

Income Mobility in Australia

Australia has an international reputation as a nation that provides economic opportunity to people from low socio-economic (SES) backgrounds. However, in recent years, the divide between the richest and the poorest has been growing in many Western countries, and it may now be harder for someone born to low income parents to become economically successful later in life.

Intergenerational income mobility is a measure of economic opportunity that describes the relationship between a person's income and the eventual income of their children. This Learning Curve summarises recent research on income mobility in Australia and the role played by the Australian education system.



KEY FINDINGS

Income mobility in Australia may be substantially lower than has been previously reported, and may be closer to low mobility countries such as the UK and US than to higher mobility countries like Sweden or Canada.

Education plays a substantial role (25-40 per cent) in economic immobility between generations.

Financial returns to education have been increasing in Australia, which increases the importance of ensuring equal access to education.

The education system in Australia is about as equitable as the OECD average and the UK education system.

Socio-economic status (SES) has more of an impact on educational attainment for females than males, and education explains a greater component of income immobility for females.

Needs-based funding can improve educational equity, which can increase the mobility of Australian society.

Intergenerational income mobility describes the relationship between a person's income and the eventual income of their children. If there is not a strong relationship between the incomes of parents and the incomes of children in a country, then it is highly mobile. This means that the children of rich parents and the children of poor parents have more equal chances of future life outcomes than in a less mobile country. Income mobility is important because it tells us the degree to which a country creates opportunities to move up the socio-economic ladder, or the degree to which the country entrenches disadvantage.

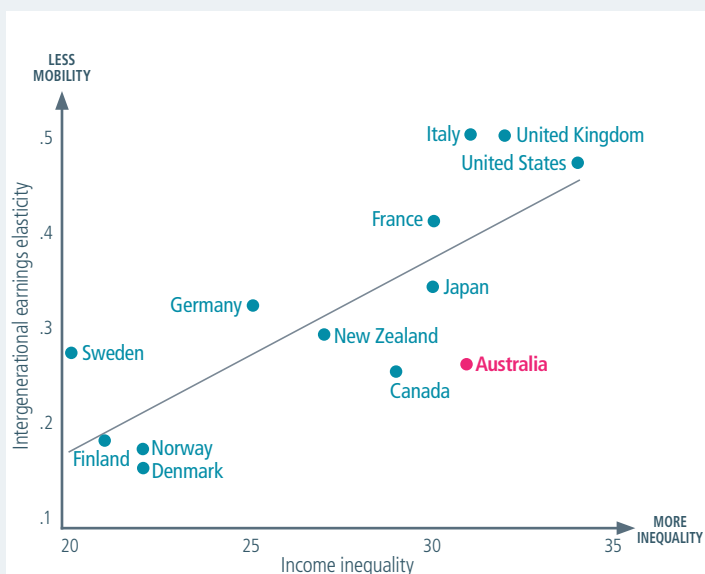


Relationship with income inequality

Income mobility has a strong relationship with another measure of equity and opportunity within a country: income inequality. Income inequality describes the gap between the richest and poorest people in a country. Generally, countries with high inequality also tend to be highly immobile. One reason for this is that as a country becomes more stratified and high- and low-paying jobs become less similar, it is harder to move between them. It is more difficult to climb up the income ladder when the rungs are further apart. The relationship between these measures has been termed 'the Great Gatsby curve' by Miles Corak (Figure 1).

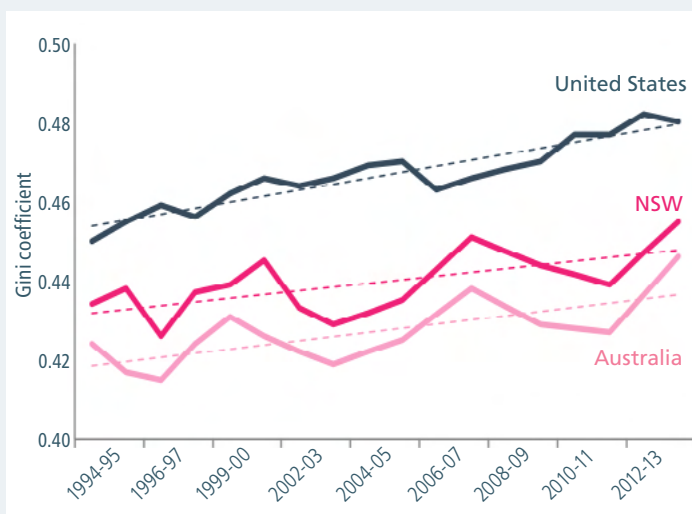
Income inequality has been increasing in the United States and many other Western countries over the past 20 years. Both Australia and, to a lesser extent, New South Wales appear to show slight increasing trends in the Gini coefficient, a commonly-used measure of inequality (Figure 2). Because of the relationship with income mobility, this trend in inequality may also indicate that Australia is becoming a less mobile society.

