Improving productivity through education

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Australia has a good system of primary and secondary education. However, good is not great. Accepting a less-than-great education system imposes opportunity costs on Australia. These include:

- reducing the opportunity for all students to realise the benefits associated with quality schooling and educational attainment
- forsaking the cumulation of these individual benefits – such as reduced cost pressures on government, productivity improvements, and greater scope to address pressing challenges (eg the ageing population, climate change and the resources boom).

Modelling based on Organisation for Economic Cooperation and Development (OECD) research demonstrates that:

- reforming Australia's education system in line with best practice would generate $3.6 trillion in benefits over the lifetime of the generation born in 2012 – the equivalent of increasing the annual growth rate of Australia's GDP by 0.29 per cent
- by persisting with the status quo, Australia would incur productivity costs of approximately $1.5 trillion over 2012 to 2092.

Australia's system of primary and secondary education has been a pillar of the country's economic and social growth since the 1870s. This system has also traditionally been a high performing one. For instance, in the 2000 year round of Programme for International Student Assessment (PISA) testing, only one country outperformed Australia in reading and mathematical literacy, and two countries outperformed Australia in scientific literacy.[1]

Over the past decade, however, Australia's education system has gradually lost its high performance reputation. While the country's mean scores were well above the OECD average in the latest round of PISA testing, Australia was outperformed by six countries in reading and scientific literacy,[2] and 12 countries in mathematical literacy. The majority of countries that outperformed Australia are located in East Asia.

This change in Australia's relative position is due both to other countries lifting their game (which, in itself, has been a significant achievement),[3] and to a drop in the proficiency of Australian students. As the chart below illustrates, Australian's mean score in reading, mathematical and scientific literacy dropped from 2000 to 2009, while the mean score of the highest scoring country increased.

Other education performance statistics show that:

- ***Drawing on the National Assessment Program – Literacy and Numeracy (NAPLAN)***, an 'unacceptable percentage of students are not meeting the nationally agreed minimum standard of achievement in literacy and numeracy',[4] and
- ***Rates of educational attainment in Australia lag those of other key countries in the Asia-Pacific*** – while 83 per cent of Australians aged 25-34 in 2009 had completed upper secondary education, this figure compares to 88 per cent in the United States, 92 per cent in Canada and 98 per cent in South Korea.[5]

There are significant opportunity costs for Australia in accepting the educational status quo. At the individual level, it limits the opportunities for all students to realise the multitude of benefits that are associated with quality schooling and greater educational attainment. These benefits include a greater potential to secure:

- ***Economic gains*** – educational attainment is positively linked to higher levels of employment and labour force participation, higher wages, and higher levels of productivity.[6] Other research has found that literacy and numeracy levels for students at age 14 are critical determinants of future achievement (particularly in terms of whether they continue at school, enter university, and secure high-status, well-paid jobs).[7]
- ***A range of non-monetary benefits*** – there is growing evidence that education has a positive causal effect on such social outcomes as better health, greater civic engagement and reduced crime.[8]

At the national level, accepting the status quo means that Australia will forego the cumulative benefits that can be gained from better educational outcomes. These benefits include reduced cost-pressures on government. As the Gonski Review noted, '[c]ountries that have significant numbers of people without adequate skills to participate socially and economically in society endure higher social costs for security, health, income support and child welfare.'[9]

More importantly, enhancing Australia's education system should drive improvements in Australia's productivity. Recent research provides an indication of the potential magnitude of these improvements.

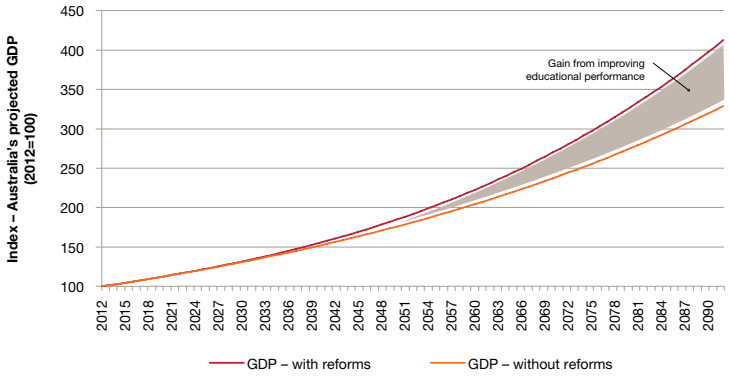
For example, KPMG Econtech estimated in 2010 that increasing completion rates of upper secondary in Australia by 5.8 per cent (ie to meet the government's target of 90 per cent) would generate an increase of 0.6 per cent in labour force productivity over 2010-40, and 0.65 per cent in GDP annually over the same period.[10]

Likewise, the OECD published research in 2010 modelling the economic benefits that countries could realise if they increased their educational performance (as measured by PISA 2000, 2003 and 2006) in line with that of Finland.[11] The value to Australia of achieving this goal was projected to be an aggregate gain of US$2 trillion over the lifetime of the generation born in 2010.[12] This is equivalent to 213 per cent of Australia's GDP in 2010, and an average increase to annual growth of 0.22 per cent over 2010 to 2090.

Updating the OECD research to take account of the results from PISA 2009 demonstrates that the potential benefits to be realised by Australia from reforming its education system continue to grow as the country's educational performance declines. Australia's average score in mathematical and scientific literacy (the benchmark used by the OECD research) was 521 in PISA 2009, or 26 points below the average score of Finland.

