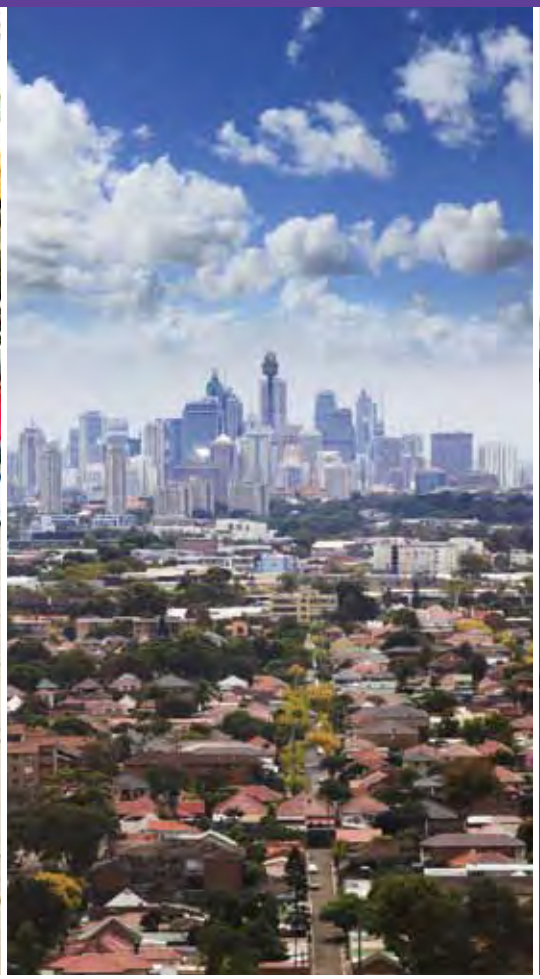

How unequal? Insights on inequality

April 2018

committee for economic development of australia

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About this publication
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About CEDA
CEDA – the Committee for Economic Development of Australia – is a national, independent, member-based organisation providing thought leadership and policy perspectives on the economic and social issues affecting Australia.

We achieve this through a rigorous and evidence-based research agenda, and forums and events that deliver lively debate and critical perspectives.

CEDA's membership includes more than 750 of Australia's leading businesses and organisations, and leaders from a wide cross-section of industries and academia. It allows us to reach major decision makers across the private and public sectors.

CEDA is an independent not-for-profit organisation, founded in 1960 by leading Australian economist Sir Douglas Copland. Our funding comes from membership fees, events and sponsorship.

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committee for economic development of australia

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Foreword

Australia has experienced its longest period of economic growth in history during the last quarter century. Yet, there is growing debate about the benefits of this economic growth and their distribution, and the extent to which inequality is increasing in Australia.

These are important issues because significant inequality can weigh on future economic performance and undermine social cohesion.

CEDA's report *How unequal? Insights on inequality* aims to examine:

- the distribution of benefits from Australia's prolonged period of economic growth;
- whether inequality has increased in Australia during this period; and
- where policy interventions could assist.

In particular, the report looks at the impact of key factors such as education, employment and location on inequality.

It also examines intergenerational inequality and potential drivers of increased inequality in the future, from technology advances to changes to traditional employment through the emergence of, for example, the gig economy.

The report provides seven high-level recommendations.

These aim to address areas of entrenched disadvantage; ensure policy keeps pace with technological and workplace changes; and provide a means to regularly and comprehensively review levels of inequality in Australia.

I would like to thank the contributing authors for their work on this report, ensuring it examines this topic from a range of perspectives and issues.

This report is the first piece in CEDA's 2018 research agenda that will examine the benefits and cost of economic growth.

Subsequent CEDA work in 2018 will examine:

- community attitudes to economic growth and development; and
- a review of the purpose of economic growth and development in Australia.

I hope you find this a useful publication and it can help raise the quality of debate on this important topic.

Melinda Cilento
Chief Executive
CEDA

Contributions

Chapter 1: On equality

Dr Simon Longstaff AO FCPA, Executive Director, The Ethics Centre

Dr Simon Longstaff, The Ethics Centre, sets the scene for the publication with a discussion of equality and fairness as it relates to economics. Dr Longstaff takes a philosophical approach to the topic and extends that into the greater work of economics, which he argues is a product of philosophy. A just society, he writes, is based on the principles of strict equality, procedural fairness and substantive fairness. Dr Longstaff concludes that any market worth having must take seriously the fundamental equality of all persons. Equality, therefore, deserves a central place in mainstream economic policy.

Chapter 2: Measuring inequality

Associate Professor Nicholas Rohde, Department of Accounting, Finance and Economics, Griffith University and Professor Lars Osberg, McCulloch Professor of Economics, Dalhousie University, Halifax

Associate Professor Nicholas Rohde, Griffith University and Professor Lars Osberg, Dalhousie University, look at the challenges for statisticians and social scientists in producing meaningful measures of economic inequality. The chapter provides background information about how economic inequality is measured,

and how specific indices should be interpreted. Associate Professor Rohde and Proessor Osberg examine different techniques to measure economic inequality including income shares, relative poverty rates – useful partial indicators of inequality – as well as Lorenz curves and the Gini coefficient. They conclude Lorenz curves and the Gini coefficients derived from them are more complicated, but also more theoretically sound.

Chapter 3: Educational inequality

Laura B. Perry, Associate Professor of Education Policy and Comparative Education, Murdoch University

Associate Professor Laura Perry, Murdoch University, conceptualises educational equity (and inequalities) as comprising educational opportunities, experiences, and outcomes. Associate Professor Perry identifies three equity groups in Australia – students from lower socioeconomic status backgrounds, Indigenous students, and students who reside in rural/remote areas that consistently experience lower educational opportunities, experiences and outcomes. The disadvantage of these groups is evident in measures such as NAPLAN and PISA and in university participation and completion. Associate Professor Perry argues there is a clear public policy imperative to reduce educational inequalities in Australia.

Chapter 4: Inequality in the workplace

Professor Alison Sheridan, Professor of Management, UNE Business School, University of New England

Professor Alison Sheridan, UNE Business School, presents evidence that, despite anti-discrimination laws and the significant increase in women's workforce participation rates over the past 40 years, we continue to see inequality played out in the workplace. While the chapter focuses on gender inequality, Professor Sheridan notes workplace disadvantage is also evident for people with a disability, people with mental health conditions, disadvantaged youth and Indigenous Australians. Professor Sheridan argues comprehensive policy responses are required to address Australia's poor record on workplace inequality. Failure to address it will have a real cost to the nation's productivity.

Chapter 5: Geographical inequality

Patricia Faulkner AO, Chairman, Jesuit Social Services

Patricia Faulkner AO, Chair, Jesuit Social Services examines how a person's geographic location contributes to their experience of social and economic disadvantage in Australia. Ms Faulkner reviews findings from research that shows Australia has geographic pockets of disadvantage. Such place-based disadvantage can be entrenched with significant costs to government and the community. Ms Faulkner puts forward a range of approaches and policy settings to address geographical inequality.

Chapter 6: Intergenerational inequality

Professor Peter Whiteford, Crawford School of Public Policy, ANU

Professor Peter Whiteford, Crawford School of Public Policy, ANU, looks at inequality between generations in Australia. He considers a range of measures for determining intergenerational inequality and mobility. After examining intergenerational earnings elasticity in Scandinavian countries, the United Kingdom and the United States, he considers the Australian situation. In Australia, it is generally expected that earnings increase with age, greater skills and experience before declining in retirement. He finds that younger Australian households have continued to enjoy increases in real incomes over time, bucking trends for the same cohort internationally.

Chapter 7: The future relationship between technology and inequality

Nicholas Davis, Head of Society and Innovation, World Economic Forum

Nicholas Davis, World Economic Forum, examines how future inequality might unfold and why through the lens of powerful emerging technologies. The relationship between technology and future inequality, he writes, is becoming more important to anticipate. Issues requiring policy thought in this space include the speed, scope and scale of new technologies; ensuring that transformed jobs and new technologies are available to all; whether wealth inequality will be exacerbated; and if powerful new technologies might contribute to inequality by having a negative impact on the most vulnerable communities.

CEDA overview

Jarrod Ball
Chief Economist, CEDA

Introduction

The debate on inequality has intensified in advanced economies in recent years, in the wake of subdued global growth after the financial crisis and heightened political instability.

The question of "How unequal?" is an opening to better understand measures of inequality and the social impact of such inequality. These issues have proven complex and highly contested in recent debates, both in Australia and internationally.

Democracies depend on a high degree of social cohesion and a broad consensus that the benefits of growth are reasonably distributed through society. Inequality drives a wedge between those seen to be benefiting from economic policies and growth and those who are not, undermining social cohesion.

Low levels of social cohesion can in turn erode support for policy settings, reforms and institutions. It also contributes to adverse societal outcomes including increased crime and political instability. Significant inequality in income and employment outcomes can weigh on capital formation, skills formation and productivity.

Through this report CEDA is seeking to build a broader understanding of inequality and the future inequality challenges Australia faces. This can then serve as a platform for continued debate on how Australia can best address these challenges. It does this through the contributions of a range of experts who provide their analysis of:

- what inequality means;
- how much inequality there is;
- whether Australians enjoy equality of opportunity:
  - educational inequality, with a focus on inequality in school education;
  - employment inequality, with a focus on gender inequality in the workplace;
  - geographical inequality, with a focus on concentrated locational disadvantage.
- how things might change in the future:
  - intergenerational inequality and the extent to which living standards vary by age and are dictated by intergenerational wealth;
  - the future relationship between rapidly emerging technologies and inequality.

The concept of inequality

The term inequality is applied in many different contexts, and there is often a suggestion that all inequality is unfair. But Dr Simon Longstaff AO (Chapter 1) notes that equality is inextricably linked to the principle of respect for persons. This allows for unequal outcomes, provided the outcomes do not undermine this respect in practice.

There are three forms of equality or fairness most likely to be encountered in ethical debates:

1. strict equality, which guarantees equality of outcome;
2. equality before the law, or in other words, procedural fairness;
3. equality of opportunity, or substantive fairness.

Equality of opportunity requires each person to be offered as equal a starting point as any other. In practice, it may be impossible to achieve absolute equality of opportunity. But as a liberal society we should try to level the playing field so that each person has a genuinely fair and equal opportunity to thrive.

Concepts of equality also extend to markets. As Longstaff points out, the idea of a *free* market is based on the acceptance and application of ethical norms. For example, a market cannot be free if people lie or cheat or use power oppressively. Society expects governments to intervene when asymmetry of power or information occurs, including through consumer laws that protect against misleading, deceptive and unconscionable conduct.

> "...equality should be accorded a central place in economic policy. It should not be put to one side as a social policy issue or technical issue of welfare economics."

Longstaff reminds us that equality should be accorded a central place in economic policy. It should not be put to one side as a social policy issue or technical issue of welfare economics.

The measurement of inequality

Recent debates in Australia have questioned whether inequality is increasing or not. This debate is not unique to Australia. The UK Government recently boasted that inequality there is at its lowest level in over 30 years based on official data. A short time after this, several economists challenged the government's narrative with alternative data and analysis.[1]

These debates reflect the complexity of data collection, measurement and interpretation. As Associate Professor Nicholas Rohde and Professor Lars Osberg (Chapter 2) note "…inequality is best thought of as one of a number of social barometers (alongside factors such as real income per capita) that must be considered in the context when assessing a country's economic progress and the material wellbeing of its citizens."

Ultimately a country with a high rate of inequality may have little poverty if it is sufficiently rich. On the other hand, a relatively egalitarian country can have significant poverty if the country is poor. Therefore, assessing inequality in isolation does not provide a complete picture of a society's wellbeing.

The variables, measures, data sets and time periods analysed will influence any assessment of inequality, as summarised in Box 1.

Box 1: Measurement concepts

Variables

The most common measure is equivalised disposable household income. This looks at all household incomes over a year that are available for spending or saving, with adjustments made for taxes and sharing between family members. It is a better measure than labour income since it is based on the household, and deducts any taxes paid and adds in any payments from the government.

Some economists favour using household consumption rather than income. This can be a better measure of living standards since people often use their savings to smooth their spending.

Net wealth (sum of all assets minus liabilities) is another variable employed and is generally more unequal than income. One issue for wealth is that it may not fully reflect the material wellbeing of an individual at a point in time, including those who are asset rich and income poor and vice versa. Wealth has an important impact on future incomes, and in turn inequality and overall economic security between generations.

Measures

The most common measure used, including for the purposes of international comparison, is the Gini coefficient. It gives a measure of inequality across the whole population. If everyone had the same income or wealth then it would be zero and values closer to one represent greater levels of inequality.

Another commonly quoted measure of inequality in recent years has been the income share of a particular group of people, such as the very rich. In recent years many commentators have focused on the top one per cent of the population.

The drawback of this measure is that it focuses on the extremes of income distribution missing out what is happening to most people. For example, as Rohde and Osberg point out, it would not capture the impact of a tax policy that lowers inequality by redistributing incomes from a range of middle- and higher-income households to lower-income households.

A somewhat better alternative is the interdecile share which measures the difference between a larger upper and lower income share. For example, the 90/10 ratio measures the difference between the income earned by individuals at the 90th percentile with those at the 10th percentile.

Data sets

There are only a small number of datasets that are utilised for measuring inequality in Australia – these include the Australian Bureau of Statistics (ABS) household income and expenditure surveys, the Household Income and Labour Dynamics in Australia (HILDA) survey and Australian Taxation Office data. As noted below, each can result in somewhat different findings.

Time period

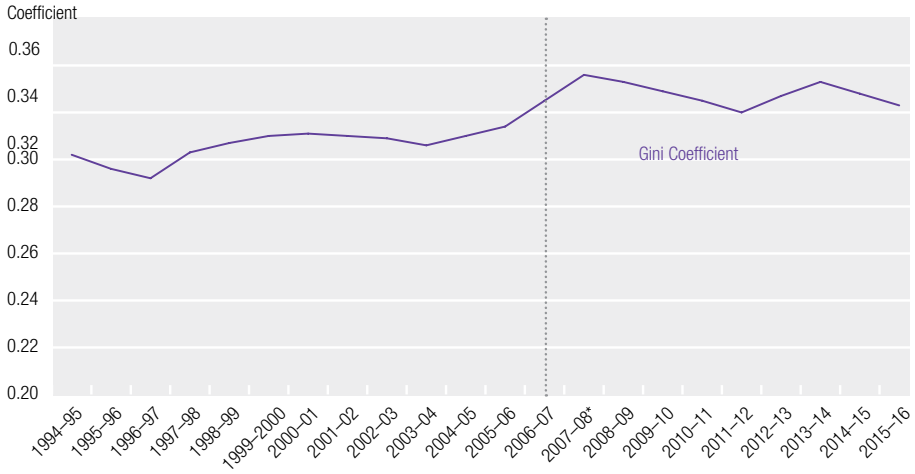
The time period analysed also impacts the findings of inequality analysis. For example, trends in the economic cycle will impact longitudinal analysis over shorter periods. The continuity and consistency of the data, particularly the methodology for collecting it will affect the comparability of measures over long periods.

How unequal? Australia's recent performance

Since the global financial crisis, the Gini coefficient for income (Figure 1) has fluctuated somewhat but income shares at each quintile have been remarkably stable (based on ABS measures). The P90/10 income ratio (Figure 2) also reflects this longer-term trend, although it has seen a clearer downward trend since the global financial crisis. By contrast income inequality increased in the decade from the mid-1990s.

This picture of recent income inequality is complicated because ABS estimates presented for 2007–08 onwards are not directly comparable with estimates for previous cycles due to the improvements made to measuring income introduced

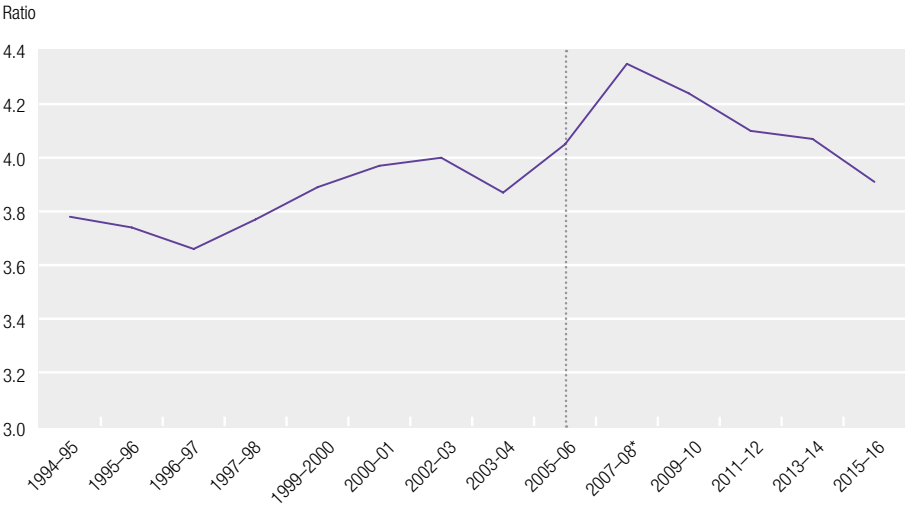
FIGURE 1
INCOME INEQUALITY (GINI COEFFICIENT)
(EQUIVALISED DISPOSABLE HOUSEHOLD INCOME)



Source: ABS, (2017) Household Income and Wealth, Australia, 2015–16. Catalogue No. 6523.0. Figures for missing years have been interpolated applying a constant rate of change.

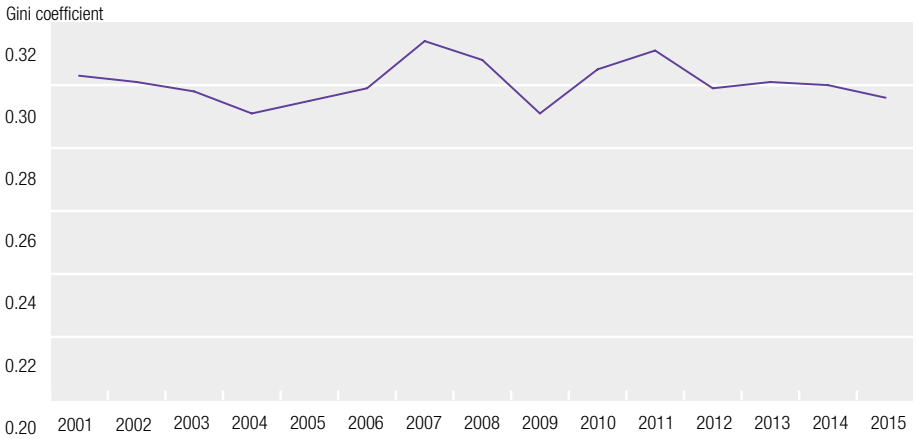
*Estimates presented for 2007–08 onwards are not directly comparable with estimates for previous cycles due to the improvements made to measuring income introduced in the 2007–08 cycle.

FIGURE 2
P90/P10 INCOME RATIO (EQUIVALISED DISPOSABLE HOUSEHOLD INCOME)



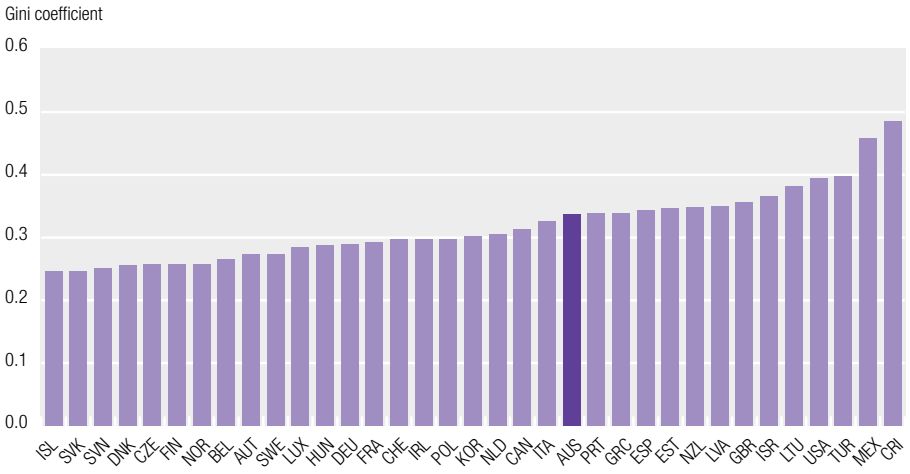
Source: ABS, (2017) Household Income and Wealth, Australia, 2015–16. Catalogue No. 6523.0.