Figure 1: Great Gatsby curve showing relationship between income inequality and immobility



Source: Corak 2013, Figure 1.

Figure 2: Trends in income inequality, 1995-2012



Note: The Gini coefficient is a measure of income inequality. Higher values indicate that income is more concentrated in a smaller number of individuals. Since 2004, Gini coefficients for Australia have been reported every two years.

Source: ABS 2014a; US Census Bureau 2014.

Income mobility in Australia

Australia is generally categorised as a high mobility country. This is based on a study by Andrew Leigh (2007). Leigh's estimates have been extensively used in many cross-country comparisons of income mobility (OECD 2010, p. 187; Corak 2012, p. 10; Janetti 2013, p. 173). However, while estimates of income mobility in other countries are typically based on averages of many different studies, in Australia the Leigh study is the only widely-cited study to examine income mobility.

In a report commissioned by the NSW Department of Education, through its Centre for Education Statistics and Evaluation, Silvia Mendolia and Peter Siminski¹ indicate that the Leigh estimates may be an anomaly. The Leigh study used data from 2004. However, repeating the same methodology with more recent years of the same data source gives estimates that indicate that Australia is much more immobile than previously thought. Table 1 shows a comparison of estimates of income immobility of several countries. Using combined data across all years 2000 to 2012, rather than only 2004, suggests that income mobility in Australia is closer to that of France or the United States than Finland or Canada.

Mendolia and Siminski also produced alternative estimates of mobility that use a broader measure of parental background than just income². These similarly indicate that immobility in Australia might be higher than previously thought. Figure 3 shows the differences in eventual incomes for people coming from different ends of the family background spectrum. Australia appears to have less mobility than even the United Kingdom, typically thought of as a low mobility country. For example, in Australia, people from very high SES backgrounds (the 90th percentile) on average earn about 54 per cent more as adults than people coming from very low SES backgrounds (the 10th percentile), compared to 38 per cent more in the United Kingdom.

Income mobility and public investment in education

Many economists (for example Solon 2004) argue that the mobility of a society is dependent on the level and progressivity of public investment in education. As a country invests more wealth in the 'human capital' of children from less advantaged families, those children become more productive, and society becomes more mobile. There is empirical support for this relationship between public education investment and income mobility: Blanden (2009) uses data on public spending on education as a proportion of GDP across an international dataset. She concludes:

As we would expect, there is a negative relationship between education spending and intergenerational persistence. Those countries which devote more of their income to public spending on human capital investment tend to be more mobile. (p. 26)

The relationship between public education investment and mobility may be a contributing reason for the lower mobility observed in Australia by Mendolia and Siminski. According to data from the World Bank (2014), since 2005, public spending on education in Australia was an average of 4.97 per cent of GDP. The average for high income OECD countries over this time was 5.33 per cent.

Table 1: Income immobility by country

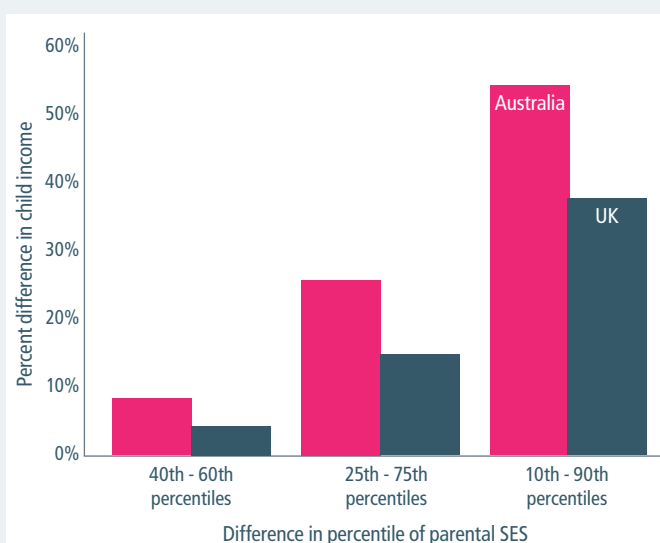
Country	Intergenerational income elasticity
Denmark	0.15
Norway	0.17
Finland	0.18
Canada	0.19
Australia (2004 data)	0.26
Sweden	0.27
New Zealand	0.29
Germany	0.32
Japan	0.34
Australia (2001-2012 data)	0.35
Spain	0.40
France	0.41
Singapore	0.44
Pakistan	0.46
Switzerland	0.46
United States	0.47
Argentina	0.49
Italy	0.50
United Kingdom	0.50
Chile	0.52
Brazil	0.58
China	0.60
Peru	0.67

