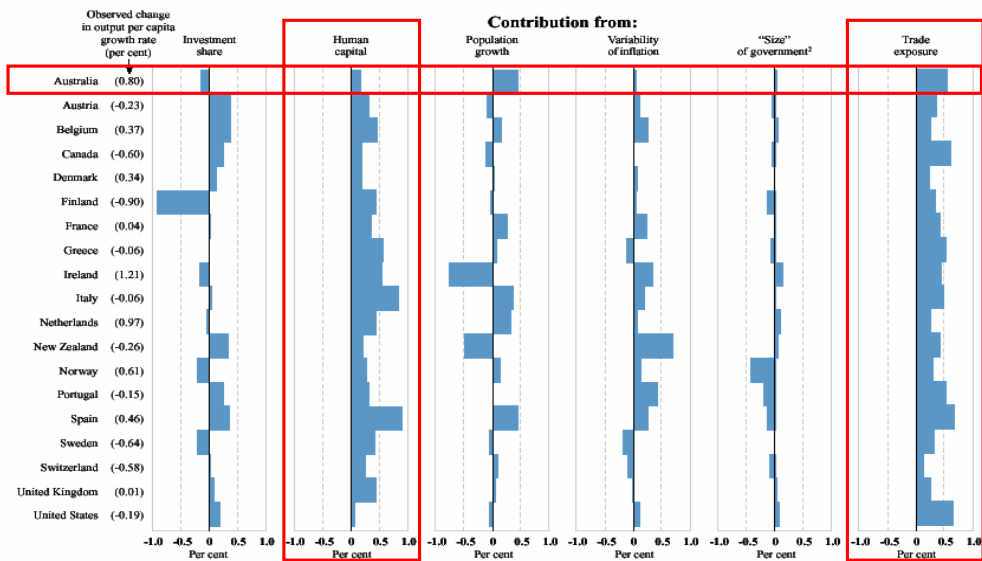
- Business investment rate
- Human capital (measured as 'educational attainment')
- Population growth
- Variability of inflation
- Size of government
- Trade liberalisation

For countries, evidence of the benefit of higher levels of education in the population is provided by the OECD Growth Study which examined the differences among OECD Member countries in changes in growth rates between the mid-1980s and the mid-1990s.

The influences of six factors were investigated:

- business investment rate,
- human capital (measured as number of years completed not by quality),
- population growth,
- variability of inflation,
- size of government,
- trade liberalisation.

## Contributions to economic growth: 1990-98



Source: *OECD Economic Outlook*, December 2000, Table A3.1; *OECD Education at a Glance 2001*, pp.48-52.

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The model fitted in the Growth Study assumed that the nature of the impact of a factor was the same in each country, with differences in impact reflecting differences in the changes in the factor. The appropriateness of this assumption was evaluated and confirmed.

Only two factors had a significant impact on changes in growth rates across all countries investigated:

- Human capital
- Trade exposure.

The variations in the impact of human capital across the countries, shown in the figure above, reflect variations in the growth in human capital. The countries that gained the most benefit from increased human capital were those that achieved the greatest increases in human capital in the period.