FIGURE 3
HILDA INCOME INEQUALITY (GINI COEFFICIENT)
(EQUIVALISED DISPOSABLE HOUSEHOLD INCOME)



Source: Melbourne Institute of Applied Economic & Social Research, (2017) The Household Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 15.

FIGURE 4
INCOME INEQUALITY ACROSS THE OECD (GINI COEFFICIENT, 2014)



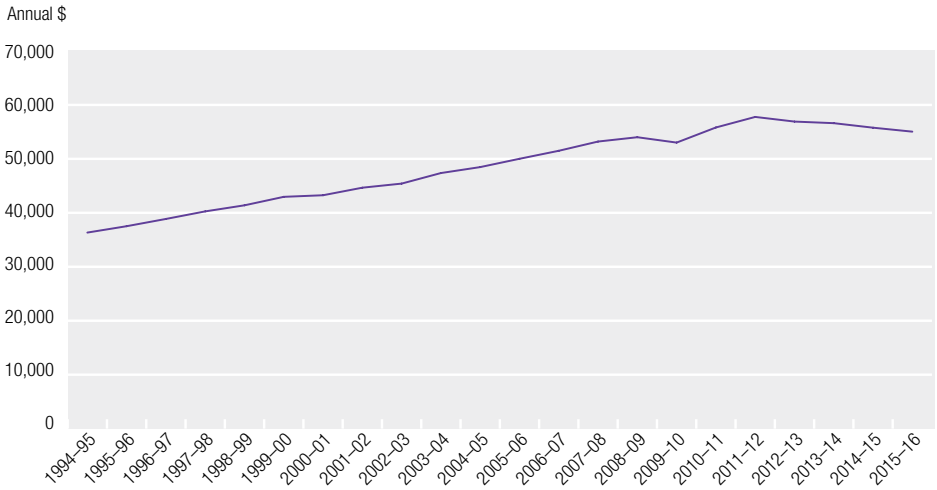
Source: OECD (2018) Income inequality (indicator). doi: 10.1787/459aa7f1-en (Accessed on 08 March 2018)

in the 2007–08 cycle. Nonetheless, the break in the series does not necessarily undermine the general trend of an increase in income inequality up until the global financial crisis and moderating levels since.

In contrast to the ABS data, it is important to note that HILDA's data set (Figure 3) suggests that income inequality has been relatively stable since the survey began in 2001. One contributor to differences is likely to be methodological. Changes to the ABS methodology have been found to be responsible for at least some upward bias in their estimates. It is also worth noting that the ABS sample size is larger than HILDA.

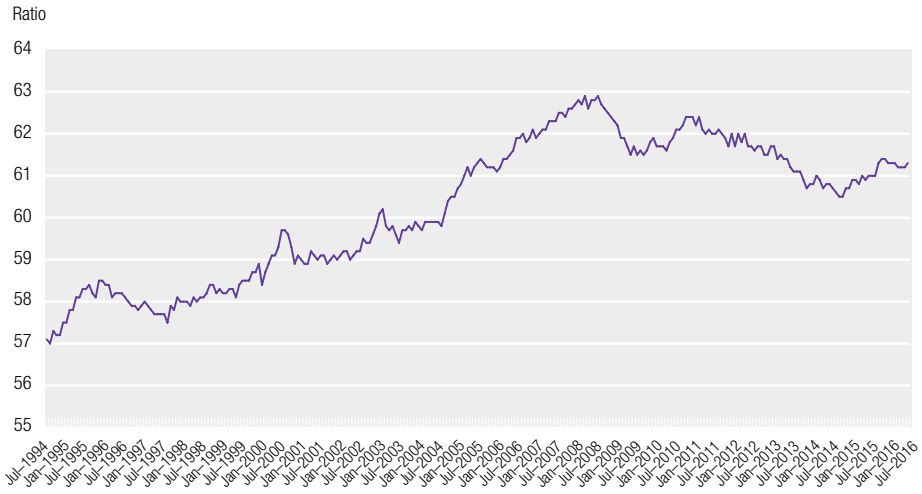
In terms of comparison to other advanced economies, Australia's level of income inequality (Figure 4) sits slightly towards the higher end of the scale. It is higher than 21 other economies and lower than 13 other economies.

FIGURE 5
REAL NET NATIONAL DISPOSABLE INCOME PER CAPITA



Source: ABS, (2017) Australian System of National Accounts, 2016–17. Catalogue No. 5204.0.

FIGURE 6
EMPLOYMENT TO POPULATION RATIO



Source: ABS, (2018) Labour Force, Australia, January 2018. Catalogue No. 6202.0

While it is difficult to disentangle the various drivers of changes in inequality over time, previous research has suggested that in Australia, recent economic conditions have played a significant part. On the one hand, employment growth has tended to reduce income inequality, while growing investment incomes have tended to increase income inequality.[2]

Other studies have found that wealth inequality increased more than income inequality between the early and late 2000s, but has since moderated.[3] Similarly, trends in consumption inequality have been consistent with those observed for income inequality.[4]

It is also important to put these trends in inequality into the broader context of Australia's recent economic performance and its impact on employment and incomes. As Figures 5 and 6 show, the changes in inequality since the mid-1990s explored previously have coincided with a period of remarkable economic growth

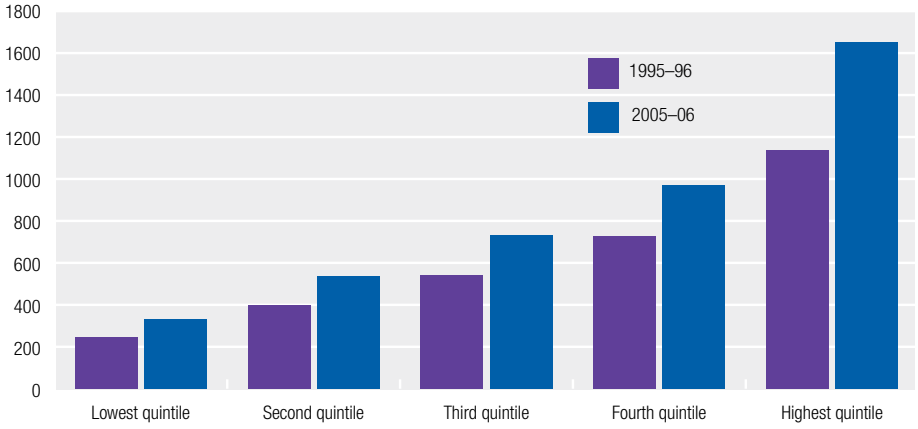
including a terms of trade boom that drove average real incomes considerably higher, alongside consistent employment growth.

As evident in Figure 7, household incomes grew strongly in the decade to 2005–06, although this growth was stronger for the highest quintile (45 per cent) compared to the lowest quintile (33 per cent).[5]

In contrast, other countries have experienced episodes of increasing inequality coinciding with weak and declining economies. An increase in inequality during this period, as indicated by ABS estimates, is arguably less concerning when people's incomes and employment prospects were growing broadly across the economy. But a sizeable part of Australia's population remains left behind, with 13 per cent of Australians below the poverty line.[6]

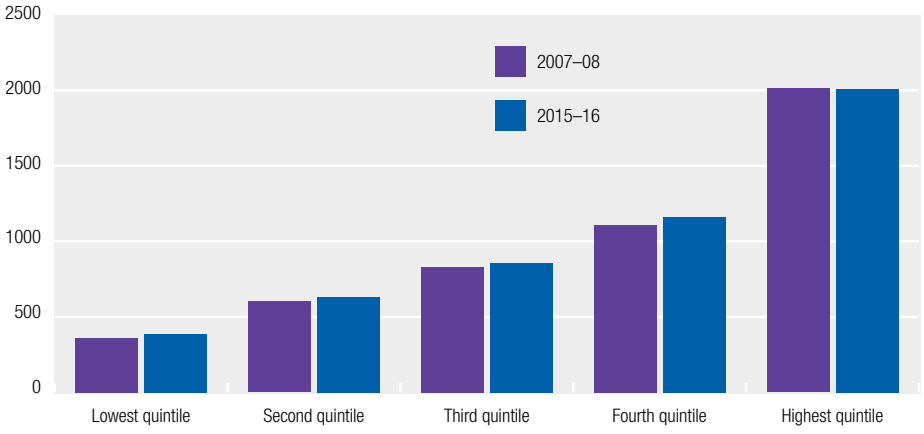
The debate about inequality seems to have lagged its measured increases in the ABS data. The debate has intensified in Australia more recently when inequality has been largely stable but incomes stagnated. In the eight years to 2015–16 average weekly household incomes grew by only $27 to $1009 as Australia's

FIGURE 7
EQUIVALISED HOUSEHOLD INCOME BY QUINTILE ($ PER WEEK)*



Source: ABS, (2017) Household Income and Wealth, Australia, 2015–16. Catalogue No. 6523.0. *2015-16 dollars

FIGURE 8
EQUIVALISED HOUSEHOLD INCOME BY QUINTILE ($ PER WEEK)*



Source: ABS, (2017) Household Income and Wealth, Australia, 2015–16. Catalogue No. 6523.0. *2015-16 dollars

terms of trade reverted closer to historical levels.[7] As seen in Figure 8, weak income growth is evident across every quintile over the last eight years. It is understandable that such a period of weak income growth may lead more in the community to question how the benefits of growth are being distributed. This underlines the importance of looking at cyclical and other economic factors when assessing welfare given how stable inequality appears to have been during this period.

The recent debate on Australia's level of inequality highlights the importance of monitoring it and the impact it is having on people's socioeconomic wellbeing and social cohesion. There is need for more rather than less authoritative voices in this debate given the complexities of measurement and the need for a comprehensive approach to analysis of inequality.

"The recent debate on Australia's level of inequality highlights the importance of monitoring it and the impact it is having on people's socioeconomic wellbeing and social cohesion."

CEDA notes that the Productivity Commission undertook research on the trends in income distribution in 2013 and will release research in coming months on trends in inequality. The Federal Opposition also has a Private Members' Bill in Parliament, which would effectively enshrine in legislation the Productivity Commission enquiring into inequality every five years in line with the Intergenerational Report and the five-yearly productivity review. It is noteworthy that some state government agencies (e.g. Victorian Department of Treasury and Finance) have also assessed these trends at a state level.

Given recent debates about Australia's level of inequality and measurement issues, CEDA supports the concept of a regular independent and comprehensive assessment of inequality in Australia. It is particularly important to ensure that Australia's tax and transfer system, the education system and intergenerational wealth are delivering desired outcomes in terms of opportunities for Australians to improve their living standards.

Measurement of inequality recommendations

Recommendation 1

The Commonwealth Government should request the Productivity Commission to undertake periodic independent reviews of inequality in Australia. Regular reviews could provide a comprehensive and holistic assessment of the extent of inequality across Australia and its implications.

Inequality of opportunity

While measuring and analysing the level of inequality is an important task, it will always be focused on past outcomes. How Australia's future rates of inequality evolve will be strongly influenced by the opportunities that citizens have to improve their living standards today. Ensuring that there is equality of opportunity in education and work across different locations is arguably a more productive focus for policy makers than engaging in protracted debates regarding past outcomes.

Inequality in the classroom

In 2017, the Commonwealth Government passed legislation to implement needs-based funding for schools. Associate Professor Laura Perry (Chapter 3), reminds us of the considerable challenges that remain in providing educational opportunities more evenly across Australia's population.

School students can experience inequality in terms of opportunities (teachers, curriculum, facilities), experiences (classroom discipline, pedagogical practices) and outcomes (values, skills, qualifications). Inequality in educational outcomes is not necessarily a cause for concern given individual differences, unless those differences become associated with group characteristics such as gender, ethnicity, first language, social class or geographic location.

As evident in Figures 9 and 10, Australia's students experience significant disparities. Such disparities can be as much as the equivalent of 4.5 years of schooling. These disparities can be based on the educational status of their parents, the location of their school, Indigenous vs non-Indigenous and socioeconomic status.

Overall, inequality of educational outcomes in Australia are of similar magnitude to the United States and greater than the United Kingdom and Canada.

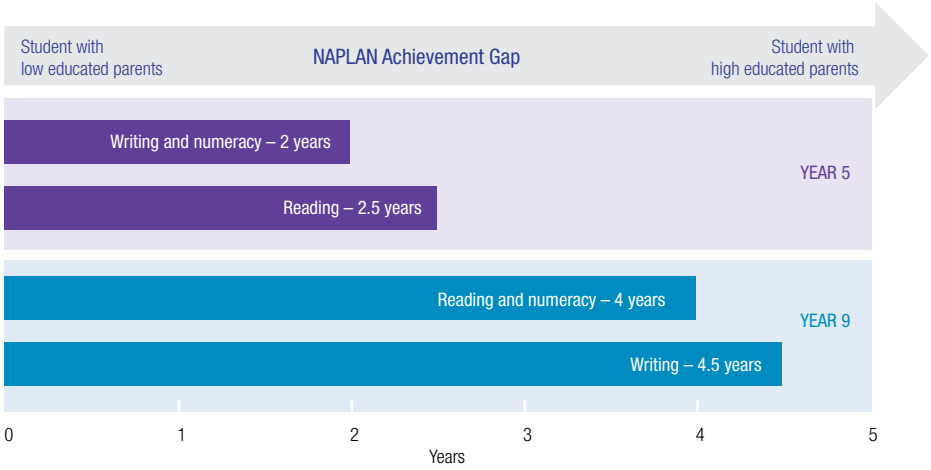
There are also a range of inequalities of opportunity evident in PISA and other studies – for example rural schools face a significant shortage of teachers while there is more limited academic curriculum in disadvantaged schools, including an absence of core subjects like advanced mathematics.

"School students can experience inequality in terms of opportunities (teachers, curriculum, facilities), experiences (classroom discipline, pedagogical practices) and outcomes (values, skills, qualifications)."

Overcoming these inequalities involves both home factors and school factors. Home factors will involve broader programs to overcome poverty and disadvantage, which are explored more fully in Chapter 5.

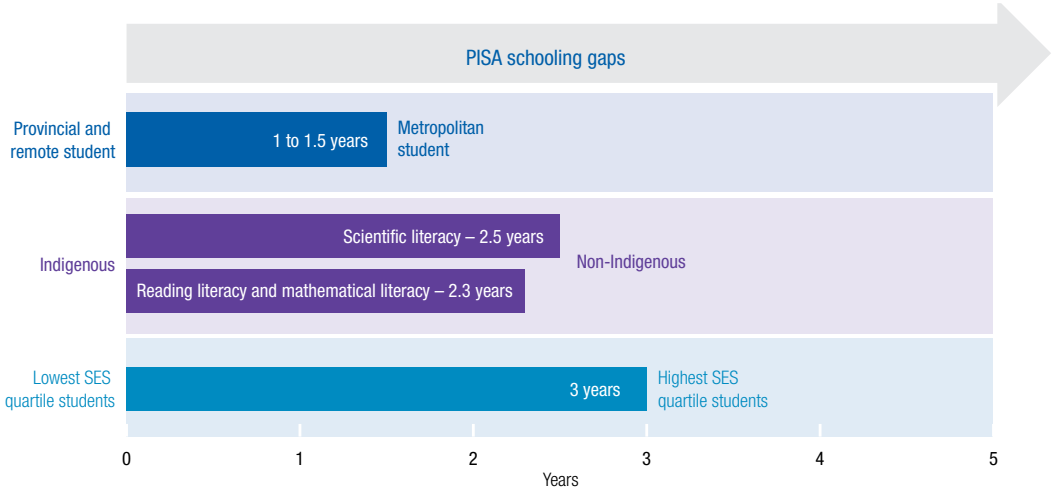
In terms of school factors, needs-based funding is an important first step with socially-disadvantaged students and schools in need of extra support. But as Perry argues, in the longer term reducing the number of socially-disadvantaged

FIGURE 9
NAPLAN ACHIEVEMENT GAPS



Source: Cobbold, T. (2017) NAPLAN data shows continuing large achievement gaps between advantaged and disadvantaged students. *Education Policy Comment:* Save Our Schools.

FIGURE 10
PISA SCHOOLING GAPS



Source: Thomson, S., De Bortoli, L., and Underwood, C. (2016) *PISA 2015: A first look at Australia's results.* Camberwell, Victoria: Australian Council for Educational Research.

schools depends on reducing social segregation between schools. This in turn requires school funding formulas designed to reduce differences between schools in terms of their resources and facilities.

The importance of social segregation is evident in international comparisons. Australia has one of the most socially segregated school systems in the OECD. Canada has one of the least. While the performance of advantaged students between the two countries is comparable, Canada's low SES students significantly outperform those in Australia.

The Review to Achieve Educational Excellence in Australian Schools was due to provide a final report to the Commonwealth Government in March 2018. The Review has considered the effective and efficient use of funding to improve outcomes across all cohorts of students, including disadvantaged and vulnerable students.

Inequality at work

Inequality of opportunity in employment comes in a number of forms. These include barriers to labour market participation, structural inequalities within the workforce and the uneven impacts of technological change.

Barriers to labour market participation are starkest in Australia for people with a disability, people with mental health conditions and Indigenous Australians. For example, in 2015 53 per cent of people with a disability aged 15–64 participated in the labour force compared to 83 per cent for people without a disability.[8]

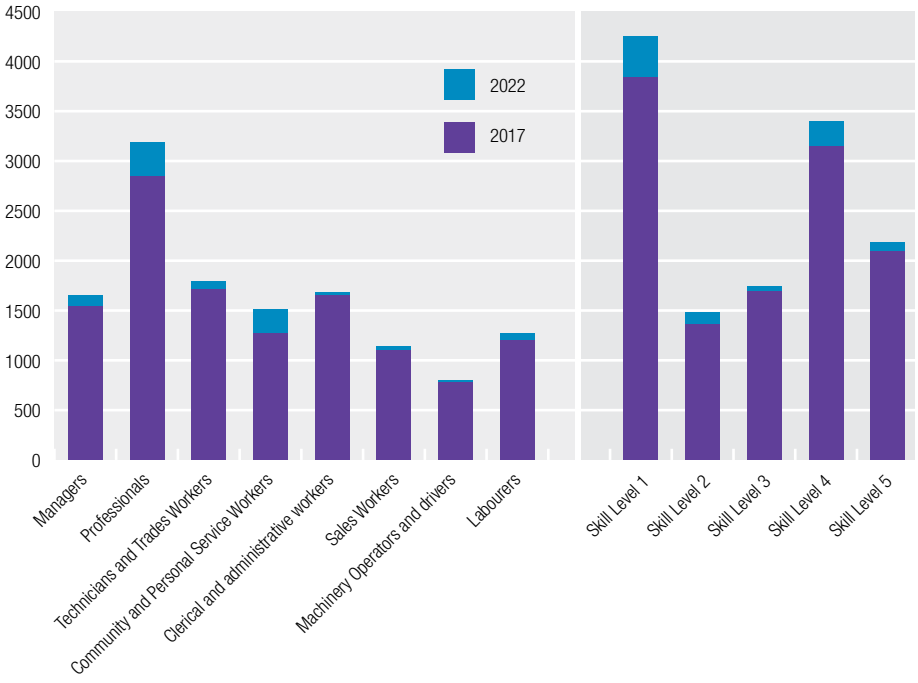
There are also inherent structural inequalities in the workforce. These include the impact of gender on promotional opportunities, remuneration and autonomy, as well as the concentration of female workers in part-time roles and sectors with lower rates of pay.

As Professor Alison Sheridan (Chapter 4) notes, Australia's gender pay gap is around 15 per cent, with little change in the last two decades:

> "While the gender pay gap has been an enduring feature of the Australian labour market, it gained more attention in 2017 as the abstract statistics came to life through high profile cases of women in media being paid significantly less than their male counterparts."

At a practical level, Energy Australia invested $1.2 million to adjust remuneration for more than 350 women to close its gender pay gap.

FIGURE 11
PROJECTED EMPLOYMENT GROWTH 2017–2022 BY OCCUPATION AND SKILL LEVEL ('000s)



Source: Department of Jobs and Small Business Labour Market Information Portal (http://lmip.gov.au/default.aspx?LMIP/EmploymentProjections)

Female workers are also heavily concentrated in occupations such as clerical and administrative roles. These roles have lower salaries and there is greater probability of future automation and computerisation based on previous research undertaken for CEDA.[9]

As Borland and Coeli concluded in CEDA's 2015 report *Australia's future workforce?* technology has driven a large shift in the skill composition of the labour market towards high-skill jobs with an accompanying reduction in the share of middle-skill jobs. The low-skills job share decreased slightly. This jobs polarisation has contributed to an increase in earnings inequality since 1990.