A measure of income immobility

Larger estimates indicate less income mobility across generations

Source: Corak 2012 Figure 1; Mendolia and Siminski Figure 2.

Figure 3:
Income difference between high SES and low SES individuals



Source: Mendolia and Siminski, Table 6.

1 The Centre for Education Statistics and Evaluation (CESE) commissioned researchers at the University of Wollongong to investigate the impact that the Australian education system has on social mobility in Australia. The report is available on CESE's website: <http://www.cese.nsw.gov.au/>

2 This broader measure is preferred in their work, both because societal advantage is a multi-faceted concept that is not adequately described by income alone, and because reliable data linking the incomes of parents and children in Australia is difficult to obtain.

Returns to education

Obtaining more education can be an important driver for individuals moving up the income ladder. Researchers in the US project that by 2018, about two-thirds of jobs will require some post-secondary education, and that this education ‘is no longer the preferred pathway to middle-class jobs—it is, increasingly, the only pathway’ (Carnevale, Smith & Strohl 2010, p. 13). Accordingly, the proportion of the population with post-secondary qualifications has been increasing over the past decade. Figure 4 shows the proportion of 25-34 year-old New South Wales residents with Certificate III or higher VET qualifications and Bachelor or higher degrees. In 2014, almost 70 per cent of the population had some post-school qualification, compared to 57 per cent in 2004.

In a report commissioned by CESE, productivity expert Hui Wei used census data to estimate the additional income that was associated with different types of qualification³. Figure 5 shows the increase in average incomes for full-time employees with Year 12 completion, Certificate III or higher VET qualifications, Bachelor degrees, and higher degrees, relative to the average income of people not completing Year 12. These increases are substantial: women with higher degrees have almost double the average after-tax income of similarly-experienced women not completing Year 12.

It is important to note that not all of this increase may be *caused by* education – people who choose to participate in further education might have other characteristics that also make them more productive in the labour market. However, even under alternative models of the role of education, qualifications are conceived to be a worthwhile investment that will increase future income for individuals (Weiss 1995, p. 136).

Figure 4:
Proportion of 25-34 year olds with selected qualifications, NSW

Note: Individuals with both Bachelor-level and VET-level qualifications are included in the Bachelor series.

Source: ABS 2014b.