## Pay-off for countries

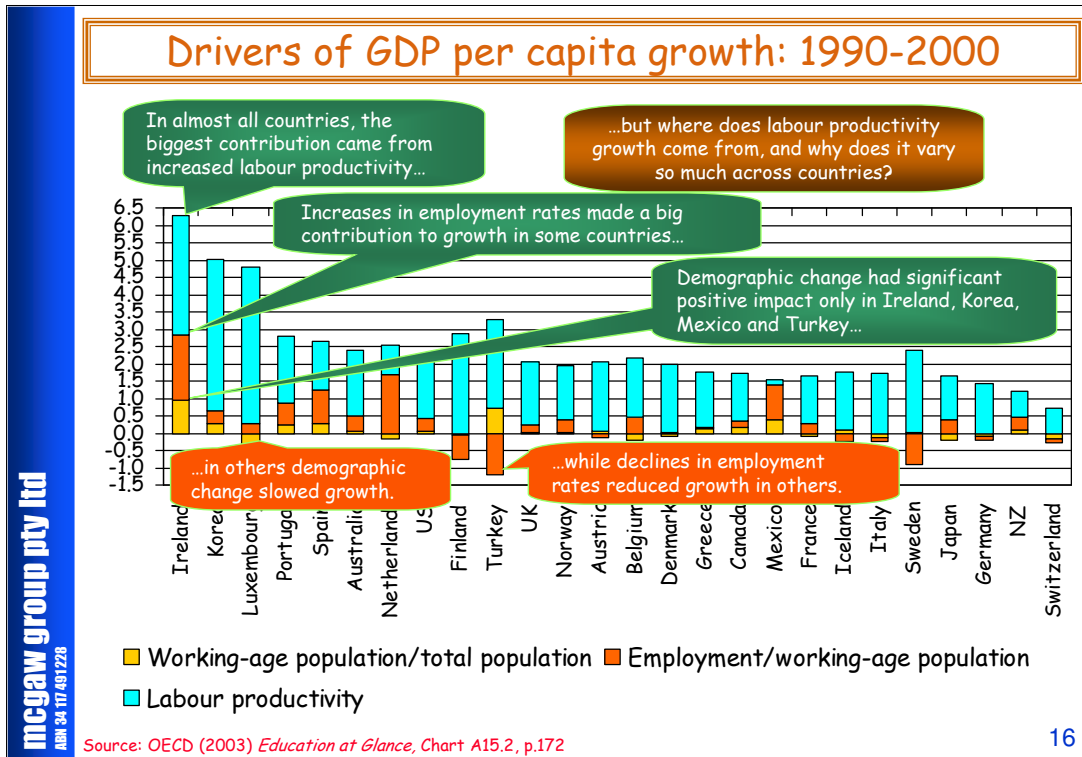
- One additional year of education
  - 3-6% increase in GDP [Education at a Glance (EAG) 2006, pp.156-157]
  - 1% increase in rate of growth [EAG 2006, pp.156-157]
- Higher literacy levels
  - Average adult literacy scores 1% above international average, then labour productivity 2.5% and GDP 1.5% above average [EAG 2006, pp.155]

Having investigated the relationship between the stock of education (human capital measured by number of years of education) and

- the long-run level of GDP
- the rate of growth of GDP,

the OECD concluded that an increase of one year in the average level of education of the working-age population raises GDP by 3 to 6% and increases the growth rate by around 1%. There is some evidence that the pay-off diminishes as the average level of education rises above levels that many OECD countries now exceed.

When measured levels of literacy are used as the indicator of the quality of human capital instead of years of education as an indicator of quantity, similar relationships are found. Coulomb et al. report that a country able to attain literacy scores 1% higher than the international average will achieve levels of labour productivity and GDP per capita that are 2.5 and 1.5% higher, respectively, than those of other countries. [This work is cited in *Education at a Glance 2006* as indicated in the slide above.]



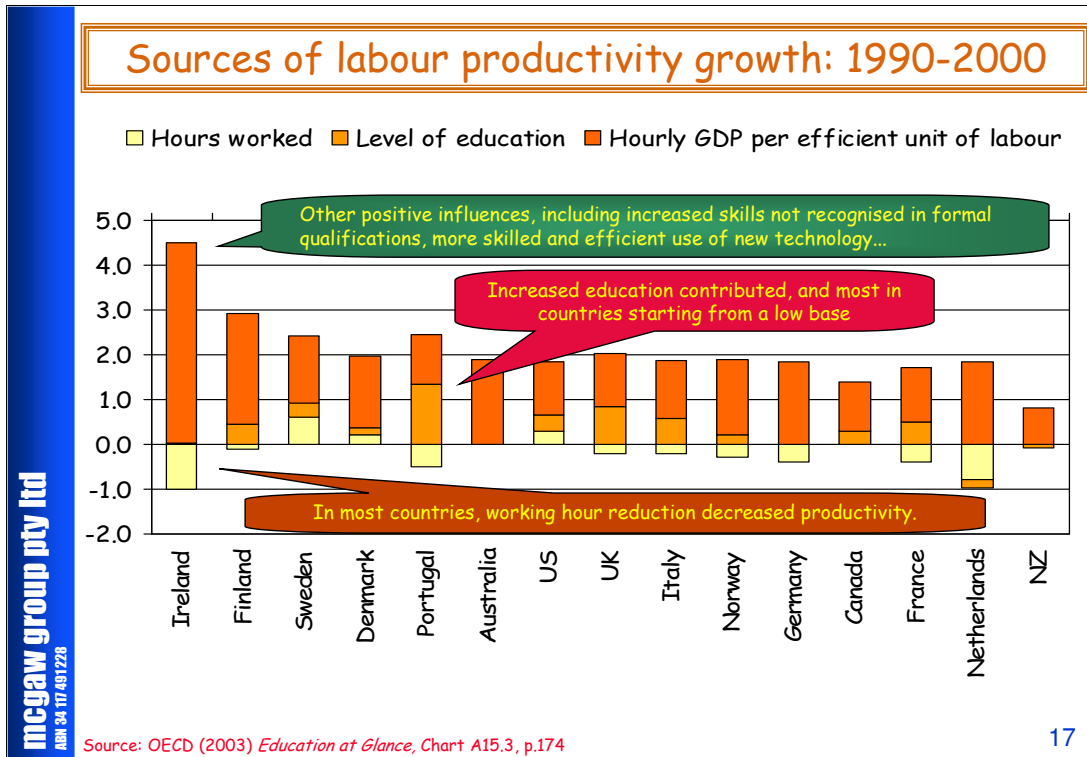
The OECD Growth Study also examined the three main factors driving economic growth over the 1990s:

- the ratio of persons of working-age (15-64 years) to the total population;
- the ratio of employed persons to the working-age population (“employment rate”);
- labour productivity.

Demographic trends were a relatively minor component of growth in GDP per capita over the 1990s. The only countries where demographic change made a significant, positive contribution to growth were Ireland, Korea, Mexico and Turkey. In some countries, demographic trends have begun to act as a slight drag on growth and that trend is set to strengthen with a more rapid increase in the share of older, non-working-age persons in the total national populations.

Increases in employment rates made a considerable contribution to growth in some countries (e.g. Ireland) while declines reduced growth in others (e.g. Turkey).

Rising labour productivity, defined as GDP per person employed, accounted for at least half of GDP per capita growth in most OECD countries over the 1990s. Since hours worked fell in most countries during the 1990s, especially in continental Europe, labour productivity growth was higher on an hourly basis than when measured on a head-count basis.



Labour productivity can be increased in several ways: by improving the quality of labour used in the production process, by increasing the use of capital per worker and improving its quality, or by attaining greater overall efficiency in how these factors of production are used together.

The figure above decomposes productivity (average annual percentage changes in GDP per person employed) into:

- changes in the average hours worked
- changes in the average years of formal education ('human capital')
- changes in the hourly GDP per efficient unit of labour, which is equivalent to changes in GDP per worker once changes in working hours and changes in the average quality of labour are accounted for.

The positive impact of improved human capital on productivity is captured in the direct measure (years of formal education) and in the changes in in the hourly GDP per efficient unit of labour since it captures the impact of skills acquired outside the formal education system and not recognised in formal qualifications and more skilled use of technology. One of the factors behind the good growth record of some countries has been the availability of a large pool of qualified personnel. Skilled labour shortages are rightly considered as a constraint on the growth process.

Only the third component influenced productivity in Australia in the period.



The strength of any claim that education plays a central role in national economic development is undermined, at least to some extent, by the case of the United States. In the OECD's Program for International Student Assessment, which measures the performances of national, representative samples of 15-year-olds in school, the United States is:

- In reading literacy, tied in 11<sup>th</sup> place with 8 other countries among 42
- In mathematics, tied in 24<sup>th</sup> place with 4 other countries among 40
- In science, tied in 17<sup>th</sup> place with 11 other countries among 40
- In problem solving, tied in 25<sup>th</sup> place with 6 other countries among 40.

The United States clearly does not have a highly-performing school education system. It is significantly behind Australia on all of these measures.

## Europe's vision

### □ Lisbon meeting of Heads of State

- Europe's target defined in the Lisbon declaration
  - by 2010: the most competitive and dynamic knowledge-based economy in the world
  - by 2004: Wim Kok's review concluded not much had changed
- Strategies proposed
  - radical transformation of the European economy
  - modernisation of social welfare system
  - modernisation of education system

### □ The target U.S. knowledge economy

- High wealth - GDP per capita (lower per hour worked)
- High productivity - per worker (lower per hour worked)
- High R&D expenditure - 42% of all OECD (lower as % of GDP)
- Patents - more than 1/3 of all, (lower per capita)

The European Union sees the United States as setting a benchmark that it hopes to reach and sees education as one of the means by which might achieve it.