Based on the most recent medium-term employment projections from the Department of Jobs and Small Business, this trend is expected to continue, with the highest skill level (1) expected to grow the most (Figure 11). Those occupations with the greatest skill demands, and identified at lowest risk of computerisation and automation in CEDA's 2015 report, will experience the strongest growth, while those at highest risk will experience the weakest growth.

"... the rapid changes in skills requirements brought about by technological change necessitate a strong education sector at every level."

There are two important implications of these trends for inequality. Firstly, to access employment opportunities, the education system will need to provide the right skills for new entrants to the labour market and those workers re-skilling for new roles. The Australian Government's Job Outlook website lists 800 occupations in the Australian economy and these occupations and the associated skill requirements are changing all the time.

As CEDA has noted previously, the rapid changes in skills requirements being brought about by technological change require a strong education sector at every level. Despite this, government funding for vocational education and training (VET) has fallen in real terms in the last decade, in contrast to other sectors.[10]

Notwithstanding the new Skilling Australians Fund, there is a pressing need to place VET on a more sustainable footing. It is an important sector in providing rapid skilling and re-skilling of the workforce, particularly in sectors such as health and community services that are experiencing strong employment growth. VET must complement other education sectors in providing the right skills for the future.

Second, if skills polarisation continues to contribute to labour market earnings inequality, then the personal tax and transfer system will continue to have a critical role in reducing the inequality of outcomes in Australia. As the International Monetary Fund (IMF) has recently shown, Australia's tax and transfer system reduces the Gini coefficient for income by around 0.15, compared to the OECD average of 0.18.[11]

Postcode inequality

As Patricia Faulkner AO notes in Chapter 5, despite 26 years of uninterrupted economic growth Australia still has large pockets of disadvantage across the country, with 13 per cent of Australia's population living below the poverty line.[12] Moreover, CEDA's previous research on entrenched disadvantage found an estimated four to six per cent of our society experiences chronic or persistent poverty or deprivation.

Research commissioned by Jesuit Social Services and Catholic Social Services shows that entrenched poverty and disadvantage is geographically concentrated. For example, in New South Wales just 37 postcodes account for almost 50 per cent of the greatest disadvantage in the state for indicators such as unemployment, domestic violence, criminal convictions and disengaged young adults. Box 2 explains the impact location can have in the formative early years.

Box 2: The impact of location in early years

Moving to an area of greater opportunity in one's early years can significantly improve income in later life.

Recent research from Nathan Deutscher of the Australian National University (ANU) uses de-identified ATO data to demonstrate how much where you grow up impacts your income by the time you turn 24 years of age.

Deustcher finds that moving at birth closes the income gap between your destination and origin by 70 per cent. Each year a teenager spends in a destination brings their expected income four per cent closer to those in their destination (relative to their origin).

Where you live in the crucial formative years matters not just because this is where you will most likely work, but also who you grow up with matters – other children and their parents.

Source: Deustcher, N. 15 March 2018, *Place, jobs, peers and the importance of the teenage years: exposure effects and intergenerational mobility*, Accessed from https://nathandeutscher.files.wordpress.com/2018/03/deutscher-2018-exposure-effects1.pdf

As this cohort of people becomes increasingly disenfranchised, costs to government also increase in terms of law enforcement, the justice system and health. People in these communities lack the basic security and cohesion that exists in more affluent postcodes.

The disparate and often inadequate systems of support across multiple levels of government for these people have not made the required impact to lift people out of poverty. Substantial investment in integrated support delivered at a local level is needed. Faulkner suggests that a suite of policies is needed, including:

- place-based initiatives that implement a cross-sector approach to tackling entrenched disadvantage at a local level, building on previous successful approaches such as the Victorian Neighbourhood Renewal program;

- breaking through silos and providing effectively targeted assistance for the most disadvantaged, building on models like a dedicated agency and navigators for the most vulnerable as recommended by the New Zealand Productivity Commission;
- ensuring that Newstart payments are set at a more adequate level, recognising that 70 per cent of people who receive it have done so for one year or more and it is currently well below the poverty line;
- job search assistance services that are better tailored to support people who are long-term unemployed and facing multiple disadvantages; and
- ensuring the availability and appropriate access to comprehensive publicly-funded datasets on disadvantaged populations, in line with recommendations 6.1 to 6.17 of the Productivity Commission's inquiry into data availability and use.

Inequality of opportunity recommendations

Recommendation 2

The findings and recommendations of CEDA's 2016 report, VET: securing skills for growth *remain relevant. That report called for a comprehensive national review of the sector to underpin future funding arrangements, along with improved data and transparency to help stakeholders make more informed decisions. It also recommended providing national information around providers, pricing, qualifications, and satisfaction survey results to the public.*

Recommendation 3

In order to reduce Australia's pockets of concentrated geographical disadvantage, a concerted effort will need to be made across all levels of government, the community sector and business. This will require:

- *implementation of placed-based initiatives;*
- *a more targeted approach to the most vulnerable through a dedicated agency and navigators as we have seen proposed in New Zealand;*
- *adjusting the level of Newstart payments to a more appropriate benchmark and indexation arrangement to ensure adequacy over time;*
- *more effectively tailored job search assistance for the long-term unemployed; and*
- *better availability and access to public datasets on disadvantaged populations, drawing on recommendations 6.1 to 6.17 of the Productivity Commission's inquiry into data availability and use.*

The future of inequality

Providing greater equality of opportunity for Australians into the future will depend on the extent to which intergenerational wealth impedes socioeconomic mobility and how future technology changes the way we live and work.

Recent commentary regarding the likely rise of powerful emerging technologies in coming decades reminds us that the world will not stand still while Australia seeks to provide increasing equality of opportunity to its citizens. In fact, there is increasing concern that these technological trends could increase future inequality.

Intergenerational inequality

In Chapter 6, Professor Peter Whiteford examines the degree of economic mobility between generations and whether young people today are likely to do as well as older generations. This is critically impacted by underlying changes in lifecycle trends, with young people today delaying childbirth and marriage and also spending more years in study.

Intergenerational mobility is analysed through intergenerational income elasticity measures. When this measure is equal to zero there is no relationship between a family's background and the incomes enjoyed by children as adults. If it is one then all children in poor families become poor adults and all children in rich families become rich adults. Estimates for intergenerational mobility in Australia range anywhere from 0.11 to 0.35. Some studies have concluded that Australia's level of intergenerational mobility is not that high. Nonetheless, it remains higher than advanced economies like the United States and United Kingdom but lower than the Nordic countries.

Whiteford also highlights research by the Luxembourg Income Study (LIS) on the rate of growth in household incomes by age, compared to average rates. The study examines eight advanced economies including Australia from the period of the late 1970s up until 2010.

Across all countries examined except Australia, younger households' incomes grew less than the average while older households grew more. Younger households (25-29) in Australia experienced income growth 27 per cent higher than the national average. Households 70-74 years of age grew only two per cent higher than the national average.

Approximate analysis of birth cohorts in the ABS Surveys of Income and Housing also supports the LIS findings. That is, younger Australian households have continued to enjoy increases in real incomes over time, in contrast to the same cohort in other advanced economies. However, it is premature to conclude that this trend will continue. As noted above, income trends have been far less favourable since 2008.

Whiteford finds that a different picture emerges for wealth, by assessing changes in the wealth of different age groups over the last decade. The wealth of older generations has increased more rapidly than that of younger generations, due to both increasing superannuation wealth as retirement approaches and increasing property wealth. Consistent with CEDA's August 2017 report *Housing Australia*[13], younger households have seen declining home ownership and higher overall indebtedness associated with housing.

Inequality in the face of technological disruption

Nicholas Davis from the World Economic Forum weighs up the potential impacts (Chapter 7) of a combination of powerful technologies including machine learning algorithms, secure and distributed forms of data sharing and management, advanced materials and biotechnologies.

The most significant impact is likely to be on labour markets, with increasing skills premiums for those able to apply new technologies successfully in their jobs. More recent studies have found that technology will lead to a major reconfiguration of the skills, tasks and activities in an occupation rather than the disappearance of many occupations altogether. This highlights the race between skills and technology. For the United States having a world-class education system that produced highly skilled graduates ahead of technology-driven skill demands led to falling inequality in the United States between 1940 and 1970, a situation which has now reversed.[14]

As part of these changes in skill composition, technology can substitute for labour in the short term, leading to slower employment growth and, in some instances, job losses. This is likely to affect those with lower education levels more. World Economic Forum research suggests that transitioning these workers into jobs that maintain or grow their wages is likely to require, on average, two years of additional education and two years of additional work experience.

Davis also notes the argument that, even if job growth keeps pace with the supply of labour, automation could shift returns away from workers and towards owners of smart technology-intensive capital. This is in part underpinned by Piketty's framework that when the rate of return on capital (r) exceeds the rate of economic growth (g) then wealth will accumulate more rapidly to owners of capital than to workers resulting in increasing wealth inequality. But a growing literature is considering the countervailing impacts that would increase demand for labour and returns to it, thus offsetting the impact of automation. For example, some studies suggest that this will occur through the creation of new labour-intensive tasks, and also through technology increasing the productivity of existing capital and workers.[15]

There are also challenges around appropriate protections for workers, particularly those workers currently taking part in the gig economy, which by some estimates could be around one per cent of the workforce. For example, these workers

currently fall outside the super guarantee, exposing them to future potential economic insecurity and a retirement income gap in the absence of private savings.

Regardless of how these changes ultimately play out, there will be a need for governments, businesses, workers and their representatives to come together to constructively manage major structural changes. As Davis notes, in-principle the enterprise bargaining system provides an avenue for business and unions to manage these changes in some sectors. The system should balance the imperatives of increasing productivity with commensurate improvements in pay and conditions. Despite this, Australia's system of enterprise bargaining appears to be in decline with the number of agreements approved in recent years consistently declining.[16] There is also consensus across employers and unions that the bargaining framework is not working.

Technology will also make collecting tax more challenging. This is already evident through globalisation and digitisation, and the resulting base erosion and profit shifting agenda being pursued by the OECD. For example, digital technologies are increasing ambiguity around where value is created and should be taxed and measuring the fair value of intangible assets inherent in digital business models.

The idea of 'robot taxes' may be novel and grab headlines, but the real challenge will be having a tax system that can balance a number of objectives for the future. That is, it must have integrity, be trusted by the community and be able to adequately fund government services and transfers to lower income households. At the same time, it should not dull incentives to invest in these new technologies that will be central to productivity and higher living standards. Australia has struggled to gain traction with tax reform on this scale over the last decade but it will be necessary if Australia is to balance future technology-led growth with fairness in the tax system.

Technology when poorly designed and applied also has the potential to inadvertently discriminate or oppress at a greater scale than humans, particularly through automated decision-making systems. These systems can be based on discriminatory variables, incomplete data, or inherently biased data. This could have significant impacts on vulnerable populations across social services, online advertising, criminal justice and financial services. Addressing an incident could also prove difficult based on access to source codes and the iterative nature of many machine learning approaches.

Emerging research suggests that new algorithmic models are most likely being created at a far greater pace than existing models are being studied, particularly for fairness and algorithmic bias.[17] This may support the creation of a marketplace where contributors can bring algorithms to be peer reviewed by others.

There are a growing number of approaches to the responsible use of new technologies in this respect including the Asilomar Principles, the IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems, and the use of "Discrimination Aware Data Mining".

Future of inequality recommendations

Recommendation 4

All levels of government should seek to address the affordability of housing for young Australians in line with the findings and recommendations of CEDA's August 2017 report Housing Australia*. This includes:*

- *Planning restrictions, particularly those imposed by local councils, need to be relaxed and made more consistent and housing density increased.*
- *Governments should further relax rules around the means testing of income received from downsizing in situations where it results in greater housing density.*
- *Governments should be encouraged to move towards charging an annual land tax in place of transaction taxes on housing.*
- *Governments should review the way in which pensions, superannuation and housing interact in providing support for Australians in the retirement phase.*
- *A larger component of capital gains should be taxed.*

Recommendation 5

Given the time and resources that will be required to up-skill and transition workers who are displaced because of technological change, any short-term government assistance should be targeted at retraining and transitioning affected workers. It should not provide passive assistance to disrupted industries.

Recommendation 6

The government, in consultation with relevant stakeholders, should explore the adequacy of superannuation, pension and savings products for contingent workers, and whether action is necessary to ensure sufficient retirement income for these workers.

Recommendation 7

In encouraging ethical and unbiased algorithmic models, Australian governments and businesses should:

- *develop and adopt ethical principles and guidelines for the use of artificial intelligence, data mining and autonomous systems. These should align and build on internationally accepted principles; and*
- *seek as much as possible to support emerging mechanisms for peer review and independent scrutiny of algorithmic models.*

Conclusion

We should be optimistic that Australia has the means to provide every citizen with reasonable opportunities to improve their standard of living. The ongoing debate on inequality provides a platform to identify where we are failing to provide equality of opportunities today. As a society we should take steps to address this and guard against unsustainable levels of inequality and fracturing social cohesion in the future. CEDA is strongly committed to providing a constructive platform through its research and forums to advance this important debate.

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BASIC concepts

1

On equality

Dr Simon Longstaff AO

This chapter explains different ideas about inequality and explores their relationship to concepts of fairness.

Dr Simon Longstaff AO has had a distinguished career, including being named as one of AFR Boss' True Leaders for the 21st century. Simon began his working life on Groote Eylandt (Anindilyakwa) in the Northern Territory working in the Safety Department of the then BHP subsidiary, GEMCO. He is proud of his kinship ties with members of the island's Indigenous community. Following a period studying law in Sydney and a brief career teaching in Tasmania, Simon undertook postgraduate studies in philosophy as a Member of Magdalene College, Cambridge. In 1991 he became the first Executive Director of The Ethics Centre. Simon is a Fellow of CPA Australia and in June 2016, was appointed an Honorary Professor at the Australian National University – based at the National Centre for Indigenous Studies. Formerly serving as the inaugural President of The Australian Association for Professional and Applied Ethics, Simon still serves on a number of boards and committees. He was formerly a Fellow of the World Economic Forum.

Introduction

This CEDA study explores the issue of inequality; its characteristics and impact across different dimensions of Australian society. Some readers may be asking why CEDA has devoted time to this topic. Why so at this time? The issue of inequality, its explanation, justification and remediation, has been a perennial concern of philosophers, economists and social theorists. Indeed, it is one of the great tropes of intellectual history – in both east and west. Or it might be noted that inequality (real and perceived) has become a serious problem for the established order – a prod for protest and discontent.

It is important to establish a shared understanding of what is being discussed – not only as manifested in particular contexts and cases but more generally. That is the task of this chapter – to frame the issue of inequality in terms that help to illuminate the more detailed discussion that emerges in the following chapters.

Readers will notice that this chapter makes scant use of the word inequality. Instead the focus is on equality (as the label suggests). This is not due to some perverse desire, on my part, to skew the focus of this paper. Nor do I mistakenly

believe that inequality is another way of saying not equal. However, I think that it is only possible to reach a deep understanding of inequality if we begin with equality (in its most fundamental form) and explore its connection to justice.

So, this chapter takes a philosophical approach to the topic – and then extends it into the groundwork of economics which, like all forms of knowledge (except, perhaps, religion) is a product of philosophy.

The past couple of years have been marked by a series of democratic votes that have defied the expectations of the mainstream media, expert commentators and the political class more generally. Rather than being sudden and unexpected eruptions of popular opinion, decades of discontent have been brought to a head – most notably in the course of the BREXIT referendum and the election of Donald J. Trump as US President. In Australia, the same phenomenon has been writ small.

Although there is an increase in the labour market participation rate with a swing back to fulltime employment; although growth is moderate and inflation low, the majority of Australians have been enduring a wage freeze. This problem is exacerbated by rising prices in areas where people are spending more of their money – housing, education, energy and healthcare. Finally, the percentage of corporate income flowing to the owners of capital has far eclipsed that flowing to labour.

All-in-all, a good chunk of public discontent is an expression of disappointment at not having received a fair share of the economic cake.

"My sense is that a large number of Australians feel that the mythic ideal of Australia as a nation of equals is losing all credibility."

However, there is a deeper sense of foreboding at work here. My sense is that a large number of Australians feel that the mythic ideal of Australia as a nation of equals is losing all credibility. They are angry. They are disappointed. They are vengeful. Above all, they are fearful that the nation's underlying social compact could have been so carelessly broken – and that the presumption in favour of basic equality has been replaced by indifference to a widening gap between: city and country, elites and ordinary folk, the haves and have nots, the political class … and just about everyone else.

In essence, a very large number of people have come to feel that they are just cogs in a machine, counting for nothing more than their capacity to work and vote. They feel that they serve a system that is indifferent to their hopes and interests – and that will exploit and discard them at will. They feel robbed of their intrinsic dignity – and the basic equality that is their due[1].

This, of course, is just my view – and one not necessarily shared by other contributors to this publication. Indeed, other conclusions may be drawn as the result of information presented in later chapters.

The foundations of human equality

In human affairs, the concept of equality is intimately linked to the principle of respect for persons. This principle states that every person possesses intrinsic dignity – an irreducible, unquantifiable value which can neither be earned nor lost. That is, the dignity of a person is not a product or function of what they *do*. It arises from what they *are*.

In history, many humans have been denied the status of personhood due to the colour of their skin, their gender, their religion, accidents of birth and so on. Those denied the status of persons have been enslaved, marginalised, exploited and so on – due to their not counting (e.g. in the United States a black American was officially accounted for as three-fifths of a person).

> "Although prejudice and discrimination have not been eradicated, in Australia the universal application of the principle of 'respect for persons' has taken root."

Such forms of discrimination persisted despite religious injunctions (mankind is made in the image of God), political ideals (the authors of the Declaration of Independence included slave-owners) and science (there are greater differences within population groups than between them).

Although prejudice and discrimination have not been eradicated, in Australia the universal application of the principle of "respect for persons" has taken root. It can be seen in the extension of universal suffrage to all adult citizens. It can be seen in the rule of law that holds every person to equal account – irrespective of their conditions of wealth, education, power, etc.

In this sense, equality needs to be distinguished from sameness. Nothing in the principle of respect for persons requires us to ignore what is distinctly different about individuals and groups. Indeed, the opposite is true – in that we should recognise the unique characteristics of each person. This includes recognising that across any population of equal number there will be a normal distribution of characteristics – some of them advantageous, some of them a hindrance; some to be admired, some to be avoided.

The key thing to note here is not that respect for persons requires us to disregard individual and group differences. If that was the case, our mostly successful multicultural society would have been impossible to build and sustain. Rather, it calls attention to a fundamental kind of equality (intrinsic dignity) that deserves a core, irreducible measure of respect. This allows for the possibility of unequal outcomes – as long as the scale of possibilities does not fall so low as to neutralise, in practice, respect for persons in principle.

Justice and equality

What makes for a just and equitable society remains a matter for debate. However, there are three major views of justice that have a direct bearing on the issue of equality. The three competing views are:

- justice as strict equality;
- justice as procedural fairness;
- justice as substantive fairness.

The following example will highlight the difference in each approach.

Imagine that it is late on a cold and rainy night. In the course of a few moments, you are approached by two strangers both asking you to provide them with some much-needed money. As it happens, you have in your wallet two $10 notes. One person, a young woman, explains that not only has she lost her bag containing her phone and wallet, she is also running late for a date with her boyfriend. Worse still, unless she takes a taxi she will arrive wet and bedraggled. Can you lend her some money for the cab fare? She promises to pay it back. The second person is evidently cold and homeless and asks for money to buy a hot meal.

"Seen in this light, equality of opportunity is not just about being given the identical opportunity available to others (in an abstract, disembodied sense). It requires each person to be offered as equal a starting point as any other."

- The concept of justice as strict equality would lead you to give an equal amount of $10 to each person.
- The concept of justice as procedural fairness would seek to apply a rule such as first come first served and accordingly give all of the money to the person who first makes the request – letting the rules decide the outcome.
- The concept of justice as substantive fairness would take into account the objective circumstances of each applicant for aid – noting any relevant differences and applying the limited support to the person most in need of help. For example, arriving for a date late, wet and bedraggled might be judged a mere inconvenience when compared to being homeless and hungry.

We tend to see all three forms of justice at work in society. In the first two cases, the concept of equality is in play. Strict equality guarantees equality of outcome. Procedural fairness guarantees equality before the law (the rules). Yet, many people feel (and it may be no more than a feeling) that something more is required. This is captured in the idea of equality of opportunity – and this seems to link to the third sense of justice outlined above – that of substantive fairness.