Using this differential, it is estimated that the value to Australia of reforming its education system would be an aggregate gain of $3.6 trillion over the lifetime of the generation born in 2012.[13] This is equal to 271 per cent of Australia's GDP in 2011-12, and represents an average increase to annual growth of 0.29 per cent over 2012 to 2092. To put this figure in perspective, a 0.29 per cent increase to the growth of Australia's GDP from 2011-12 to 2012-13 would equal $3.8 billion.

The figure below highlights the difference in Australia's projected GDP, with and without reforms.



By persisting with the status quo, Australia will incur productivity costs. A continuation of the current trend would mean that Australia's performance in PISA would further decline over the next decade – with its average score in mathematical and scientific literacy expected to drop by 13 points (from 521 in 2009 to 508 in 2021). In contrast, Finland's average score is expected to increase by 14 points (from 547 in 2009 to 561 in 2021).

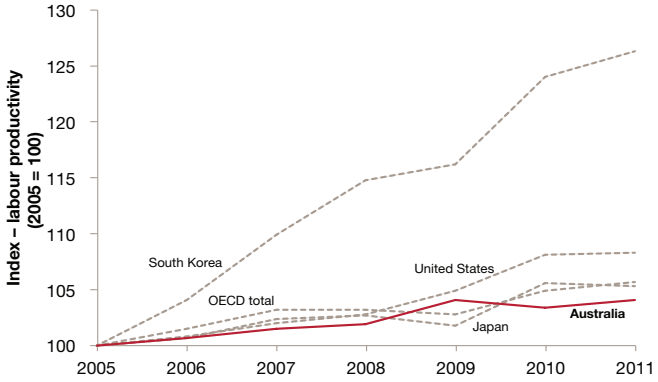
Drawing on the assumptions and algorithms that underpin the OECD research, it is estimated that the projected decline in Australia's educational performance would cost an aggregate of $1.5 trillion over 2012 to 2092 – compared to a scenario where Australia maintains its PISA 2009 average score.[14] This aggregate cost is the equivalent of 115 per cent of Australia's GDP in 2011-12.

The need to improve Australia's productivity performance

The productivity improvements that should be gained by enhancing Australia's education system would clearly generate benefits. But what makes these productivity improvements an opportunity cost in particular is that Australia currently needs to pull every possible lever to improve its productivity performance.

As Eslake and Walsh demonstrate,[15] Australia is being buffeted by two trends. On the one hand, the country's productivity performance has deteriorated significantly over the past decade. At the same time, Australia is faced with a raft of challenges that necessitate an increase in productivity if the country hopes to address the challenges without sacrificing its standard of living. These challenges include the ageing of Australia's population, mitigating or adapting to climate change, and managing the side effects of the resources boom.

An improved productivity performance is also required to maintain Australia's international competitiveness. As the figure to the right illustrates, Australia's labour productivity (measured as GDP per hour worked) has grown at a slower rate over the past decade than the OECD as a whole, as well as key Asian peers (such as Japan and Korea) that outperformed Australia in PISA 2009.[16]



[1] Lokan, Jan et al (2001), 15-up and Counting, Reading, Writing, Reasoning …:How literate are Australia's students?, Australian Council for Educational Research, Melbourne, p. ix.
[2] Thomson, Sue et al (2011), Challenges for Australian Education: Results from PISA 2009, Australian Council for Educational Research, Melbourne, pp. iii-iv.
[3] See: Jensen, Ben (2012), Catching Up: Learning from the Best School Systems in East Asia, Grattan Institute, Melbourne.
[4] Gonski, David et al (2011), Review of Funding for Schooling—Final Report, Canberra, p. 24.
[5] OECD (2011), Education at Glance 2011: OECD Indicators, Paris, p. 39.
[6] Forbes, Matthew et al (2010), The Effects of Education and Health on Wages and Productivity, Staff Working Paper, Productivity Commission, Canberra.
[7] Penman, Robyn (2004), What do we know about the experiences of Australian youth? An easy reference guide to Longitudinal Surveys of Australian Youth research reports, 1996–2003, Australian Council for Educational Research, Melbourne, pp. 9-11.
[8] OECD (2011), Education at Glance 2011: OECD Indicators, Paris, pp. 192-3.
[9] Gonski, David et al (2011), Review of Funding for Schooling—Final Report, Canberra, p. 19.
[10] KPMG Econtech (2010), Measuring the Impact of the Productivity Agenda, pp. vii-viii.
[11] Hanushek, Eric A. And Ludger Woessmann (2010), The High Cost of Low Educational Performance: The long-run economic impact of improving PISA outcomes, OECD, Paris, p. 25.
[12] This figure has been discounted using a rate of 3 per cent.
[13] This figure has been discounted using a rate of 3 per cent. It is based on the algorithms and assumptions outlined in: Hanushek, Eric A. And Ludger Woessmann (2010), The High Cost of Low Educational Performance: The long-run economic impact of improving PISA outcomes, OECD, Paris.
[14] This figure has been discounted using a rate of 3 per cent. It is based on the algorithms and assumptions outlined in: Hanushek, Eric A. And Ludger Woessmann (2010), The High Cost of Low Educational Performance: The long-run economic impact of improving PISA outcomes, OECD, Paris.: The long-run economic impact of improving PISA outcomes, OECD, Paris.
[15] Eslake, Saul and Marcus Walsh (2011), Australia's Productivity Challenge, Grattan Institute, Melbourne.
[16] OECD (2012), 'OECD Stat Extracts', http://stats.oecd.org/. Accessed on: 20 August 2012.

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