When the European Union Heads of State met in Lisbon in March 2000, they adopted the goal of the European Union becoming the "most competitive and dynamic knowledge-based economy in the world" by 2010. They were clear that, to become number 1, they would have to overtake the United States. (In 2004, the former Prime Minister of the Netherlands, Wim Kok, reviewed progress toward achieving the Lisbon goals and concluded that little progress had yet been made.)

When setting the goal in 2000, the European leaders declared that, to achieve it, there would need to be:

- a radical transformation of the European economy
- a modernisation of its welfare system
- a modernisation of its education system.

To overtake the United States as a knowledge economy, Europe would need to move ahead of the United States on a range of indicators including wealth, productivity, research and development (investment and patents) on all of which the United States is the clear international leader.

## US education weak but knowledge economy strong

- Perhaps education does not matter
  - labour market matches skills not qualifications to jobs
  - entrepreneurial tradition
  - BUT there are social and personal returns to education...
- Perhaps U.S. has a first-mover advantage in education
  - GI Bill and early development of higher education
  - that advantage is disappearing, so...
- Perhaps education quality comes later, serving an elite
  - high-quality university system (including research role)
  - recruiting from others' superior education systems
    - into U.S. graduate schools
    - into U.S. enterprises
  - well focused and extensive job-related continuing education
- Should a country worry about its education system?
  - The US?
  - Australia?

The evidence from international comparisons that the United States education system, at school level, is relatively weak begs the question of whether education would indeed be the key to advancing a knowledge economy. The question is, "How does the United States have such a strong economy when its school education is so weak?"

The answer may be that education does not matter but there is good evidence that it does – some of it referred to earlier in this presentation. The question then becomes how does the United States make up for the disadvantages of a weak school education system.

One possibility is that the entrepreneurial tradition in the United States, coupled with a labour market that matches skills rather than qualifications to jobs generates high levels of productivity.

Another possibility is that the United States achieved a first-mover advantage in higher education achieving high levels of participation well before other countries. If that is the case, then the advantage may now be eroding as a growing number of other countries are achieving higher participation rates in tertiary education than the United States. (Slide 10.)

A third possibility is that the United States makes up for the deficiencies in its own school education system with a high-quality higher education system, particularly at the graduate level. A fourth is that it covers its deficiencies by recruiting individuals from high-quality systems in other countries. A fifth is that it makes up for the deficiencies through extensive, well-focused, job-related continuing education.

On the face of it, the United States might not need to worry too much about the deficiencies of its school education, though it clearly does as its *No Child Left Behind* federal legislation and many State reforms reveal.

Australia cannot afford to take the risk. Improving the skill levels of the population and increasing the proportions of the population that complete upper secondary and tertiary education and essential tasks.



Which brings us to the role of the agencies that comprise the Australasian Curriculum, Assessment and Certification Authority.

## And your responsibilities

- Creating pathways that
  - open appropriate opportunities
  - are separated by relatively permeable boundaries
  - facilitate re-entry
- Others are trying this too but some have problems
  - UK: the A Levels hinder reform
  - European apprenticeship systems
    - Labour market they serve confers advantages
    - Nevertheless, their attractiveness is declining

You have an important role to play in creating the pathways through which students can move in the years beyond compulsory education to complete upper secondary education or its equivalent and, where appropriate, to move on to various forms of tertiary education.

You have an important role in providing the curriculum that will prepare students for university education and the examinations and other forms of assessment that will determine, in part, who gains access to that next level. But you also have an important role in providing other pathways and in keeping the boundaries between all the pathways relatively permeable. To some extent, you can also play a role in facilitating re-entry for students who have dropped out early.

You have to do all of this in a complex institutional environment in which both federal and state agencies work in ways that are often not mutually supportive or complementary.

Australia is not alone in seeking to reform and expand its post-compulsory education offerings. The United Kingdom struggles to change its system but is hindered by the need to work around the edges of its A Levels which were created for a small proportion of the population and which are very narrow, allowing students in the final two years of secondary education to study as few as three subjects and for them to be as narrowly focused as, for example, double mathematics and physics.

The stratified academic and vocational systems in European countries with a strong apprenticeship system have often been seen to be an attractive model for Australian attempts to broaden the options available to students in the post-compulsory years of secondary education. It needs to be recognised, however, that the labour market in these European countries confers a considerably higher status on jobs for which the apprenticeships prepare workers and thus on the apprenticeship training than is typically the case in the Australian labour market or in the United Kingdom from which the Australian labour market white-collar/blue-collar structure derives.

I wish you courage and success.

# Thank-you

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