Seen in this light, equality of opportunity is not just about being given the identical opportunity available to others (in an abstract, disembodied sense). It requires each person to be offered as equal a starting point as any other. For example, it might be said that, within an apparently meritocratic system like

school examinations leading to university admission, every student has an equal opportunity to achieve the marks needed to be admitted to, say, the study of medicine. However, imagine an admittedly extreme example in which a child who was required to attend a school without any books, internet, etc. Shouldn't we recognise that their opportunity is not in any way equal to that of the student surrounded by every educational resource that they could need to excel?

Although, in practice it may be impossible to achieve absolute equality of opportunity, justice (as substantive fairness) should at least require us to notice the relevant differences in the circumstances of people competing for the same goods and do as much as we can to level the playing field so that each person has a genuinely fair and equal opportunity to thrive on the basis of their effort and capacities – rather than as a result of an accident of their birth.

Equality and the role of free markets

Adam Smith was not an economist. Rather he was Professor of Moral Philosophy at the University of Glasgow. Although better known for *The Wealth of Nations* (a book frequently referenced but seldom read), his economic ideas can only be understood in the context of his other work – notably, *The Theory of Moral Sentiments* (in which the concept of the invisible hand makes its first appearance).

For Smith, as for his successors, the market has no intrinsic value. Rather it is both an arena within which freedom of choice might be exercised and a tool for increasing the prosperity of all (and not just the few). Thus, the market has a profoundly important moral purpose.

The engine by which that purpose is realised is the legitimate pursuit of self-interest by economic actors. Smith reminds us that it is not through benevolence that the butcher, brewer and baker make provisions for our dinner. Rather it is self-love (self-interest – both theirs and ours) that is the driving force. The invisible hand ensures that self-interest is converted into an increase in the stock of common good.

Often missed in Smith's work is the fact that his concept of a free market is based on the acceptance and application of certain ethical norms. That is, he is not a proponent of unfettered competition of the let-it-rip *laissez-faire* variety. Smith's market is not of the dog-eat-dog variety. Rather, he recognises that markets can only be truly free if they are not distorted by various forms of corruption. So, a market cannot be free if people lie or cheat or use power oppressively. All such practices deny market participants the opportunity to make informed choices and thus, to exchange goods based on an accurate assessment of relative value. We see the principles of a free market in its ideal form. Imagine a crossing point at a stream or river. On one side is a person with surplus wool. On the other a person with surplus wheat. One is hungry, the other cold. They exchange and move off – each better for the bargain.

A free market is built on the assumption that its participants are not subject to duress. An exchange is hardly free if one of the parties has the equivalent of a gun at their head. This simple truth has led to many social, legal and political reforms in which the aim has been to maintain some relative equality in bargaining power. For example, the creation of trade unions was in response to the exploitation of individual workers whose personal standing was grossly unequal when compared to the power of employers. The infamous status of Hungry Mile or children down mines, etc. reminds us of what happens when such asymmetry of power prevails as a structural factor in (not-so-free) markets.

In a similar fashion, we have seen changes in consumer law designed to even things up between producers and consumers. Notable examples of innovation include the Commonwealth *Trade Practices Act* which outlaws misleading, deceptive and unconscionable conduct – all in the name of maintaining a free market.

"A market that fails for lack of fairness and equality in its processes is no market at all. To ignore this basic reality is to be truly irrational."

As with the link between equality of opportunity and justice as substantive fairness, there is an organic link between the concept of a *free* market and a basic equality between all of its participants. Specifically: all are equally entitled to make informed decisions; all are equally entitled to make genuine choices (subject to minimum constraint), all should be equally entitled to a reasonable benefit from the bargain.

This last point is especially interesting as it resonates with the findings of behavioural economists. Contrary to the assumptions of classical economics, human beings (across all cultures) are generally unwilling to make a bargain in return for what they know to be a minimal increase in utility. The classical model assumes (against the evidence) that an ideally rational person will prefer to have something (even a very little) rather than nothing. Instead, it turns out that real people choose to receive nothing rather than be treated unfairly. This human inclination to fairness was anticipated by Adam Smith who argued, in *The Theory of Moral Sentiments*, for the importance of the practices of *sympathy* (putting yourself into the shoes of the other person) and *reciprocity* (doing unto them what you would have them do unto you).

For Adam Smith self-interest explained *why* people would engage in the market. *How* they should exchange was a different matter. Again, one does not need to be a moralist to recognise the importance of Smith's insights and the evidence of the behavioural economists. A market that fails for lack of fairness and equality in its processes is no market at all. To ignore this basic reality is to be truly irrational.

The question of value

As noted above, a genuinely free market ought to facilitate the exchange of value by well-informed participants who are able to make free choices. However, what standards should apply when assessing the quality (efficiency) of that exchange?

Some expect efficient markets to facilitate exchanges of equal value. However, as the earlier example of an ideal market in wheat and wool should have indicated, there is rarely any objective standard for deciding what is of equal value.[2] With a few exceptions, relative value is in the eye of the beholder. Only the person who is cold or hungry can really know the worth to them of the wool or wheat to be exchanged.

The concept of value takes on an additional level of complexity when one allows for the way a person might assign value to intangible qualities. For example, a person might pay a premium for a product that is of a particular colour, or an item of lesser quality that carries the logo of a famous brand or goods or services that embody that person's ethics. The value of a particular colour, logo or ethical alignment is purely a matter of subjective judgement by market participants. Under the laws of supply and demand, the more people valuing a particular attribute the more the price of securing that attribute should increase.

Yet, not all things that people value are subject to the laws of supply and demand. Some goods are infinitely divisible and therefore afford every person an equal opportunity to partake in them. We can see this in a comparison between two systems of value available to a room of 100 people. In one system there are 100 chocolates available for consumption. Given the (unfortunately) finite nature of chocolate and assuming steady demand, if one person consumes 50 chocolates, then the price of the remaining portion increases in alignment with the commodity's relative scarcity.

> "…a genuinely free market ought to facilitate the exchange of value by well-informed participants who are able to make free choices."

However, in the second system, the good to be secured is friendship. In principle, in a room of 100 people every individual can make a friend with 99 others. The fact that the person next to me has made 99 friends in no way limits my capacity to achieve the same result. Friendship should therefore be considered a common good – open in equal measure to all.

One needs to bear all of this in mind when applying the concept of equality to economics. It is worth recalling that the concept of private ownership has often been at odds with other competing ideas. One notable alternative has been that of the commons (thus the outrage in European societies, like England, when legislation like the *Inclosure Acts* came into force). All of a sudden – and by a stroke of the pen – common lands were converted into private property. Even before then, royal domains were often held under the fiction that the monarch held property in trust for the community as a whole. Although pure fiction – it's worth noting that such a myth was thought important enough to preserve.

In the Western tradition, you can see some of the antecedents of thinking about such questions in Biblical accounts of creation, the Garden of Eden and the Fall. All of the world views derived from this narrative accept that the earth – and all of its parts, creatures, etc. are created to be the common possession of all humanity – to use as humankind requires or desires. In *Paradise Lost*, John Milton proposes that Lucifer is, at least in part, motivated by jealousy that humanity has been so well bestowed with bounty. Lucifer's aim therefore is to corrupt what he cannot have for himself, setting the conditions for what ultimately becomes two of the foundations for a market economy (alienation from the original commons and the need to labour in order to sustain oneself and thus, own the fruits of one's labour).

"The role of money, therefore, is to serve as a stable store of value (a medium of exchange) in which a potentially degradable surplus is converted into something enduring – which explains the value of gold – an especially stable element in nature."

Political philosophers, like Hobbes and Locke, have tried to reimagine the original state (the state of nature) with Hobbes thinking it a bleak condition in which life is ultimately "nasty, brutish and short" while Locke takes a more optimistic view. However, where Hobbes and Locke agree is in thinking that the reality of human self-interest is such that rules and structures are needed to manage competition for limited goods.

As noted above, the idea that the addition of one's labour confers private ownership has a long history (thousands of years) by which the raw materials of life might be held in common but were transformed into private property by the addition of value through one's individual or collective ingenuity and labour. However, Locke argued in his *Two Treatises* until the invention of money, ownership was always limited to that which could be used without waste. So, Locke argues that an orchardist who grows more fruit than he or she can consume – and who leaves the uneaten surplus to rot – can claim no ownership in the remainder. The orchardist might erect fences and post signs warning against trespass – but the wasting fruit is not theirs to control. As such, any other person in need may take for themselves what would otherwise go to waste. This right to the commons is an equal right of all.

The role of money, therefore, is to serve as a stable store of value (a medium of exchange) in which a potentially degradable surplus is converted into something enduring – which explains the value of gold – an especially stable element in nature.

Equality and the global commons (a thought experiment)

Historically, markets have not been thought of as venues for the exchange of what is already held in common. Theoretically (at least) markets made no sense for people able to satisfy their needs by making free use of the commons, as required. Instead, markets existed to facilitate the exchange of goods that contained added value (labour and ingenuity) of a kind required to convert the commons into private property. For example, naturally growing wheat (unimproved, low yielding, etc.) might belong to the commons and be open to use by all. However, bread would be private property and open to exchange in the market. In summary: markets were only ever conceived of as facilitating exchange of private property, thus the problem of allocating the commons never arose.

It could be argued that this concept of the market is far too narrow – and that the value held in the global commons ought to be included. This would certainly follow if one accepts Adam Smith's claim that self-interest is the best engine for improving the lot of all.

In principle, an extension of the market (in its broad, philosophical sense) would require a division of the global commons into equal parts in number sufficient to enable the allocation of one share to every person alive. An allocation of equal parts would do something to iron out the differences arising from the accident of one's time and place of birth. Every person would have an equal, vested interest in the raw material of life – the natural and social capital on which all economic activity ultimately depends. Upon that base, each person might make improvements (add value) – and benefit from doing so – but not at the cost of degrading others' share of the commons.

"In principle, an extension of the market (in its broad, philosophical sense) would require a division of the global commons into equal parts in number sufficient to enable the allocation of one share to every person alive."

Natural Capital is the *unimproved* value of the natural environment – including all ecological services – on land, sea and in space. It includes all potential sources of material goods needed to sustain humanity and advance material civilisation.

Social Capital is the *unimproved* value of those arrangements that enable humanity to flourish through the application of our species' capacity for creativity and innovation – even when stocks of Natural Capital are threatened or depleted due to natural causes. Social Capital includes the capacity to establish and maintain peaceful, productive communities and civilisations.

Taken together, Natural and Social Capital make up the Global Commons.

Let us suppose that the concept of equality, discussed above, was to be applied to an economic system. Such a system would not require equal outcomes – but it would attempt to give every person a fair opportunity to participate in a free market. Is anything like this even possible?

If there was the political will to make fundamental change, then it is possible to imagine a system that could operate according to the following hypothetical rules.

1. The global commons are, in principle, infinitely divisible into equal shares.
2. An equal share of the global commons may only be held by a natural person.
3. A natural person may only ever hold one equal share.
4. Any surplus value not used (or useable) by a natural person may be leased to another person (including to non-natural persons like corporations).
5. An unused portion of the global commons may be allocated to a common pool that can aggregate and manage/lease the surplus held in trust for the natural persons from whom the surplus has been derived.
6. A natural person is entitled to receive income in return for the use of the surplus portion of their share of the global commons.
7. Any person may improve and thus increase the value of that portion of the global commons for which they have the use.
8. A person would be entitled to retain for their personal use an agreed percentage (say 80 per cent) of the value of any improvement they make to their share of the global commons. The balance of the value of any improvement would be added to the general stock of Natural and Social Capital, thus maintaining real value.
9. Those who either damage or destroy any part of the global commons would contribute to a reparations fund an amount of value equal to the loss caused by the damage or destruction plus any surplus (profit) derived from those acts leading to that loss.

Although there have been some attempts to price externalities (such as pollution), the idea of bringing the commons into the market (as a whole) is a radical idea. It will offend some cultural sensibilities – especially among those who fundamentally object to the concept of private property. The point of this paper is not to argue that such a change should happen – that is a larger question. It is merely to demonstrate what is possible if the concept of equality was to be given fuller expression within a system of market economics.

Conclusion

Too often, it seems to me, the concept of equality is pitted against that of liberty. The idea of a free market (at least as conceived of by Adam Smith) reveals this to be a false dichotomy. Any market, that is worth having, takes seriously claims about the intrinsic dignity – and therefore fundamental equality – of all persons. Free markets create an arena for the exchange of value in circumstances where no person's preferences are deemed to be more or less worthy than another's. As a social institution, free markets promote liberty not merely in name, but in fact. They privilege (indeed, require) honesty and fairness – not for purely ethical reasons – but because the logic of the market recognises such attributes to be necessary conditions without which a free market cannot be said to exist.

The challenge for policy makers is to look beyond conventional beliefs about economics and instead, exercise independent judgement informed by the purpose that economics (as a discipline) and markets (as social institutions) are meant to serve.

Issues of equality should not be shunted to one side – reserved for social policy advocates and a special class of welfare economics. Instead, the concept of equality should be accorded a central place in mainstream economic policy.

Endnotes

1 For more on the concept of intrinsic dignity, its origins and application to politics, science and economics see: Longstaff, S. A. (2017) *The Cloven Giant*, Sydney, The Ethics Centre .

2 The rare exceptions noted above include price indices for commodities along with the capacity to maintain accurate standards for comparison (e.g. weights and measures) across markets.

2

Measuring economic inequality

Associate Professor Nicholas Rohde
Professor Lars Osberg

This chapter explores the different measures used to compare inequality and the variables that can impact accuracy.

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Lars Osberg is currently McCulloch Professor of Economics at Dalhousie University, Halifax. He holds a PhD in economics from Yale and has had visiting positions at Cambridge, New York University and the Universities of Sydney, NSW and Essex. He is also the author of numerous refereed articles in professional journals, book chapters, reviews, reports and miscellaneous publications. His current research emphasises the implications of increasing inequality and the measurement and determinants of poverty, economic insecurity, inequality of opportunity and economic well-being.

Introduction

Producing meaningful measures of economic inequality poses a number of challenges for statisticians and social scientists. For example, many people would like to have definitive answers to seemingly simple questions like: Is Australia less unequal than the United States? But quantitative comparisons of this form are often more complex than they first appear. Indeed, any measure of inequality will invoke some subtle, baked-in assumptions that may not be apparent to the casual observer. These assumptions can be critical and are sometimes strong enough to drive particular empirical results – for example two apparently similar techniques can produce conflicting results on the level or trend of inequality within a society. Consequently, the goal of this chapter is to arm the reader with some background knowledge about how economic inequality is measured, and how

specific indices should be interpreted. In order to demonstrate these ideas, the chapter also presents a summary of Australia's position with respect to other OECD countries in terms of inequality in incomes. We also review some empirical evidence of inequalities in consumption and wealth, and review trends in income disparities at the global level.

Inequality of what? Among whom? When?

A good place to start is to consider the range of economic indicators that can be analysed. People are often concerned with inequalities in variables such as earnings, household incomes, permanent (i.e. lifetime) incomes, wealth levels, and other aspects of wellbeing such as education and health outcomes. However, as these variables capture different aspects of socioeconomic (dis)advantage, their inequalities can require differing interpretations and carry different implications for policy. Furthermore, some variables make better vehicles for analysis than others. For example, disparities in labour incomes are commonly discussed in the media; however, there are many factors that can affect this variable (such as differences in working hours or tax burdens) which do not closely correspond with intuitive notions of inequality. Similarly, inequalities in wealth can be sensitive to factors such as a population's demographic make-up (e.g. affluent young people can have fewer assets than struggling older people); and disparities in short-term incomes can reflect things like sharing within households, and transitions from study to the workforce, that have little to do with long-term economic wellbeing.

"People are often concerned with inequalities in variables such as earnings, household incomes, permanent (i.e. lifetime) incomes, wealth levels, and other aspects of wellbeing such as education and health outcomes. However, as these variables capture different aspects of socioeconomic (dis)advantage, their inequalities can require differing interpretations and carry different implications for policy."

For these reasons, baseline analyses of inequality mostly focus on the variables that best reflect underlying living standards. Two common choices are post-fiscal household incomes (as used by the OECD), and household consumption levels (often employed by The World Bank). The former variable is the sum of all household inflows taken over a year, with adjustments made for taxes and sharing between family members. The latter measures spending, which will reflect lifelong incomes when individuals behave as rational economic agents. When these variables are not available there is still sense in studying other forms of disparity, however abstract indicators normally require careful empirical manipulation if they are to be used in measures of socioeconomic inequality.

Inequality as a relative concept

A common misunderstanding that complicates public debate around inequality stems from its characterisation as a purely relative phenomenon. As such, the term "inequality" refers only to the way the economic pie is divided – it is unrelated to its overall size. A highly unequal country can therefore have very little absolute poverty if it is sufficiently rich (e.g. the United States), while a fairly egalitarian society can have a great deal of poverty if the country itself is poor (e.g. Afghanistan). Similarly, inequality can rise during a time of strong economic growth if the gains are broadly shared but still accrue more at the top of the distribution (e.g. Australia from the early 1990s on some measures), or can fall during poor economic times if high income earners are more affected (e.g. the United States after the 2008 financial crisis). For these reasons, in isolation inequality metrics do not make suitable measures of the welfare of the poor. Instead, inequality is best thought of as one of a number of social barometers (alongside factors such as real income per capita) that must be considered in context when assessing a country's economic progress and the material wellbeing of its citizens.

Statistical measures of economic inequality

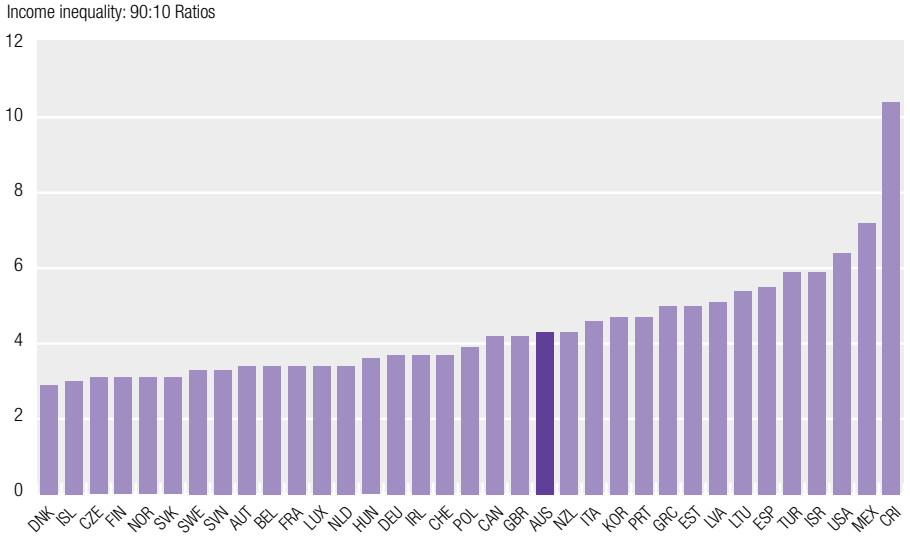
A statistical/econometric measure of inequality is a summary index that is designed to capture dispersion in the variable of interest. The goal is usually to distil inequality into a single number that can be used to make comparisons across countries or for a single country over time. This chapter reviews three commonly employed inequality indices and presents some empirical results describing Australia's recent performance on each. Data on real household incomes are taken from the ABS and OECD, and hence the inequality metrics employed will all be referred to in terms of incomes.

"Similarly, inequality can rise during a time of strong economic growth if the gains are broadly shared but still accrue more at the top of the distribution (e.g. Australia from the early 1990s on some measures), or can fall during poor economic times if high income earners are more affected (e.g. the United States after the 2008 financial crisis)."

Income shares

The simplest technique that is regularly used to study economic inequality is probably the *income share*. Made famous by the pioneering work of Piketty[1] this measure simply gives the proportion of total income that accrues to the top p% of the population. It is customary to choose a value such as p=1 so that the measure quantifies the relative affluence of the top one per cent of income earners, although there is no reason why the measure cannot be generalised to focus on any percentile of interest.