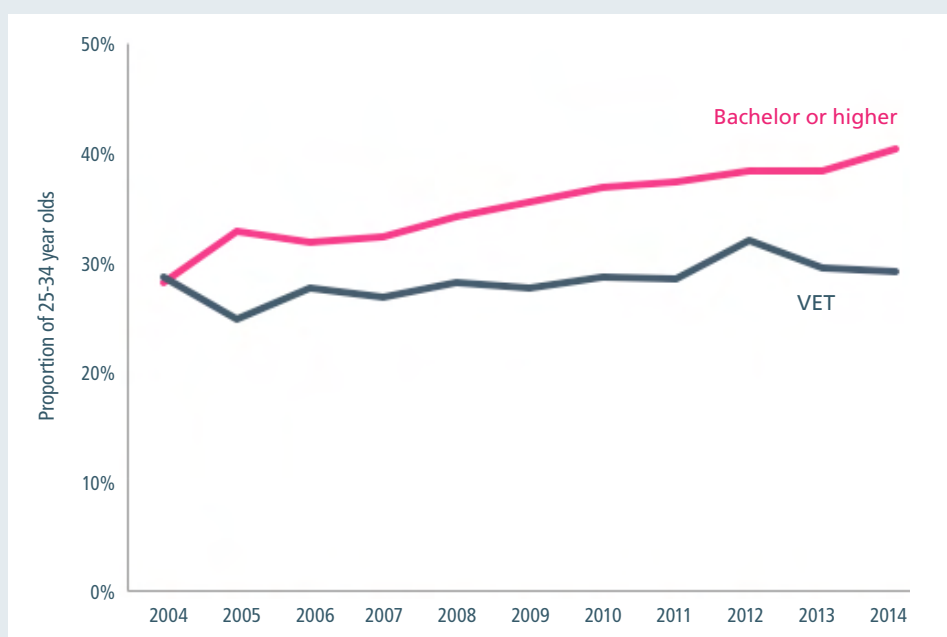
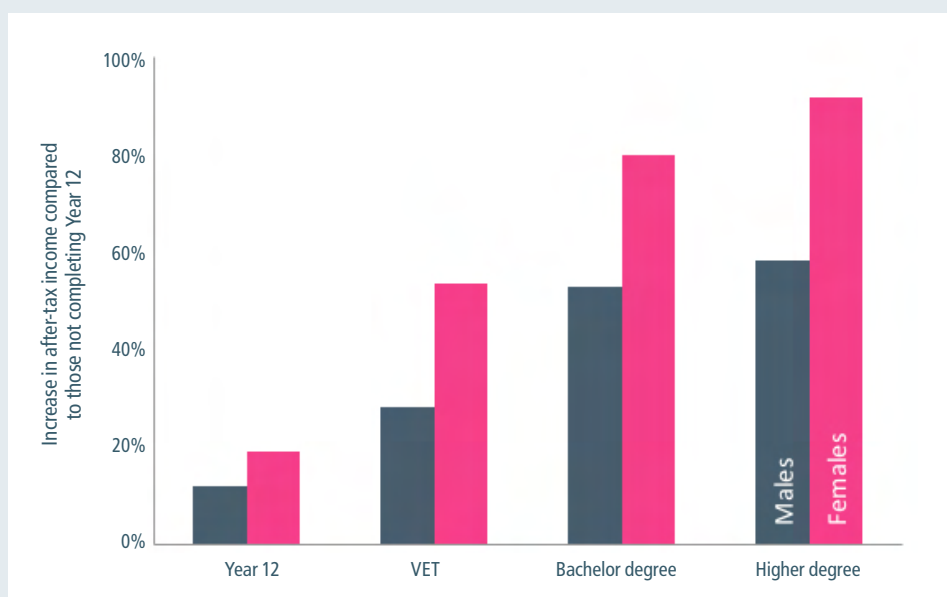


Figure 5:
Estimated increase in income associated with qualifications, Australia, 2011

Source: Wei 2014, Tables 3.7-3.8.

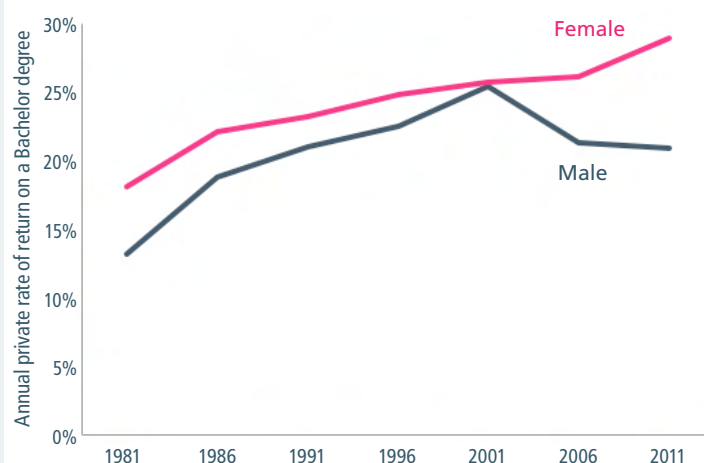


³ The report is available on CESE's website: <http://www.cese.nsw.gov.au/>

This return on individuals' investments in education seems to be increasing over time in Australia. Figure 6 shows the estimated annual return on a Bachelor degree, using Census data from 1981 to 2011. In the last thirty years, returns for both men and women have increased by more than half. Only in the past decade have returns dropped slightly for men, which may reflect the (temporarily) increased job opportunities requiring less education in the mining sector over that period.

Increased financial returns to education is one of the major drivers of increasing inequality seen in Figure 2, as people who undertake further education are now more likely to have very different incomes from those who do not (Autor 2014, pp. 843-847).

Figure 6: Estimated annual financial return on a Bachelor degree, Australia, 1981-2011



Source: Wei 2014, Table 3.1.

Education's role in the mobility of Australia

Because of the high financial returns associated with further education, the mobility of a country is affected by the extent to which people from low-SES backgrounds can obtain that further education. If higher qualifications are accessible to only those from the most advantaged families, then people will tend to stay in the circumstances into which they were born, and income mobility across generations will be lower. If the

education system is not equitable, then schooling will serve to entrench disadvantage in society.

Under many measures of equity, Australia has an education system that has room to improve. For example, the average maths scores of 15 year olds from low SES and high SES backgrounds of various countries are reported in Table 2. The SES gap in performance for Australian students is approximately equal to the OECD average, and comparable to the United States and United Kingdom.

Table 2:
SES gaps in PISA
performance for
selected countries,
2012

Source: OECD (2013),
Figure 2.6.

Country	Average score of low SES students (Quartile 1)	Average score of high SES students (Quartile 4)	Difference
Macao-China	521	558	37
Norway	459	522	63
Finland	488	555	67
Hong Kong-China	532	600	68
Canada	486	558	72
Sweden	443	518	75
Italy	447	522	75
Japan	500	575	76
Korea	516	595	80
Vietnam	473	555	82
Denmark	460	545	84
United Kingdom	458	545	87
Australia	463	550	87
United States	442	532	90
OECD average	452	542	90
Shanghai-China	562	660	98
Chile	378	477	100
Germany	467	569	101
Singapore	523	627	104
New Zealand	444	559	114
France	442	561	119
Chinese Taipei	497	626	128

Many of the countries with small SES performance gaps are also the countries that outperform Australia in overall performance. The OECD consistently reports strong relationships between equity and performance of school systems: countries that offer low-SES students greater educational access are also the countries that perform better overall (OECD, 2013, p. 27). In many cases, the difference in overall performance between Australia and other countries is due to lower scores for low SES Australian students. For example, Australian students in the top SES quartile received average scores of 550, contributing to Australia's overall rank of 19th in 2012. High SES students received similar scores in Macao (ranked 6th), Finland (ranked 12th), Canada (ranked 13th), and Vietnam (ranked 17th). However, low SES students in these countries performed considerably better than low SES students in Australia.

There is also evidence to indicate that equity is decreasing in Australia's education system. The OECD estimates that there was a larger gap in maths performance between high SES and low SES Australian students in 2012 than in 2003. Consistent with there being a relationship between equity and overall performance, over the same time period, Australia's average maths score declined from 524 to 504 (OECD, 2013, fig. II.2.13).

In their report commissioned by CESE, Mendolia and Siminski attempted to quantify the precise amount of the transmission of advantage from Australian parents to children that could be explained by the Australian education system. The results are shown in Table 3. Mendolia and Siminski found that the Australian education system explains between 26 and 41 per cent⁴ of the transmission of advantage from parents to children. This is because children from more advantaged families stay at school longer, have better school outcomes, and are more likely to progress on to further education than children from more disadvantaged families.

Table 3: Estimated role of education in cycle of disadvantage

	Minimum	Maximum
Males	20%	35%
Females	26%	38%
All children	26%	41%

Source: Mendolia and Siminski, Table 6.

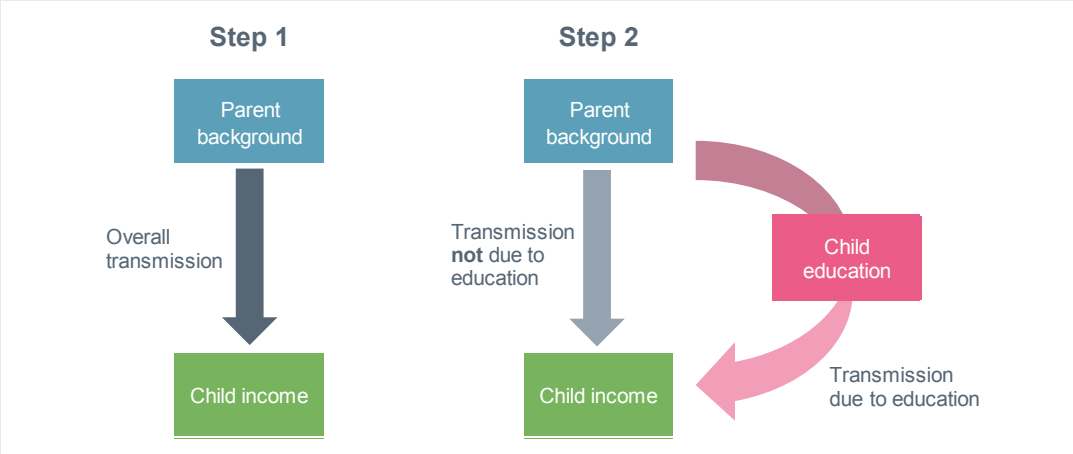
Education appears to play a greater role in transmitting advantage for females than for males. This is consistent with the increased financial return of qualifications for females compared with males. This might be an indication that closing the gap in school outcomes between low SES and high SES students is more important for girls than it is for boys. However, it might also be a result of the Australian mining boom, which represents temporarily positive labour market conditions for unskilled males.