FIGURE 1
INTERDECILE INCOME RATIOS FOR AUSTRALIA AND OTHER OECD COUNTRIES – 2014

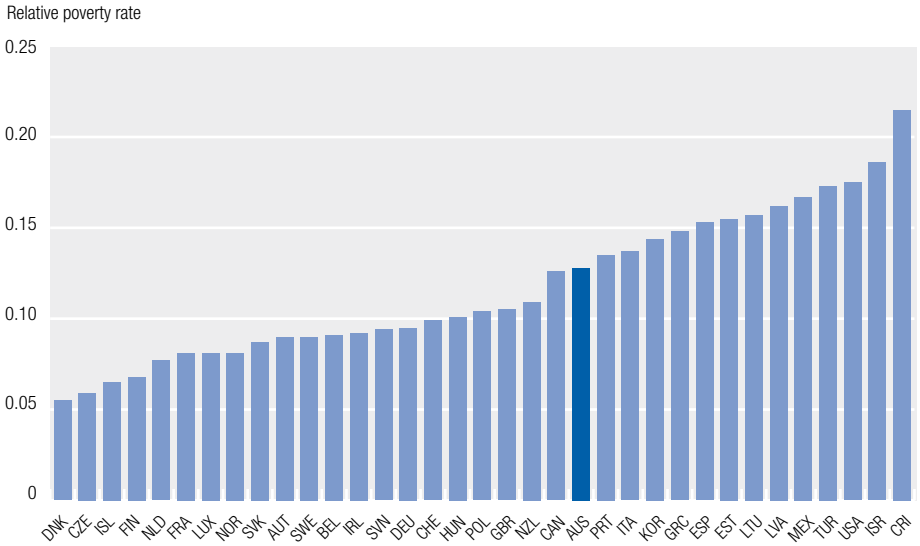


Source: OECD, 2018, Income inequality. doi:10.1787/459aa7f1-en

The main advantage of the income share is its simplicity in calculation and interpretation. If the income share of the top one per cent is around 10 per cent (as it has historically been in Australia[2] then this subgroup has about 10 times the income of the average person. However, by focusing only on the distinction between the top *p*% and everybody else, the income share has a serious drawback. As per its construction, the measure says nothing about how incomes are distributed among the lower 100 – p% of the population. Thus, a social program that combats poverty by redistributing income from the middle class downwards might reasonably be expected to lower inequality; however, it will not show up in this metric. This complicates the measure for anybody who wishes to interpret inequality as an indicator of relative economic disadvantage as it only considers inequality in the extremes of the distribution, rather than over the whole population.

A close relative of the income share known as the *interdecile share* is designed to fix this problem. This measure is the ratio of an upper level income share (for say the top p = 10 per cent) and a lower level share (such as the lowest 100-q = 10 per cent). Since the richer group will (by definition) have a higher income than the poorer group, this measure is equal to one when all incomes are perfectly equal; and can take on any arbitrarily high value as the income share of the poorer group approaches zero. Figure 1 contrasts the Australian 90:10 interdecile ratio with those from other OECD countries for 2014 (the latest available year). According to the chart the richest 10 per cent of Australian households have approximately 4.3 times the income of the lowest 10 per cent – a value that places us slightly above average compared to these developed economies. The results for the other countries also line up with public perceptions – European nations are normally considered relatively egalitarian (especially in the Nordic region) and had ratios around 3.2. Conversely the United States, Mexico and Costa Rica were highly unequal and all had ratios in excess of 6.0, a result that matches the standard narrative of high inequality in North America.

FIGURE 2
RELATIVE POVERTY RATES FOR AUSTRALIA AND OTHER OECD COUNTRIES – 2014



Source: OECD, 2018, Income inequality. doi:10.1787/459aa7f1-en

Relative poverty rates

Relative poverty rates are conceptually similar to income shares and interdecile shares, however their focus is on the lower end of the income distribution. They also differ from the above indices in terms of construction. Relative poverty rates work by defining some income level that is required to participate fully in society, and then measure the proportion of individuals that fall below that level. In this sense they are still capturing a relative "share", but a share of the population rather than a share of aggregate income. These relative measures are also distinguished from their absolute counterparts by the way that poverty lines are defined. An absolute poverty rate employs a fixed threshold (such as $2 per day) while a relative poverty line is indexed to the overall income level, such that greater incomes are needed in richer economies. If each individual's income within a country were to double then the relative poverty line would also double, leaving the rate unchanged. It is this property that makes the relative poverty rate behave as an indicator of low-end inequality, rather than as a standard poverty metric. It is typical to define the line as one half of the median income level, which constrains this index to a range between zero and one half.

"Relative poverty rates work by defining some income level that is required to participate fully in society, and then measure the proportion of individuals that fall below that level."

Figure 2 shows that the country rankings based upon relative poverty rates are fairly similar to those obtained by looking at interdecile shares. In particular the countries with the highest interdecile shares also had high relative poverty rates (e.g. Costa Rica, Mexico, the United States) while the Northern and Western European countries again had fairly low rates (Denmark, Iceland, Finland, Netherlands). This similarity is a desirable characteristic as it implies a degree of robustness across the two methods. However, it is also worth emphasising that because the rankings do not coincide perfectly there is also a level of ambiguity

present. In Figure 1 Australia is ranked one place below New Zealand, while Figure 2 ranks Australia a few places above, and hence it is hard to make a definitive statement about which country is more unequal. Rather in our data it appears that the two countries are fairly similar, and more in-depth techniques are required to determine if a definitive ranking can be established.

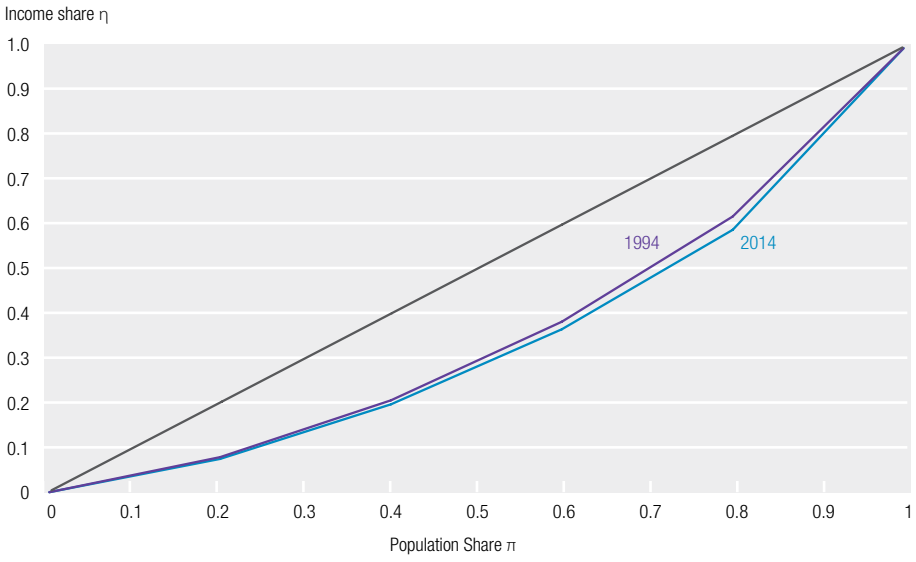
Lorenz curves and the Gini coefficient

If a disadvantage of the above measures is that they only focus on the income scale at particular points, an alternative is to examine the Lorenz curve for the full distribution. Developed by American economist Max Lorenz in 1905, this technique provides a useful graphical summary of income disparities, and also forms the backbone for the commonly employed Gini index. A Lorenz curve is constructed from a sample of incomes by ordering the observations from smallest to largest.[3]

> "In Figure 1 Australia is ranked one place below New Zealand, while Figure 2 ranks Australia a few places above, and hence it is hard to make a definitive statement about which country is more unequal."

Figure 3 presents some Lorenz curves for Australia based upon ABS income quintiles for 1994 (purple) and 2014 (blue). From the two curves it is clear that in both years the lowest earning 20 per cent of households received around eight per cent of total income, while the lowest 50 per cent had about a 30 per cent share of the total. To illustrate how these curves can be used to study inequality, consider the special case where all incomes are equal. In this case the lowest 20 per cent of households have a 20 per cent income share, and

FIGURE 3
LORENZ CURVES FOR AUSTRALIA – 1994 AND 2014



Source: Australian Bureau of Statistics. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6523.02013-14?OpenDocument.

hence this segment of the curve would be the 45° line. Further since the poorest 20 per cent have a proportional share then every other quintile must as well, and therefore the Lorenz curve for a perfectly equal society occurs where the income share and the population share are equal. Conversely as inequality increases, the Lorenz curve bends more decisively away from the 45° line.

A primary advantage of the Lorenz curve is that in certain circumstances it allows for definitive inequality rankings to be established.[4] Since the curve for 2014 is a little further from the egalitarian line than the 1994 curve we can conclude that inequality was slightly higher in 2014.

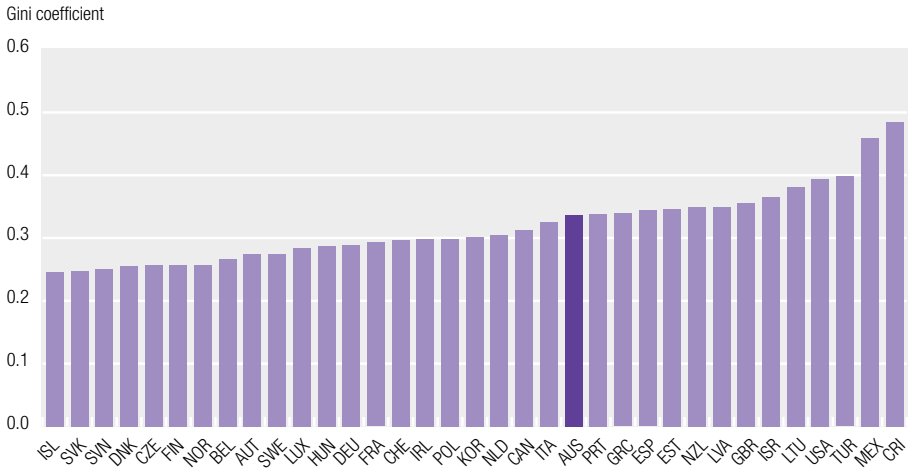
Furthermore, the Lorenz curves also highlight how the two distributions are different. As the blue and purple lines are very similar for the lowest 20-30 per cent of households it is clear that the relative shares of these groups were essentially unchanged. Conversely in the mid and upper segments of the distributions there are clear differences, indicating that the rise in inequality over this period was due to the richest households pulling ahead of the middle.

Extending this concept also allows us to derive an additional summary measure of economic inequality – the Gini Coefficient. The coefficient is between zero and one and captures the area enclosed between the Lorenz curve and the egalitarian 45° line.[5] If everyone had the same income or wealth then it would be zero, while values closer to one represent greater levels of inequality.

"Conversely in the mid and upper segments of the distributions there are clear differences, indicating that the rise in inequality over this period was due to the richest households pulling ahead of the middle."

The relationship between the Gini coefficient and the concept of Lorenz dominance should be immediately clear. If one Lorenz curve dominates another the Gini coefficient for the dominated country must be higher – and therefore rankings of Gini coefficients will always coincide with Lorenz dominance rankings. This is a major advantage of the Gini over the other measures considered above. While simple indices like the income share or relative poverty rate are easy to interpret, the fact that they only consider the income distribution at certain points means that they characterise inequality in fairly limited ways. These measures tend to be closely correlated with Lorenz consistent indices such as the Gini but are also capable of producing results that are inconsistent with the dominance principle.

FIGURE 4
GINI COEFFICIENTS FOR AUSTRALIA AND OTHER OECD COUNTRIES – 2014

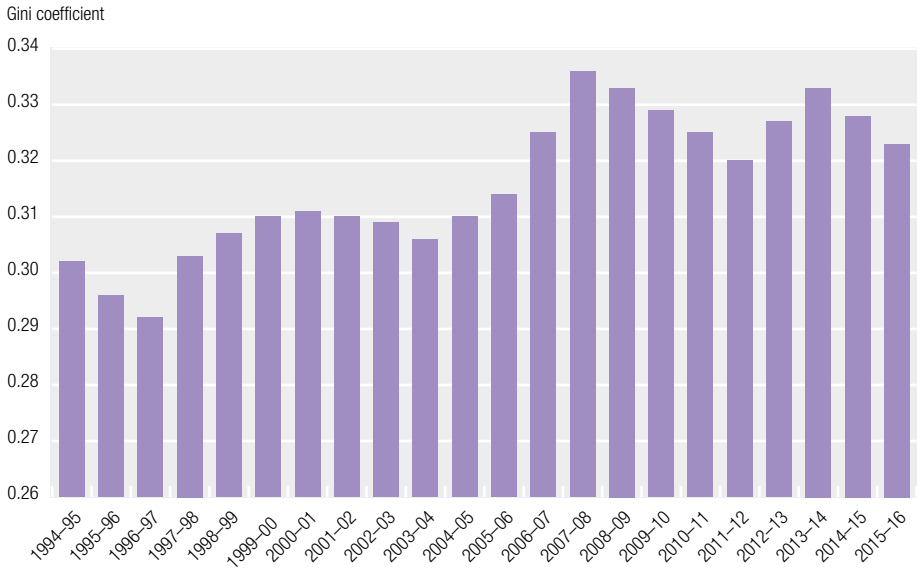


Source: OECD, 2018, Income inequality. doi:10.1787/459aa7f1-en

To illustrate the Gini coefficient Figure 4 presents the cross-national data from 2014, while Figure 5 shows the trend in Australian Gini coefficients from 1994–2014.

Figure 4 shows that the inequality rankings provided by the interdecile shares and relative poverty rates are not anomalies in our data, as the results stack up closely with those given by the Gini. Again Australia is slightly towards the higher end of our scale with a value around 0.34. Among English speaking countries this is more unequal than Canada, but a little lower than New Zealand, Great Britain and the United States.

FIGURE 5
TREND IN AUSTRALIAN GINI COEFFICIENTS: 1994–95 TO 2015–16



Source: Australian Bureau of Statistics. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6523.02013-14?OpenDocument.

In terms of trends in inequality over time, Figure 5 shows that the Gini coefficient rose quite steadily in the late 1990s and early-to-mid 2000s, before declining after the financial crisis in 2008. In contrast to this measure derived from ABS data, the Household Income and Labour Dynamics in Australia (HILDA) survey suggests that the Gini coefficient has remained around 0.3 since the HILDA survey began 15 years ago.[6] There are likely to be a range of reasons for the different findings, including differences in income definitions and methodology. Nonetheless, there does appear to be a reasonable level of support across a number of studies[7] indicating that Australian income inequality has been elevated compared to earlier periods, but has fallen since its peak in 2007.

Other variables and global trends

Having established Australia's relative position and trend in income inequality we now consider disparities in some other important variables. As per the introduction, some economists look to consumption rather than income as an indicator of household wellbeing, as it will take better account of households using savings or borrowings to smooth changes over time. Nonetheless, consumption is still not a complete measure as it does not include public goods and government funded services like health and education. Dollman *et al*.[8] compare trends in Australian income inequality with estimates based upon household expenditures and find (expectedly) that consumption inequality is somewhat lower, due to redistributions that occur across individuals and over time. Nonetheless the trend in Australian consumption inequality has fairly closely mirrored the trends in income inequality. As both have been steadily increasing this strongly suggests that widening economic disparities are a real phenomenon and not a statistical quirk.

"…the trend in Australian consumption inequality has fairly closely mirrored the trends in income inequality. As both have been steadily increasing this strongly suggests that widening economic disparities are a real phenomenon and not a statistical quirk."

This rising inequality in Australia is actually one that has occurred across a host of developed countries over the last few decades – for example most English speaking countries show similar trends.[9] The uniformity of this result suggests that there might be a common theme driving increases in intra-national inequality, especially those seen in developed nations. Although evidence here is mixed, it appears that the combination of increased globalisation (which has increased the scope for winner-takes-all distributional outcomes) and skill-biased technical change (innovations that increase the return to skilled labour) may be an important part of the story.

However, despite this rising trend for intra-country inequality, disparities at the global level have actually been falling.[10] This is mostly attributed to the strong economic growth seen in China and India, which has helped to alleviate extreme poverty in almost one third of the world's population. Thus, while internal inequalities have been growing, the inequalities that occur between countries have been falling, which has had a dominating effect at the aggregate level.

Nonetheless falling global inequality is not found universally. If we turn to household wealth (i.e. the sum of all assets minus total liabilities) rather than income or consumption as a means of gauging inequality then the conclusions are a little different. Data on wealth is normally sparse as the variable is difficult to measure accurately, which makes reliable estimates hard to obtain. Nonetheless using a sophisticated methodology that combines data-sets and models unobservable sections of the wealth distribution, Davies *et al.*[11] (2017) produce estimates for global wealth inequality since 2000. According to their results wealth inequality fell slightly from 2000–07 but returned to early 2000s levels by 2014, which is essentially the reverse of the patterns seen for income inequality in Australia. They also find that the world Gini is staggeringly high – 0.92 in 2014, which is close to three times the average Gini for income depicted in Figure 4. This value corresponds to a top one per cent share of about 49.7 per cent and a top decile share of around 88.3 per cent. In Australia, ABS and HILDA data show that wealth inequality increased from the early 2000s up until the late 2000s, but has moderated since this time.[12] Therefore wealth tends to be more unequally distributed relative to other economic indicators.

"Data on wealth is normally sparse as the variable is difficult to measure accurately, which makes reliable estimates hard to obtain."

Summary

The key points from the chapter can be summarised as follows.

- When studying economic inequality, the variable that is analysed matters. Some variables make better indicators of living standards than others, and none perfectly capture economic wellbeing. Hence care must be taken when interpreting any measure of inequality.
- As a concept, inequality is relative and relates only to the proportional distribution of resources between individuals. Intuitively it can be thought of as how the economic pie is divided up, but has nothing to do with its overall size.
- Simple inequality measures such as the income share, interdecile share or relative poverty rate make useful partial indicators of inequality. Income shares normally describe the top of the income distribution, interdecile ratios compare the top with the bottom, and relative poverty rates focus only on the lower end of the distribution of economic outcomes.

- Empirical results based upon the above measures tend to produce fairly similar results. However, the simplicity of these techniques comes with some limitations – they can give results that don't coincide with more thorough analyses of inequality.
- Lorenz curves and the Gini coefficients derived from them are more complicated, but also more theoretically sound.
- As of 2014 Australia is slightly above average among developed countries in terms of income inequality. This result holds for a wide variety of summary indices including the Gini coefficient.
- Australian income inequality is high relative to longer-run historical levels but has fallen slightly since 2008.
- Rising income inequality has been the norm for most developed countries over the last few decades. However, at the global level income inequality has been falling, thanks largely to the economic growth seen in China and India since 2000.
- Consumption inequalities are usually lower than for incomes but tend to show similar trends.
- Inequalities in wealth are usually the most severe among all economic indicators. As of 2014 the top 10 per cent of all households globally controlled nearly 90 per cent of all wealth.

Endnotes

1 Piketty, T. (2014). *Capital in the Twenty-First Century*, Cambridge: Harvard University Press.

2 Atkinson, A. and Leigh, A. (2007). "The Distribution of Top Incomes in Australia" *Economic Record*, 83, 246-261.

3 If the population share of the lowest earning fraction is denoted π and the relative income share of that fraction is denoted η, then the Lorenz curve is the function $\eta=f(\pi)$. Since both π and η are shares, the Lorenz curve lies on the unit square. And because the poorest 0 per cent cannot earn an income, and the poorest 100 per cent (i.e. the full sample) must receive all the income, the Lorenz curve will be continuous, convex, and pass through the points [0, 0] and [1, 1].

4 Atkinson, A. (1970). On the Measurement of Inequality" *Journal of Economic Theory*, 2, 244-263.

From this famous work of Atkinson it is known that if one Lorenz curve lies above another over the entire interval (0, 1) then the distribution with the higher Lorenz curve will have unambiguously less inequality (subject to some unrestrictive assumptions about social welfare). Thus, from Figure 3 we can conclude that because the purple Lorenz curve "dominates" the blue curve, inequality in 2014 was higher than it was in 1994 – a result that will also be reflected by any "Lorenz consistent" inequality measure. However, Lorenz dominance is in the real world fairly rare. In many comparisons, across countries and over time, the Lorenz curves cross. In these cases, different indices of inequality can produce different rankings of relative inequality. Suppose, for example, that the Lorenz curves cross once, so that the Lorenz curve for country A is above that for Country B up to some population share β and then below it for the remaining top of the income distribution. This implies that at the point of intersection (β), in both countries the poorest β percent have the same percentage of total income. However, below β percent of the population the poorest have more of total income in country A and above β the poorest have more income in country B. Country A is less unequal at the bottom of the income distribution and country B is less unequal at the top.

5 See Osberg, L. (2017) "On the Limitations of Some Current Usages of the Gini Index" *Review of Income and Wealth*, 63, 574-584.

Osberg provides a discussion. To illustrate consider the case where all inequality is eliminated. The Lorenz curve becomes equal to the egalitarian line and hence the enclosed area equals zero. Conversely as incomes become increasingly unequal the Lorenz curve takes on a reversed "L" shape and the enclosed area approaches one half. If this area is multiplied by two we obtain a measure that lies between zero (no inequality) and one (perfect inequality). This value (the Gini Coefficient) is perhaps the most widely used measure of inequality.

6 Melbourne Institute of Applied Economic & Social Research, 2017. *The Household Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 15*, p.29.

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INEQUALITY
of opportunity

3

Educational inequality in Australia

Associate Professor Laura B. Perry

This chapter explores different forms of educational inequality, how Australia compares to other countries and policy options for reducing inequality.

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Introduction

Education is an essential component of any nation's economic, political, cultural and social development. It is the main vehicle for social mobility for individuals. It develops skills, attitudes and attributes that are essential for creating active, engaged and productive citizens. It is the key to promoting a tolerant, cohesive, prosperous and innovative society.

Education is positively related to many benefits. For example, it is related to superior health and wellbeing, civic outcomes, happiness and self-efficacy.[1] Individuals with higher levels of education tend to be more tolerant of people who are different from themselves, have higher levels of political and civic engagement, earn more money, have better health and wellbeing and live longer. These benefits are passed to the next generation, with parental education positively linked to children's health outcomes, for example. Conversely, low levels of education are related to many negative outcomes. In Australia, low educational outcomes are related to diminished health,[2] unemployment,[3] low wages,[4] social exclusion,[5] crime and incarceration[6] and teenaged pregnancy.[7]

Education helps people to become happier, healthier, and wealthier, which translates to large social and fiscal benefits for communities and the larger society.[8] Higher wages and lower unemployment means a larger tax base, less crime and less public money to be spent on healthcare, social welfare and prisons. It can lead to more economic development, innovation, creativity and social cohesion. It minimises the negative drains on the public purse and leverages positive outcomes.

What is educational inequality?

Schooling is a complex social institution that comprises many dimensions, all of which can influence children and young people's personal and academic development. Due to its complexity, it is handy to conceptualise educational equity (and inequalities) as comprising multiple dimensions. One way to do this is to break down educational equity into opportunities, experiences, and outcomes.

Opportunities

Educational opportunities comprise inputs and resources, structures and access. They include, for example, qualified and experienced teachers, particular forms of curriculum, facilities and resources.

Experiences

Educational experiences are the processes and interactions that occur in schools, such as classroom disciplinary climate, student-teacher relations, teacher expectations, pedagogical practices, and relations with peers.

Outcomes

Educational outcomes are the values, skills, qualifications, attributes and characteristics that schooling develops in young people. They include secondary school completion qualifications, tertiary participation and completion, scores on standardised tests and evaluations, and grades from school-based assessments. Educational outcomes also include cognitive skills such as writing, analysis, critical and creative thinking, and soft skills related to interpersonal communication, emotional and social intelligence, teamwork and intercultural understanding, among others. Finally, educational outcomes include disciplinary knowledge, literacy and numeracy skills, and cultural knowledge. Literacy and numeracy skills are measured by the National Assessment Program – Literacy and Numeracy (NAPLAN), which is administered to all students in Years 3, 5, 7 and 9. Australia also participates in the Programme for International Student Assessment (PISA), which is administered by the Organization for Economic Cooperation and Development (OECD) to a nationally representative sample of 15-year-olds in member countries every three years.

"Schooling is a complex social institution that comprises many dimensions, all of which can influence children and young people's personal and academic development."

Implications of different forms of inequality

Educational outcomes, like any human behaviour or trait, are not equally distributed among individuals. This is normal and natural and not a cause for concern. Some students will be better at math, for example, than their peers, while others

will be better at sports or art or English. These individual differences become inequalities, however, when they are associated with group characteristics, such as gender, ethnicity, first language, social class or geographic location. Group differences are a cause for concern because they suggest that social forces and structures are hindering the development of individuals.[9]

Equity of educational opportunities and experiences are important for two reasons. First, educational opportunities and experiences directly impact on education outcomes. If particular groups of students have inequitable access to qualified and experienced teachers, for example, it is likely that they will have lower educational outcomes than their more educationally privileged peers.[10] At the same time, all students should have equal access to quality learning environments, regardless of whether they impact on their educational outcomes or not. All students, regardless of where they live or go to school, have a right to enjoy supportive relationships with their teachers, or to have a safe and orderly classroom. Thus, ensuring equity of educational opportunities and experiences is important for ensuring equity of educational outcomes, as well as a matter of equity in its own right.

"Most people would agree that the ability to develop to one's potential should not be shaped by parental income, place of residence, or school attended."

Most people would agree that the ability to develop to one's potential should not be shaped by parental income, place of residence, or school attended. At the bare minimum, all students should receive equal opportunities and experiences. To reduce inequalities of education outcomes, socially disadvantaged students may need additional educational opportunities (for example resources and supports) than their more advantaged peers. The problem, however, is that socially advantaged students in Australia often receive *more* educational advantages than their peers.

Educational inequality in Australia

There are three equity groups in Australia. These are the groups of students that consistently experience lower educational opportunities, experiences and outcomes. They are students from lower socioeconomic status backgrounds, Indigenous students, and students who reside in rural/remote areas.[11] These groups often overlap, resulting in compounded educational disadvantage. Thus, the students who experience the highest levels of educational inequality in Australia are low-income Indigenous students who reside in rural/remote communities.[12]

Stark inequalities have been documented for a range of outcomes, such as NAPLAN and PISA, secondary school completion (Year 12), and university participation. A snapshot of educational inequalities is provided below.

NAPLAN

Inequalities in literacy and numeracy outcomes as measured by NAPLAN have been documented. For students in Year 7, Lamb et al[13] found the following inequalities in the proportion of students that achieved the international benchmark on NAPLAN:

- 62 per cent of Indigenous students did not meet the international benchmark, compared to 27 per cent of non-Indigenous students.
- 50 per cent of students whose parents did not complete Year 12 (a proxy for socioeconomic status) did not meet the international benchmark, compared to 13 per cent of students whose parents have completed Year 12.

For students in Year 5 and Year 9, Cobbold[14] found large inequalities on NAPLAN between the children of parents with high and low levels of education. The achievement gaps between Year 5 students from high and low educated parents was the equivalent of more than 2.5 years of learning in reading and approximately two years in writing and numeracy; in Year 9, the gaps were approximately four years in reading and numeracy and 4.5 years in writing.

"Reflecting the compounding of multiple disadvantage, the largest inequalities are found between students from the highest and lowest socioeconomic quartiles."

PISA

Inequalities on NAPLAN are mirrored in PISA. Stable inequalities have been documented in all rounds of PISA and in all three subject domains (reading, mathematical, and scientific literacies). Data from the last round of PISA has uncovered the following inequalities:[15]

- Students that attend schools in provincial and remote communities (representing approximately 25 per cent of students in the PISA sample) have substantially lower scores than their metropolitan peers. This equates to one year and 1.5 years of schooling for provincial and remote students respectively in all three domains.
- Indigenous students have substantially lower scores than their non-Indigenous peers, equating to 2.5 years of schooling for scientific literacy, and 2.3 years of schooling for reading literacy and mathematical literacy. Only 25 per cent of Indigenous students reached the National Proficient Standard in mathematical literacy compared to 57 per cent of non-Indigenous students. Similar proportions were found for reading and scientific literacy, with 32 per cent of Indigenous students reaching the National Proficient Standard compared to 62 per cent of non-Indigenous students.
- Reflecting the compounding of multiple disadvantage, the largest inequalities are found between students from the highest and lowest socioeconomic quartiles. Across all three subject domains, students from the highest SES quartile substantially outperform students from the lowest SES quartile. The equity gap represents almost three years of schooling for all subject domains.

Educational attainment

Inequalities in academic achievement are mirrored in inequalities of educational attainment. For example, the proportion of students that complete secondary school vary substantially:

- 72 per cent of metro, 65 per cent of regional and 36 per cent of remote students complete secondary school in Australia.[16]
- The secondary school completion gap between Indigenous and non-Indigenous students is more than 40 per cent.[17]
- The gap between students from the highest and lowest socioeconomic backgrounds is 28 per cent. Overall, 40 per cent of young people from the lowest socioeconomic backgrounds do not complete Year 12.[18]

University participation and completion

Inequalities of university participation and completion also exist:

- 66 per cent of students from the highest socioeconomic backgrounds (top quintile) enter university, compared to 25 per cent of students from the lowest socioeconomic quintile.[19]
- Australians who reside in large cities are twice as likely to have a university degree than their counterparts in rural communities.[20]

Inequalities of educational opportunities and experiences

Inequalities of outcomes are related to inequalities of educational opportunities and experiences. These include, for example, inequalities in access to experienced teachers, school resources, academic curricula in upper secondary school and classroom disciplinary climate.

Data from PISA has shown that schools in rural communities face greater challenges than their metropolitan counterparts. One of their largest challenges is recruiting and retaining teachers. School principals report that teaching shortages hinder student learning, with 83 per cent of principals in small rural communities reporting that a lack of mathematics teachers hinders instruction to some extent or a lot, compared to only 17 per cent of principals in communities close to the centre of a very large city.[21]

Of all OECD countries, Australia has one of the largest gaps in the shortage of teachers between urban and rural schools.[22] Inequalities of instructional materials have also been documented, with 50 per cent of principals in small rural communities and 40 per cent of principals in small country towns reporting that a shortage of instructional materials hinders instruction in their school to some extent, compared to eight per cent of principals in schools located in inner suburbs of capital cities.[23] On the other hand, students in rural and metropolitan schools report similar levels of support from their teachers,[24] which is a reassuring finding.

Data from PISA has also uncovered between-school inequalities of educational opportunities and experiences between schools with different socioeconomic compositions. Australia has the largest gap in the shortage of teachers between disadvantaged and advantaged schools among all OECD countries.[25] Disadvantaged schools in Australia also have far fewer educational materials (books, facilities, laboratories) than high SES schools.[26] This gap is the third largest in the OECD, with only Chile and Turkey showing larger inequalities between schools. Large inequalities in students' educational experiences have also been found between advantaged and disadvantaged schools, particularly in regards to classroom disciplinary climate, teachers' use of stimulating instructional strategies, and supportive relationships with teachers.[27]

"Even some core academic subjects, such as literature and advanced mathematics, are not offered in all high schools. They found that nine per cent of low SES schools offer English literature, physics, chemistry and advanced mathematics, compared to 100 per cent of high SES schools."

Finally, between-school inequalities in access to academic curricula in senior secondary school (Year 11 and 12) exist in Australia. Access to a wide range of academic curriculum offerings in upper secondary school is substantially greater in higher SES school contexts than in disadvantaged schools.[28] Even some core academic subjects, such as literature and advanced mathematics, are not offered in all high schools. They found that nine per cent of low SES schools offer English literature, physics, chemistry and advanced mathematics, compared to 100 per cent of high SES schools.[29] Between-school curricular inequalities exist between rural and metropolitan schools as well. Rural schools, on average, offer half as many academic subjects as do larger secondary schools in metropolitan areas.[30] Access to STEM subjects, especially advanced mathematics, is especially inequitable. In Victoria, for example, only 30 per cent of rural public schools and 65 per cent of metropolitan public schools offer advanced mathematics.[31]

Curricular inequalities are problematic for multiple reasons. First, they present substantial barriers for students who are unable to reside in an affluent community or pay fees to attend a non-government school, contradicting Australia's social commitment to provide a "fair go". Second, these barriers reduce the country's ability to increase secondary students' participation in science, technology, engineering and mathematics, a key policy objective of the Australian Government's innovation agenda.[32] Third, curricular inequalities exacerbate the social segregation of schools, which leads to further educational inequalities. This is because middle-class/professional families often choose a secondary school based in part on the school's offerings. Well-off rural families, for example, often send their children to board at private schools in capital cities, in part because of limited curricular offerings in the local school.[33] This drift can reduce the local school's ability to offer a solid range of academic curricular offerings, and thus the vicious cycle of school residualisation and educational disadvantage continues.

How to reduce educational inequalities?

Inequalities of educational outcomes are the result of home/community factors and school factors. Home factors play the largest role, but school factors are also important. Social disadvantage at home reduces parent and care-givers' capacity to support children's school learning.[34] School factors play a larger role as youths progress through the education system. By Year 3 in primary school, the relationship between school disadvantage and academic outcomes is just as strong or even stronger than family disadvantage in predicting literacy scores.[35] These findings show that schools can ameliorate educational inequalities that are the result of social disadvantage.

Because educational inequalities are partly the result of social disadvantage, one way to reduce inequalities of outcomes is to reduce poverty.[36] This is a long-term solution that takes much time, effort, and political will. It is an effective investment, however, because it disrupts the vicious cycle of social disadvantage and educational disadvantage.

In the short term, schools and education authorities can implement strategies that have been shown to improve the educational outcomes of disadvantaged students and schools. This approach is essential, but it rarely leads to large and sustained improvements.[37]

The most effective approach for reducing inequalities of educational outcomes is to reduce social segregation between schools.[38] Segregated schooling, which occurs when socially advantaged students are segregated into some schools and socially disadvantaged students are segregated into other schools, is neither efficient nor effective. It is associated with lower outcomes for students in the disadvantaged schools, and at the same time, is not associated with higher outcomes for students in advantaged schools. Evidence for this claim can be seen by comparing PISA scores for Canada and Australia.[39] Canada has one of the least segregated schooling systems in the OECD, and Australia has one of the highest. Advantaged students have the same performance on PISA in the two countries, but low SES students perform substantially better in Canada than in Australia.

"The most effective approach for reducing inequalities of educational outcomes is to reduce social segregation between schools. Segregated schooling...is associated with lower outcomes for students in the disadvantaged schools, and at the same time, is not associated with higher outcomes for students in advantaged schools."

Conclusion

While schooling in Australia is generally considered high-quality, educational disadvantage and inequality are a cause for concern. Inequalities of educational outcomes in Australia are of a similar magnitude to those of the US, and are greater than in the UK or Canada.[40] This is a striking finding, and one that is perhaps surprising given our national identity as an egalitarian society that gives everyone a fair go.

The costs of educational underachievement and disengagement are large, for individuals but also for the larger society. According to the[41] OECD 17 per cent of Australian young people leave secondary school without achieving basic educational skill levels. The OECD report estimates the total economic benefit out to 2095 of ensuring that there is universal enrolment in secondary school and all students achieve basic skills by 2030. It finds that the economic benefit for Australia is equivalent to 130 per cent of the nation's current gross domestic product in 2015 terms. Put another way, GDP would be 11 per cent higher in 2095 than if the education system did not achieve these outcomes. They conclude that eliminating school underperformance would reap enough fiscal benefits to pay for the country's entire school system.

Similarly, Lamb and Huo[42] modelled the fiscal and social costs to Australian society of early school leaving and lifetime disengagement. Their results are staggering, with an estimated lifetime fiscal cost of $12.6 billion and social cost of $23.2 billion (at the 2014 net present value) for early school leaving. As many early school leavers do not find stable employment later in life, they also estimated the costs to society of lifetime disengagement. These costs are even higher: $18.8 billion in lifetime fiscal costs and $50.5 billion in social costs.

> "…17 per cent of Australian young people leave secondary school without achieving basic educational skill levels...eliminating school underperformance would reap enough fiscal benefits to pay for the country's entire school system."

Investing in high achievement and productive school experiences for all students not only reduces costs but also increases opportunities for national development. At the end of WWII, Korea had an agrarian economy with low levels of literacy. The nation invested heavily in schooling, which in turn facilitated the development of industry and manufacturing. South Korea now has some of the highest educational outcomes in the world,[43] as well the world's most innovative economy.[44]

Investing in strong educational opportunities and outcomes for all students, not just a segment, is especially important for small countries. For large countries like Germany or the US the economic costs of having inequitable education systems can be more readily off-set. Their large populations, dynamic economies, advanced industrial and technological prowess, and sophisticated research and development infrastructure ensure that they have enough human capital to be

economically competitive. Small countries, however, do not have the luxury of maintaining inequitable schooling. If they want to be internationally competitive, as well as prosperous and harmonious, they need to develop as fully as possible the talents of all their young people, not just a few.

Clearly there is a public policy imperative to reduce educational inequalities in Australia. Reducing educational inequalities will lead to increased educational effectiveness and efficiency.[45] Solutions are not easy, but they are not impossible, as the experiences of other countries show. The first step is for policy makers to commit to achieving educational equity, putting it at the forefront of any policy discussion or objective.

"Clearly there is a public policy imperative to reduce educational inequalities in Australia. Reducing educational inequalities will lead to increased educational effectiveness and efficiency."

Two steps are necessary to reduce educational inequality. The first is to provide extra support to low performing, socially disadvantaged students and schools. However, improving teaching and learning in socially disadvantaged schools is difficult, expensive and hard to sustain. For this reason, it is also important to reduce the number of socially disadvantaged schools, which means reducing social segregation between schools. School segregation is problematic because it is related to educational inequalities between schools. These inequalities then lead to further segregation, creating a vicious cycle of stunted learning and wasted opportunity. Put another way, educational inequalities between schools are both a cause and a consequence of school social segregation.

School funding is an important lever for reducing educational inequality. Needs-based school funding is crucial for addressing the additional challenges that socially disadvantaged students and schools face. However, needs-based funding is not sufficient. Even more importantly, school funding formulas can be designed to reduce, not increase, qualitative differences between schools in terms of their resources and facilities. This in turn will reduce school social segregation. Finland, which outperforms Australia on PISA, reduced school stratification and segregation more than 40 years ago by reforming its school funding mechanisms. Other high performing countries such as New Zealand, Canada, the UK and Ireland have also reformed their school funding mechanisms to reduce educational inequalities while also promoting diversity of educational offerings. These experiences can provide insights about ways to promote educational choice and diversity while also improving educational equity and effectiveness.

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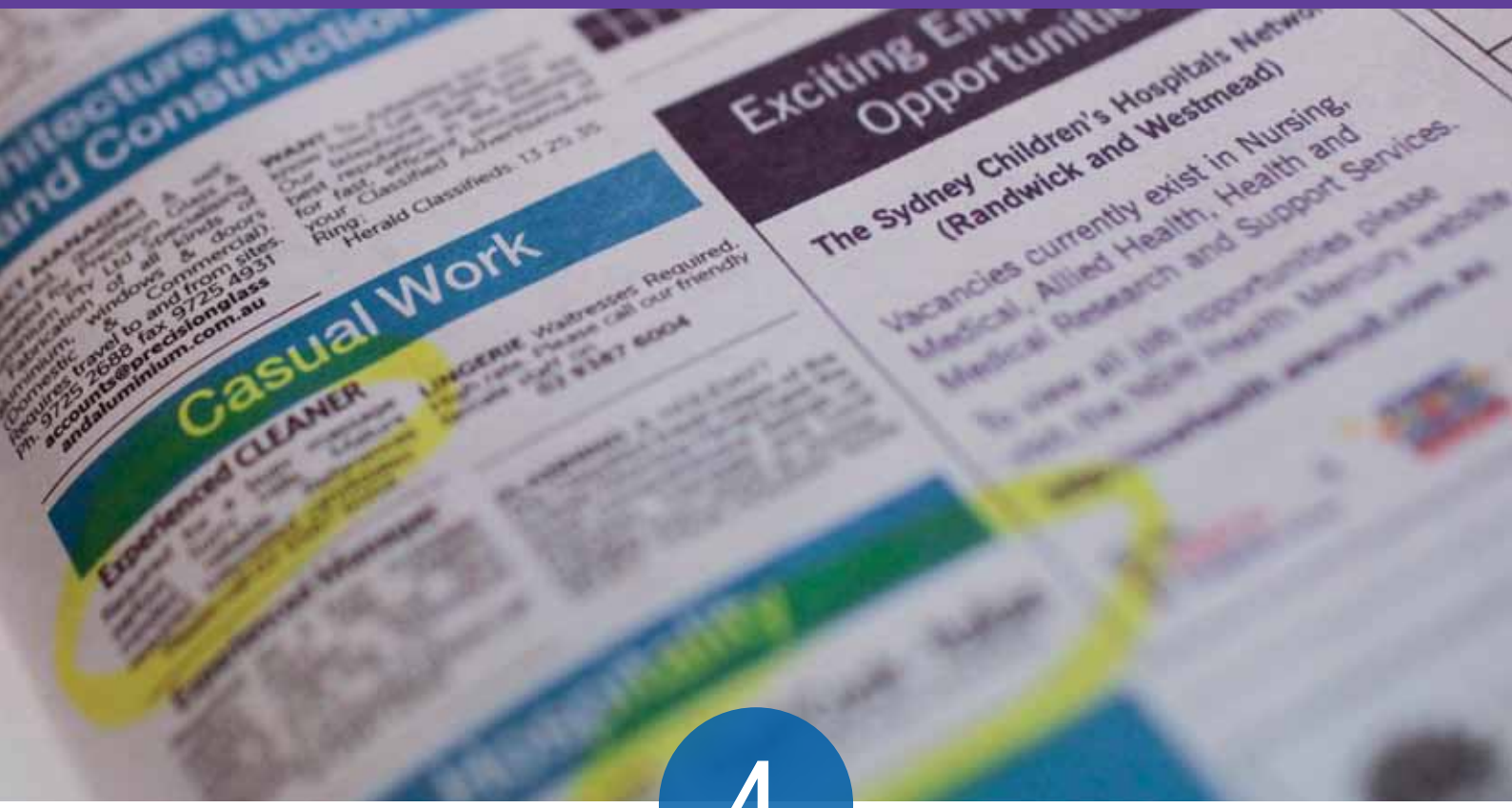


4

Inequality in the workplace

Professor Alison Sheridan

This chapter explores inequality in the workplace, with a particular focus on gender inequality.