Mendolia and Siminski also applied this method to data for the UK to be able to compare how education affects income mobility in both the UK and Australia. They found that the education system explains a similar proportion of advantage in each of the countries, implying that each school system is similar in terms of equity of outcomes. This is consistent with the data on equity of school systems from PISA. Mendolia and Siminski also find similar patterns in terms of gender in both countries, with education playing a greater part in transmission of advantage for females than males.

How do we estimate the role of education?

Mendolia and Siminski use a *mediation* approach to quantify the role education plays in the transmission of advantage from parents to children. This involves two steps. First, they estimate the relationship between the background of parents and the eventual income of their children. This is an overall effect, which includes transmission via many different pathways, including education, health, crime, hereditary traits, and the direct transfer of wealth through inheritance. They then estimate a different model, which is identical except that it also contains education outcomes of the child. This means that they are estimating two effects – transmission of advantage through better education outcomes, and transmission of advantage through all other factors. The size of the education effect relative to the initial overall effect tells us what proportion of the transmission of advantage is due to education.

Figure 7: Method used to quantify the role of education in immobility



4 There is an estimated range of effects because it is difficult to determine whether people's ability causes or is caused by education. Mendolia and Siminski rerun their models using different assumptions, in order to calculate a minimum estimate and a maximum estimate. The true effect of education likely lies somewhere in the middle of this range.



How can we increase income mobility?

The estimates of the role education plays in the transmission of advantage can be viewed as the degree to which we can improve social outcomes across generations through making the school system more equitable. That is, if we are able to reduce or eliminate the outcome gap between low SES and high SES students, we can reduce the strength of the cycle of disadvantage in Australia by between one-quarter and two-fifths.⁵

One method that could be used to reduce the SES gap in schooling outcomes in Australian schools is needs-based funding. In 2011, the Gonski Review of Funding for Schooling noted the traditional absence of targeting schooling resources to student need in Australia. The panel concluded that 'Australia must aspire to have a schooling system that is among the best in the world for its quality and equity, and must prioritise support for its lowest performing students. Every child should have access to the best possible education, regardless of where they live, the income of their family or the school they attend' (Gonski et al., 2011, p. xiv). The result was a comprehensive needs-based funding framework that specifically targeted resources to students from the most disadvantaged backgrounds. In NSW government schools, this funding is distributed using the Resource Allocation Model, consistent with Gonski recommendations.

If these resources are used to fund evidence-based initiatives to increase outcomes for low-SES students, then public resources can go some way to make up for the socio-economic resources that students from disadvantaged backgrounds lack. This results in increased educational opportunity for all students, regardless of background. If students leave the education system with qualifications awarded according to their merit and interests, instead of their circumstances of birth, the economy will be more productive, as well as fairer.

Conclusion

Australia has an international reputation as a high mobility country, where the circumstances of one's birth are not deterministic of eventual economic success. This report challenges this view, and provides evidence that the Australian education system plays a substantial (though not the only) part in the transmission of economic advantage. Comparisons with the UK – popularly perceived as a highly stratified country – show both that overall economic immobility and the role played by the education system in entrenching that mobility are similar in Australia.

Due to the substantial role that the education system appears to play in overall economic mobility, policies that can reduce or eliminate this substantial SES gap in Australian schools stand to have major impacts on the future of society. Education can not only contribute to the nation's economic growth and productivity, but it also has a role to play in how fair Australia will be.



⁵ It is important to note that this leaves three-fifths to three-quarters of the transmission of advantage that cannot be reduced by education policy. The children of more advantaged parents also have better outcomes in terms of health, housing, crime, as well as a range of other indicators. The process of transforming into a more mobile society cannot ignore these important policy areas.

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