Professor Alison Sheridan is a Professor of Management at the UNE Business School, University of New England. She has written extensively on gender and the workplace. Her recent co-edited book, *Inclusive Leadership; Negotiating Gendered Spaces*[1] reflects her continued interest in enabling more inclusive workplaces. She is currently on the executive of the Gender and Diversity in Organizations (GDO) Division of the US Academy of Management, she is a Life Fellow of the Australian and New Zealand Academy of Management (ANZAM) and a Principal Fellow of the Higher Education Academy.

Introduction

2017 saw renewed attention on questions of inequality in the Australian workforce, particularly the reasons for the national gender pay gap. The gender pay gap measures the difference between women's and men's average full-time equivalent earnings, expressed as a percentage of men's earnings. In 2017, Australia's gender pay gap was 15.3 per cent. This means men still take home $26,527 a year more than women on average.[2]

That men out earn women in every industry and across all occupations is not a new story. Wage inequality has grown steadily since 1982.[3] But in 2017 we once again saw how the personal is political. While the gender pay gap has been an enduring feature of the Australian labour market, it gained more attention in 2017 as the abstract statistics came to life through high profile cases of women in media being paid significantly less than their male counterparts. On top of this, the revelations of sexual harassment by powerful men in the film industry in the US quickly gained traction internationally through the #MeToo social media campaign, outing the systemic nature of sexual harassment.

In making sense of inequality in the workplace and heeding the potency of the personal as political, there is merit in considering the aggregate statistics as well as the individual experience.

Inequality regimes

National data distinguishing women's and men's employment point to the enduring inequality between these two categories in the paid workforce, as do the powerful stories told. Patterns of employment for other groups may not be quite as accessible from the national statistics, nor have they attracted as much media attention, but they, too, contribute to inequality in our labour market.

Lower participation rates, clustering in low skilled, low paid and/or casual work, assumptions about who should do what work are also evident for other groups – people with a disability; people with mental health conditions; disadvantaged youth and Indigenous Australians.[4]

Across the OECD, individuals with a disability have lower rates of participation in the paid labour market than those without one, with health problems being a significant barrier to labour force participation. With only 40 per cent of those with a disability participating in the labour market, Australia performs poorly compared to other OECD countries. While the employment rate for the Australian working-age population as a whole rose by five per cent over the past two decades, there has been no improvement in the participation rates for those with a disability over the same period.

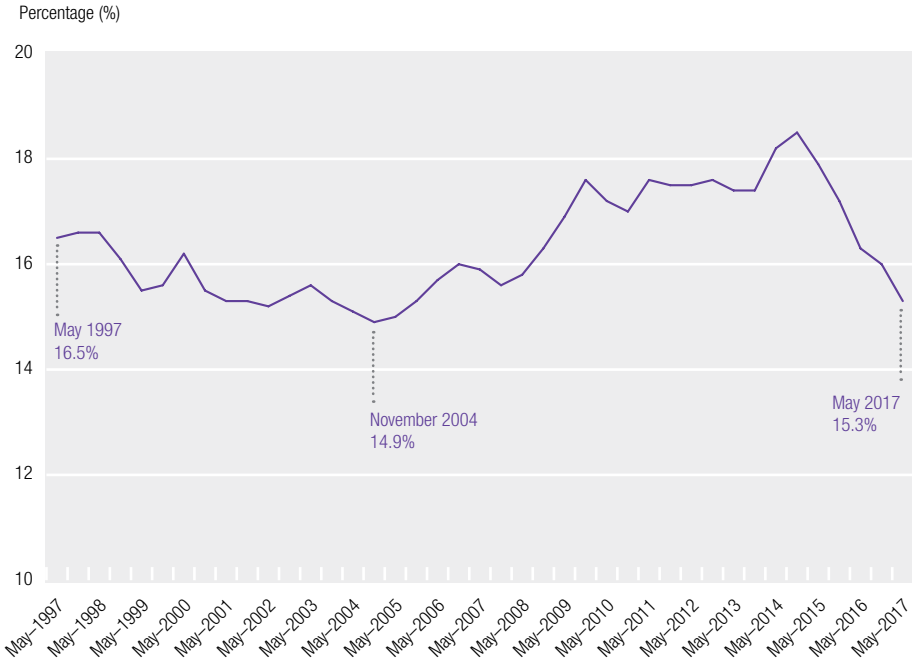
"Across the OECD, individuals with a disability have lower rates of participation in the paid labour market than those without one...(but) Australia performs poorly compared to other OECD countries."

Australia also performs poorly relative to other OECD countries with respect to the workforce experiences of those with mental health problems. The unemployment rate for those with mild-to-moderate mental health problems is 2.5 times higher than for those with no mental ill-health, while for those with severe mental health problems, their unemployment rates are five times higher.[5]

Indigenous Australians have a low employment rate compared to non-Indigenous Australians.

While the focus for the remainder of this article is on gender, that these categories are not exclusive is an important point to recognise. If economic and social inequality are to be addressed, we need policy makers to recognise the complex, mutually reinforcing nature of these categories to develop comprehensive policy responses. Recent work has demonstrated that reducing gender wage gaps can increase economic prosperity for all.[6]

FIGURE 1
THE AUSTRALIAN GENDER PAY GAP, MAY 1997-MAY 2017



Source: WGEA 2017

Gender pay gap

Economic and social inequality in Australia is fostered in workplaces, in the day to day activities of working and organising work. In spite of long standing anti-discrimination laws, and the significant increase in women's participation rates in the paid workforce over the past 40 years, we continue to see inequality played out in the workplace.

Australia prides itself on giving people a fair go, yet at least one measure makes Australia look not so fair – the gender pay gap. While other countries have reduced their gender pay gap over the past two decades,[7] Australia's gender pay gap has proven remarkably enduring (see Figure 1).

As can be seen in Table 1, the representation of women across industries has remained relatively stable over the past 20 years. As more women have entered the paid workforce, there have been small increases in women's representation across most industries, but we have not seen major disruptions to the patterns characterising our labour market. Structural inequality remains a feature of our workplaces.

"Australia prides itself on giving people a fair go, yet at least one measure makes Australia look not so fair – the gender pay gap...Australia's gender pay gap has proven remarkably enduring."

TABLE 1
FEMALE SHARE OF WORKFORCE BY INDUSTRY

Industry	Female employees 1997 percentage	Female employees 2017 percentage	Gender dominance (2017)
Health care and social assistance	77.2	78.6	Female-dominated
Education and training	66.2	71.3	Female-dominated
Retail trade	55.2	56.2	Mixed
Accommodation and food services	53.4	56.3	Mixed
Financial and insurance services	45.1	50.3	Mixed
Rental, hiring and retail services	46.4	52.7	Mixed
Administrative and support services	51.7	52.5	Mixed
Public administration and safety	41.7	44.9	Mixed
Arts and recreation services	48.5	46.4	Mixed
Information media and telecommunications	39.5	44.0	Mixed
Other services	37.7	44.5	Mixed
Professional, scientific and technical services	42.7	45.0	Mixed
Agriculture, forestry and fishing	30	30	Male-dominated
Wholesale trade	31.6	30.8	Male-dominated
Manufacturing	27.7	26.1	Male-dominated
Transport, postal and warehousing	22.1	21.7	Male-dominated
Electricity, gas, water and waste services	16.5	21.4	Male-dominated
Mining	10.8	16	Male-dominated
Construction	12.6	10.6	Male-dominated

Source: ABS (2017) *Labour Force, Australia, Detailed, Quarterly*, Nov 2017 cat no. 6291.0.55.00, viewed 6 February 2018

Inequality in organisations reflects systemic disparities between participants in terms of power and control over goals, resources and outcomes; control over how to organise work; promotion opportunities and access to engaging work; security in employment and conditions; and differences in remuneration and other rewards.[8] The gender pay gap is a potent symbol of inequality.

Causes of this inequality are diverse, not least being the entrenched views on who should do what sort of work, and how work is valued. Gender segregation, both horizontal and vertical, remains a feature of the Australian labour market.

TABLE 2
FEMALE SHARE OF WORKFORCE BY OCCUPATION

Occuaption	Female employees 1997 percentage	Female employees 2017 percentage	Gender dominance (2017)
Clerical and administrative workers	75.6	73.7	Female-dominated
Community and personal service workers	66.0	69.8	Female-dominated
Professionals	47.7	54.8	Mixed
Sales workers	61.8	60.7	Mixed
Machinery operators and drivers	13.1	9.35	Male-dominated
Technicians and trade workers	12.5	15.3	Male-dominated
Managers	28.5	37.7	Male-dominated
Labourers	34.7	35.2	Male-dominated

Source: ABS (2017) *Labour Force, Australia, Detailed, Quarterly*, Nov 2017 cat no. 6291.0.55.003, viewed 6 February 2018

Horizontal segregation occurs when there is an over- or under-representation of women and men in certain occupations and industries (glass walls), while vertical segregation concerns the imbalance between men and women in leadership roles (glass ceiling).

The remuneration and rewards found in the industries where women dominate are less than those in which men dominate.[9] Changes to the Australian economy since the 1980s have reinforced these patterns. The deregulation of the financial sector prompted large capital flows into this sector, leading to a significant expansion of credit, fuelling property and resource booms.[10] The growth in these sectors in absolute terms has been significant, and importantly, we have seen the distribution of wages within these sectors become dramatically more unequal. For instance, with women clustered at the lower levels, and men dominating the top levels, the gender pay gap is now highest (29.6 per cent) in the finance and insurance services industry.[11] The gender wage gap has also increased in the mining orientated state of Western Australia.

"The remuneration and rewards found in the industries where women dominate are less than those in which men dominate. Changes to the Australian economy since the 1980s have reinforced these patterns."

Women now make up over 46 per cent of the paid labour force in 2017, but as seen in Table 2, they are still heavily concentrated in the clerical and administrative, sales and community and personal service occupations, which are not renowned for being fertile training grounds for future managers, nor for their hefty salaries. Clerical and administrative roles have also been identified as susceptible to automation and computerisation, increasing the potential of future job dislocation and further disparity.[12]

The occupations in which men still dominate are: managers; tradespersons and related workers; and labourers and related workers. As can be seen in Table 2, occupational shifts appear to have occurred more in the 'mixed-sex occupations' such as professionals, rather than those occupations which have traditionally been male- or female-dominated. Women's increasing education levels have underpinned their rise in the professionals' occupation.

The efforts of bodies such as the Workplace Gender Equality Agency (WGEA)[13] to support business to attract and retain more women to the more highly-paid male-dominated occupations has positively influenced their representation in management roles, but women remain under-represented in these roles.

As the traditionally "female" and relatively poorly paid occupation of community and personal service workers has grown in absolute numbers, women's share has also continued to increase, preventing a narrowing of the gender wage gap.

Working hours

Working hours are another factor impacting income inequality, with a disproportionate representation of women in part-time roles.[14] Women still bear most of the unpaid domestic work[15] and this is evident in their working patterns, with 81.5 per cent of employed men working full-time compared to 53.7 per cent of employed women.[16] This is most acute for working mothers. OECD analysis indicates that in Australia 45 per cent of partnered working mothers (aged 25-45 years) work part-time, with 80 per cent of them citing family reasons for doing so. The pattern of working hours in Australia is far more polarised than many countries, with a relatively high incidence of very short weekly hours (15 or less) among female part-time workers and very long weekly hours (50 or more) among male full-time workers. The male breadwinner and female carer stereotypes are entrenched.

"As the traditionally 'female' and relatively poorly paid occupation of community and personal service workers has grown in absolute numbers, women's share has also continued to increase, preventing a narrowing of the gender wage gap."

The disadvantage suffered by those working part-time has been compounded by the shift to more casual and contingent contracts evident in the Australian economy through the 1990s and which has remained a feature of our labour market. There are job quality consequences of this gendered polarisation of work hours, with those sectors with higher rates of part-time and casual work being found in low skilled service occupations. The precariat[17] has a gender dimension.

The personal is political

These patterns of gender segregation and pay gaps are not new and attention to these matters from policy makers has peaked and troughed at different times over the past two decades. But in 2017 we saw the spotlight well and truly drawn to gender pay disparities when the stark differences between what women and men are paid in key media roles in the United Kingdom and Australia emerged.

"But in 2017 we saw the spotlight well and truly drawn to gender pay disparities when the stark differences between what women and men are paid in key media roles in the United Kingdom and Australia emerged."

What began in the UK as revelations of the gender pay gap for high profile media presenters, took on a very visible face here in Australia with the resignation by *Today* show host Lisa Wilkinson as she sought to negotiate with her bosses equal pay to her male colleague, Karl Stefanovic. The ensuing public debate through social media made it clear that the inequality regimes evident in the media organisations were not unique. Across the country, claims were being made that equal work was not recognised through equal pay and that inequality was alive and well. Press clips such as the following connected the abstract to the lived experience.

> "The real point is that the pay gap at Today fits into a broader pattern. ….We know it's the same at the BBC and for women in Hollywood. And we know it's true for chief executives and senior business leaders because corporate salaries for listed companies need to be disclosed to shareholders.
>
> Now, you might think 'So what? These people are rich, or at least wealthy'.
>
> But it's not just true for elites. Workplace Gender Equality Agency figures show female graduates earn four per cent less than their male peers in the same jobs, and the gap widens as women progress up the career ladder."[18]

The exposure of endemic sexual harassment in Hollywood through the #MeToo campaign and the personal stories shared, focused the spotlight on unequal power relations between men and women more generally. The wider media coverage has included stories from diverse workplaces, where women in low paid and or tenuous roles with limited economic agency or career security are now speaking out about the practices reinforcing the inequality. These stories are making visible the experiences of inequality in the workplace. Whether these will lead to systemic change is yet to be determined.

Reducing inequality has a positive impact

The introduction of equal pay legislation in the late 1960s and early 1970s helped to address direct discrimination, but imbalances in gender representation across occupations and industries in Australia are still striking. Recent high-profile cases in the national media have brought these to life.

Reducing segregation has the advantage of increasing labour force participation and the pool of talent available to employers, which in turn encourages worker effort, spurs innovation and enhances productivity. Just as additional investment in female education can increase human capital and so help to minimise gender income differentials across mixed occupations and industries, policies targeted toward directly narrowing existing wage gaps and systemic inequality are worthwhile in their own regard.

> "Until we address the fundamental problem of the undervaluing of traditionally 'female' work and occupations, achieving a more equal distribution of women and men in these and increasing the participation rates of disadvantaged groups in the labour market, Australia's dismal record in addressing the inequality regimes in our workplaces will continue, with a real cost to national productivity."

Until we address the fundamental problem of the undervaluing of traditionally "female" work and occupations, achieving a more equal distribution of women and men in these and increasing the participation rates of disadvantaged groups in the labour market, Australia's dismal record in addressing the inequality regimes in our workplaces will continue, with a real cost to national productivity.[19]

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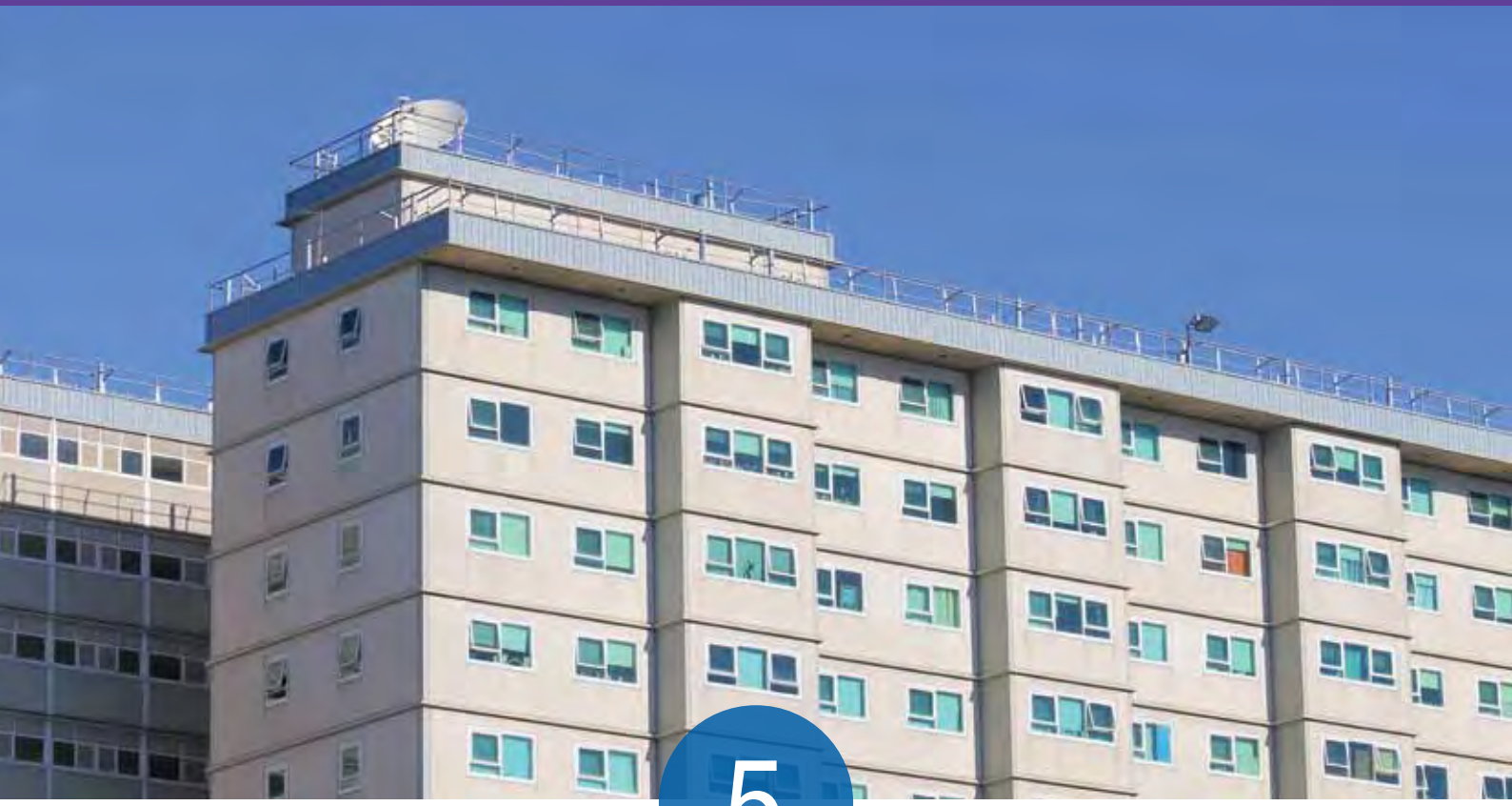

5

Geographical inequality

Patricia Faulkner AO

This chapter outlines how Australia is performing in terms of place-based disadvantage, the implications of this and required policy responses.

Patricia Faulkner is Chairman of Jesuit Social Services. Patricia's career has spanned the most senior levels of the public and private sectors. She has been a CEO of large and complex government departments and a partner in major advisory firm KPMG. She now has a portfolio of board and advisory roles, both as chairman and member.

Patricia was awarded an Order of Australia in June 2008 for her services to the field of health and social policy; and a Centenary Medal in 2002 for services to public administration. Patricia was awarded the degree of Doctor of Laws honoris causa by Monash University in 2013. Her current appointments include Member, CEDA Board of Directors; Deputy Chairman, St Vincent's Healthcare Australia; Chairman, Telecommunications Industry Ombudsman; Chairman, Melbourne Racing Club Foundation; Member, Melbourne Racing Club Committee; Member, Melbourne Theatre Company Board; Member, Ministerial Advisory Committee on Palliation Services; Member, Catholic Professional Standards Ltd; Member/Trustee, VicSuper.

Place-based disadvantage

Despite 26 years of uninterrupted economic growth Australia still has large pockets of disadvantage across the country, with 13 per cent of Australia's population living below the poverty line.[1]

Geographical inequality can be thought of as the relative rates of inequality within regions and how they compare. For example, Australian cities generally have higher rates of inequality within them than regional areas.[2]

More importantly, it can be about the relative rates of social and economic development between different geographical areas right from the state, region, postcode and neighbourhood level.

Previous research commissioned by Jesuit Social Services and Catholic Social Services shows that entrenched poverty and disadvantage is geographically concentrated. For example, in New South Wales just 37 postcodes account for almost 50 per cent of the greatest disadvantage in the state for indicators such as unemployment, domestic violence, criminal convictions and disengaged young adults.[3]

As this cohort of people becomes increasingly disenfranchised, costs to government also increase in terms of law enforcement, the justice system and health. The geographic concentration of disadvantage also means that people in these communities lack the basic security and cohesion that exists in more affluent postcodes.

The disparate and often inadequate systems of support across multiple levels of government have not had the required impact to lift people in these communities out of poverty. It is clear that substantial investment in integrated support delivered at a local level is required. The most vulnerable in our society will not succeed without broad and intensive support. Nor will they succeed if the welfare system punishes them for not being in work.

"The disparate and often inadequate systems of support across multiple levels of government have not had the required impact to lift people in these communities out of poverty."

This form of inequality is particularly important when one considers the work of Wilkinson and Pickett in *The Spirit Level: Why equality is better for everyone*. The authors find that the more unequal a rich country is, the worse it performs across a range of areas including mental health, drug use, imprisonment and status of women. This is because inequalities erode social capital and the cohesion between members of a society. As a society we should be seeking to avoid this outcome, which most often manifests itself at a very localised level.

This chapter will outline how Australia is performing in terms of place-based disadvantage, the implications of this and how policy makers and other groups should respond in future to better address place-based disadvantage at its core.

How is Australia performing? Findings from *Dropping off the Edge*

Since 1999, Jesuit Social Services and Catholic Social Services Australia have been commissioning research into place-based disadvantage, with four reports undertaken by the late Professor Tony Vinson.

The most recent report, *Dropping off the Edge*, in 2014 provides a picture of the extent to which place-based disadvantage is entrenched. It provides the most comprehensive study of this form of entrenched place-based inequality.

For each state and territory, the research reports on 22 indicators of locational disadvantage. This includes social distress, health, community safety, economic and educational dimensions of disadvantage. The data is disaggregated at the Statistical Local Area (SLA) (Queensland, South Australia and Northern Territory), Local Government Area (LGA) (Western Australia and Tasmania) and postcode level (NSW, Victoria and ACT).

Reflecting the often-entrenched nature of location-based disadvantage, a major theme of *Dropping off the Edge 2015* is the consistency with which localities identified as extremely disadvantaged in 2015 resemble those similarly ranked in earlier studies. This is especially true of the localities comprising the two top bands (12 most disadvantaged places) derived by a statistical tool that captures what the indicators have in common.

The second way of gaining an overall picture of disadvantage is to simply count the number of times each location fills one of the highest-ranking spots on each of the 22 indicators. Generally speaking, a ranking in the top five per cent of results is considered a high ranking. The two methods produced similar results but with some variations reflecting diverse political, demographic, economic and social landscapes across the different jurisdictions. Nevertheless, the data permits some significant messages to be read on a jurisdiction by jurisdiction basis.

In every jurisdiction there is a marked degree of spatial concentration of disadvantage, as evident in Table 1.

The concentration of disadvantage can be illustrated clearly when we compare the rate of occurrence of various indicators within the three per cent most disadvantaged localities versus the remaining 97 per cent in each jurisdiction.

Normally a doubling of the rate of an occurrence within a locality would be considered a notable outlier. In the case of juvenile offending in Victoria, a state with an acknowledged overall modest rate, the ratio favouring the general community was almost three-and-a-half times less than the three per cent most

TABLE 1
SUMMARY OF FINDINGS FROM *DROPPING OFF THE EDGE*

State or Territory	Concentration of disadvantage	Dominant characteristics of mutilply-disadvantaged locations	Level of entrenchment
New South Wales	37 postcodes (six per cent) account for 49.5 per cent of the most disadvantaged rank positions	• Criminal convictions • Access to internet • Unemployment • Domestic violence • Lack of qualifications • Young adults disengaged • Limited education	24 of the 40 most disadvantaged postcodes were the same as the 2007 study
Victoria	27 postcodes (four per cent) account for 28.2 per cent of the most disadvantaged rank positions	• Unemployment • Criminal convictions • Disability • Long-term unemployment, prison admissions • Child maltreatment, low family income, rental assistance • Family violence, psychiatric hospital admissions	Nearly half of the 40 most disadvantaged postcodes were the same as the 2007 study
Queensland	Six per cent of SLAs account for nearly 50 per cent of the most disadvantaged rank positions	• Youth disengagement • Long-term unemployment • Prison admissions • Low family income • Access to internet	More than half of the 40 most disadvantaged SLAs were the same as the 2007 study

…continued overleaf

TABLE 1
SUMMARY OF FINDINGS FROM *DROPPING OFF THE EDGE*...CONT

State or Territory	Concentration of disadvantage	Dominant characteristics of mutilply-disadvantaged locations	Level of entrenchment
South Australia	5.5 per cent of SLAs account for 57 per cent of the most disadvantaged rank positions	• Unemployment • Poor education levels • Long-term unemployment • Criminal convictions • Young adults disengaged	31 of the 40 most disadvantaged SLAs were in the top six bands of disadvantage
Tasmania	Just six LGAs (21 per cent) accounted for 80 per cent of the most disadvantaged rank positions	• Young adults disengaged • Unemployment, low family income • Contact with justice system • Disability	N/A
Western Australia	4.3 per cent of LGAs account for 28.6 per cent of the most disadvantaged rank positions	• Access to internet • Young adults disengaged • Poor education levels • Prison admissions • Low family income • Unemployment	N/A
Northern Territory	25 per cent of SLAs account for nearly 47 per cent of the most disadvantaged rank positions	• Access to internet • Young adults disengaged • Poor education levels • Prison admissions • Low family income • Unemployment • Unskilled workers • Lack of qualifications • Domestic violence • Criminal convictions	N/A
Australian Capital Territory	Five postcodes (19 per cent) account for 49 per cent of the most disadvantaged rank positions	• Rental assistance • Poor education levels, long-term unemployment • Low family income, internet access, limited work skills, disability, unemployment	N/A

Source: *Dropping off the edge*, 2015. Available: https://dote.org.au/findings/

disadvantaged group. These differences were by no means extreme in comparison with some of the other jurisdictions. For example, in Western Australia, the proportion of prison admissions was eight times greater in the top three per cent localities, and approximately five-to-six-times higher with respect to both unemployment indicators, and also young people not engaged in work or study and low overall level of education.

While these numbers illustrate a lost opportunity to engage people in disadvantaged areas to make a positive and valuable contribution to the community, they also illustrate the human cost of inaction. These numbers represent people with hopes, dreams and aspirations caught up in a complex web of disadvantage without the tools or the support to flourish. When this is the case, our society is poorer for the loss.

The implications of Australia's current performance

Costs to governments and communities

The costs of concentrated geographic disadvantage to government and the community are likely to be significant. Despite this, there have been no comprehensive attempts to estimate the costs in Australia.

A picture emerges from separately estimated costs of poor outcomes that often emerge from geographic disadvantage. For example, the costs of crime in Victoria in 2009–10 alone were estimated to be $9.8 billion, equivalent to $1678 per person or 3.4 per cent of that state's Gross State Product.[4] KPMG has also estimated that the total cost of violence against women and their children in Australia was $22 billion in 2015–16.[5]

Future approaches to addressing geographical inequality

Given the results of the studies previously cited, at an aggregate level it is clear that previous government policies and programs have not worked and there has been ongoing underinvestment in the safety net and coordinated measures to lift the most disadvantaged out of poverty.

Reducing this form of disadvantage requires governments to shift away from fragmented policies and programs, which seek to address individual symptoms of the bigger problem. Instead, there is a need for more integrated solutions that address the multitude of causal factors at the local level and make a substantial investment in lifting people out of entrenched disadvantage.

Addressing this problem is not simply about income or increased benefits. It is a problem that requires comprehensive, integrated and intensive support programs at the local level. A number of areas are outlined below where governments will need to shift current approaches and thinking if they are to make meaningful progress on reducing locational disadvantage.

Place-based approaches

As a starting point, policies and programs to address entrenched locational disadvantages need to be targeted at the local level – both in their development and implementation. There are already examples of these approaches being successfully applied in Australia that can be drawn upon in designing future interventions.

"As a starting point, policies and programs to address entrenched locational disadvantages need to be targeted at the local level – both in their development and implementation."

Neighbourhood renewal

In 2001 the Victorian Government launched a Neighbourhood Renewal Program that expanded to cover 19 locations across Victoria. The approach to the program built upon UK experience with the Employment Zones project, which sought to address persistent long-term unemployment in some locations in the UK.

Neighbourhood renewal is a cross sector approach to tackling entrenched disadvantage at a local level. It focused on lifting community participation, employment, education and training, housing and physical environment, improving safety and reducing crime, promoting health and wellbeing, and increasing access to services.[6] It included aspects such as:

- dedicated neighbourhood teams to deal with worklessness including a place manager, community development worker, and employment and learning coordinator;
- regional partnerships between regional offices of state government departments, local schools, police, local businesses, community groups, service providers and residents;
- intensive and individualised support for long-term unemployed people;
- community hubs where people can meet, interact and access required support services;
- social enterprises providing supported work and training pathways for residents;
- early interventions in schools for disengaged youth; and
- technology initiatives.

In its evaluation of the program in 2008, the Department of Human Services found that compared to surrounding neighbourhoods, the gap on measures of disadvantage had either stopped growing or narrowed on 76 per cent of the indicators for renewal areas.[7] A separate study found that the program improved trust in government, improved perceptions of influence and control over community decisions and led to improved services.[8]

Such programs may also enhance the long-term wealth of residents. A study prepared for the Australian Housing and Urban Research Institute using a quasi-experimental methodology for evaluating urban renewal programs found a statistically significant price premium within five out of seven neighbourhood renewal program areas in Victoria.[9]

Growing Brimbank

Another example of a place-based approach is evident in *Growing Brimbank*, which is a partnership between the Australian Health Policy Collaboration at Victoria University and the City of Brimbank, focused on strategies to improve health and education outcomes in Brimbank.[10] The City of Brimbank includes the cities of Keilor and Sunshine.

The *Brimbank Atlas of Health and Education* and the *Physical Activity, Sport and Health in the City of Brimbank* reports provide a baseline of how its health, education and social characteristics compare against national, state and Melbourne averages. The baseline data gives an appreciation of where Brimbank has both challenges and strengths compared to the rest of the population. For example, in terms of particular challenges that it faces as a community:

- Rates of disability are higher than for Melbourne and Australia.
- Crime rates are higher than for Melbourne or Victoria.
- Unemployment is higher than Melbourne and Australian averages.
- Twice as many residents did not have access to the internet at home compared to the Melbourne average.
- It has a higher infant mortality rate compared to Melbourne averages.
- The prevalence of obesity is higher than for Melbourne, male smoking rates are higher than for Melbourne or Australia and the proportion of residents who consume the recommended daily serve of fruit and vegetables is lower than for Melbourne or Victoria.

This baseline data and ongoing monitoring and evaluation will be used to guide evidence-based interventions aimed at improving health and education outcomes. It is also being developed as a beacon site for other disadvantaged communities.

Implementing place-based approaches

Building on the previous work of the Social Inclusion Board,[11] there are a number of steps that governments can take to provide a framework for location-based initiatives, including:

- using detailed data sets to fully understand and document the socioeconomic situation in priority locations;
- all levels of government agreeing on a method for identifying and agreeing on priority locations for a targeted local approach;

- establishing local government structures that will empower a cross-sectoral group of local organisations to drive local engagement and service provision; and
- developing a detailed funding and evaluation agreement, along with a service provision model that facilitates innovative approaches across different locations.

Innovative forms of investment and partnership

It is also clear that a range of stakeholders must work collaboratively to address issues of geographical inequality, including governments, community groups and business. There is the potential for this to be done in ways that move beyond the traditional role of government as a sole funder of services for those in need.

Microfinance

Low income is consistently a characteristic in multiply disadvantaged neighbourhoods. Unfortunately, many people living in these areas will be among the 20.7 per cent of Australian households who do not have $500 in savings. They are at risk of being preyed on by payday lending services that involve incredibly high interest rates.

In response to this microfinance offers fair, safe and ethical financial services for low-income people and includes things like low-interest loans, insurance, and financial counselling. Over several decades a number of microfinance initiatives have emerged in Australia. An evaluation of Good Shepherd Microfinance's No Interest Loan Scheme (NILS) which offers no-interest loans of up to $1200 to people on low incomes found that it creates positive changes in clients' financial capabilities, and in their economic and social outcomes. Despite this, these schemes have very little coverage and there is significant capacity for them to be expanded.

Another innovative initiative in the microfinance sector is the Good Shepherd Microfinance Good Money Stores. These stores are located in a number of communities in Victoria, Queensland and South Australia and offer a wide range of microfinance products. They are a partnership between governments, Good Shepherd Microfinance and the National Australia Bank. They offer a safe and affordable alternative to mainstream financial services.

Social procurement

Federal, state and local governments are major purchasers of goods and services and through their procurement policies and practices. The way in which government chooses to purchase goods and services can have an influence on social outcomes including employment and training, as well as investment in particular locations.

A number of governments have recognised this and include requirements around locally sourced content and outcomes around employment for particular groups including young people and Aboriginal people. The Victorian Government, for example, has a number of requirements on major projects with the Melbourne

Metro Rail project requiring contractors to ensure 10 per cent of the workforce is apprentices, trainees, or cadets; as well as an Aboriginal Employment Target of 2.5 per cent and employment targets for Priority Jobseekers.

There is scope for governments and other major purchasers of goods and services in multiply disadvantaged communities to develop new and tailored approaches to maximise the social outcomes achieved through their purchasing of goods and services.

Broader policy settings

While local approaches and solutions developed at the state government level will play an important role in addressing geographical disadvantage, Commonwealth Government policy settings will also need to adjust in areas such as unemployment benefits, job search assistance and the availability of administrative data.

Navigation and coordination of supports

As the New Zealand Productivity Commission noted in 2015, social services are often funded and delivered in administrative silos, with little visibility of the important links across the system and how it is performing for people with multiple forms of disadvantage.[12] In order to support the most vulnerable in New Zealand, its suggested approach was to have a single organisation with responsibility for providing integrated services to those populations. This could occur through one government agency purchasing services from "navigators" who work closely with clients or using existing governance structures like local health boards.

> "The concept of an integrated agency to focus specifically on the most disadvantaged and 'navigators' to break down silos between different agencies, programs and supports has merit and should be explored further in the Australian context."

The New Zealand Government appears to have implemented this approach in part through its Social Investment Agency, which has responsibility for supporting a social investment approach across government and testing and trialling new approaches, including place-based initiatives.

The concept of an integrated agency to focus specifically on the most disadvantaged and "navigators" to break down silos between different agencies, programs and supports has merit and should be explored further in the Australian context.

Unemployment benefits

As the Australian Council of Social Services points out, the single rate of Newstart allowance for the unemployed is now $109 per week below the poverty line.[13] While a common argument for such a low rate is that it is designed to be a short-term payment for people transitioning from one job to the next, the reality is that over 70 per cent of people receive it for one year or more as they find themselves in long-term unemployment.[14] For these people, the rate of Newstart is particularly harsh.

The Henry Review of Taxation called for an increase to Newstart in 2010 as have some employer groups like the Business Council of Australia. The rate of Newstart is indexed to the Consumer Price Index, while pensions are generally indexed to average earnings. Professor Peter Whiteford has shown that if this continues to 2050, as assumed in the most recent Intergenerational Report, by then a single unemployed person will receive a payment of 11 per cent of the average male wage compared to 20 per cent now.[15] Therefore it would appear inevitable that unemployment benefits will need to be adjusted to ensure that they are not an entry point to deep and persistent disadvantage.

> "The cost, effectiveness and feasibility of a basic income scheme really depends on the extent to which it is designed to be universal as opposed to means tested, and the level at which it is set."

The idea of a Universal Basic Income (UBI) has also been a topic of debate in recent years in the context of the future of work and managing the potential of increased job loss and worker transitions. It would appear to have a potentially broader application in dealing with disadvantage. The UBI acts as a means of guaranteeing a minimum income to all and is not means or activity tested in any way. Arguments that are made in favour of such a scheme include that it would[16]:

- eliminate the inflexibility of welfare payments and associated poverty traps;
- provide extra support to workers in the gig economy whose work is less predictable; and
- reduce the disincentives to work from high effective marginal tax rates as people come off welfare.

At a practical level, the cost, effectiveness and feasibility of a basic income scheme really depends on whether it is actually universal or instead means tested, and the level at which it is set. In terms of levels, it could be set as a living income that replaces existing welfare, which allows for people to live above the poverty line or it could be set as a more modest income that supplements existing income support.[17] Budget constraints would obviously influence the level and whether it is means tested or provided unconditionally.

At this stage no country has fully implemented a UBI. Canada, Finland and the Netherlands are trialling it, while the Swiss electorate voted against the introduction of UBI in 2016.[18] Nonetheless, there would seem to be benefit in Australian policy makers better understanding the applications of different basic income schemes, relevance to Australia and ultimate feasibility based on international experience.

Job search assistance

Just as the rate of unemployment benefits appear to be lagging socioeconomic trends, so does the Commonwealth Government's program for assisting jobseekers, JobActive.

While the program may be effective for short-term unemployed people, for more than 170,000 Australians who are long-term unemployed and likely facing multiple disadvantages, the level and nature of support is likely to be inadequate. As social policy researchers Sue Olney and Wilma Gallet have remarked:

> "For jobseekers with a large distance to cover to the labour market, the process of activation extends beyond the employment services system and its resources. Some of these jobseekers have never worked, some have low levels of education and some have outdated qualifications. Some have little or no capacity to work full time or are only able to work episodically. Besides lacking skills to fill available jobs, they may be struggling with mental health issues, trauma, poverty, prejudice, drug and alcohol use, unstable accommodation, anxiety, mild physical and intellectual disabilities, isolation, unreliable transport, care of dependents, complex peer and family issues and intergenerational labour market detachment."[19]

The 2011 review of employment services found that the system delivered generic rather than personalised support to jobseekers. More recently, an audit by the ANAO found that less than 40 per cent of job seekers using JobActive are securing long-term employment and over a third of agencies are not complying with minimum standards.

The current strains on a program that costs $1.7 billion a year to administer presents an opportunity to more holistically assess the adequacy of support and assistance for the long-term unemployed. While the JobActive program is unlikely to be able to address issues of long-term unemployment and multiple disadvantage on its own, there is a need to better encourage collaboration and innovation across the community sector with targeted local strategies and resources.

"Data on the administration of government policy and programs is particularly valuable given that it is comprehensive, reliable and collected at a disaggregated level."

Enhanced sharing and use of data

Effectively delivering more localised support and services to overcome geographic disadvantage will also depend upon enhanced data. As the Productivity Commission noted in its recent inquiry into data availability and use: "Wider release of data and more effective sharing by governments would likely trigger significant investment (private as well as public) and improvements in national welfare."[20]

Data on the administration of government policy and programs is particularly valuable given that it is comprehensive, reliable and collected at a disaggregated level. As the Productivity Commission has pointed out, the first step will be to establish a process where the public can nominate datasets and governments can ultimately designate National Interest Datasets. Non-sensitive data can then be released while privacy and confidentiality of other datasets could be managed carefully including through accreditation of users.

Conclusion

Based on the available evidence, it is clear that Australia has geographical pockets of concentrated, entrenched and cumulative disadvantage across all the key indicators of wellbeing – income, education, employment, access to housing, health, crime and reliance on government assistance. This leads to social exclusion further entrenching these inequalities, and incurs considerable economic and fiscal costs for governments and the community. Despite this, history shows that we can make important progress to address this form of disadvantage through more targeted place-based approaches. If this is complemented by more supportive unemployment benefits and job search services, along with greater innovation in funding mechanisms and data then Australia has a real opportunity to implement an effective framework for addressing geographical disadvantage.

Endnotes

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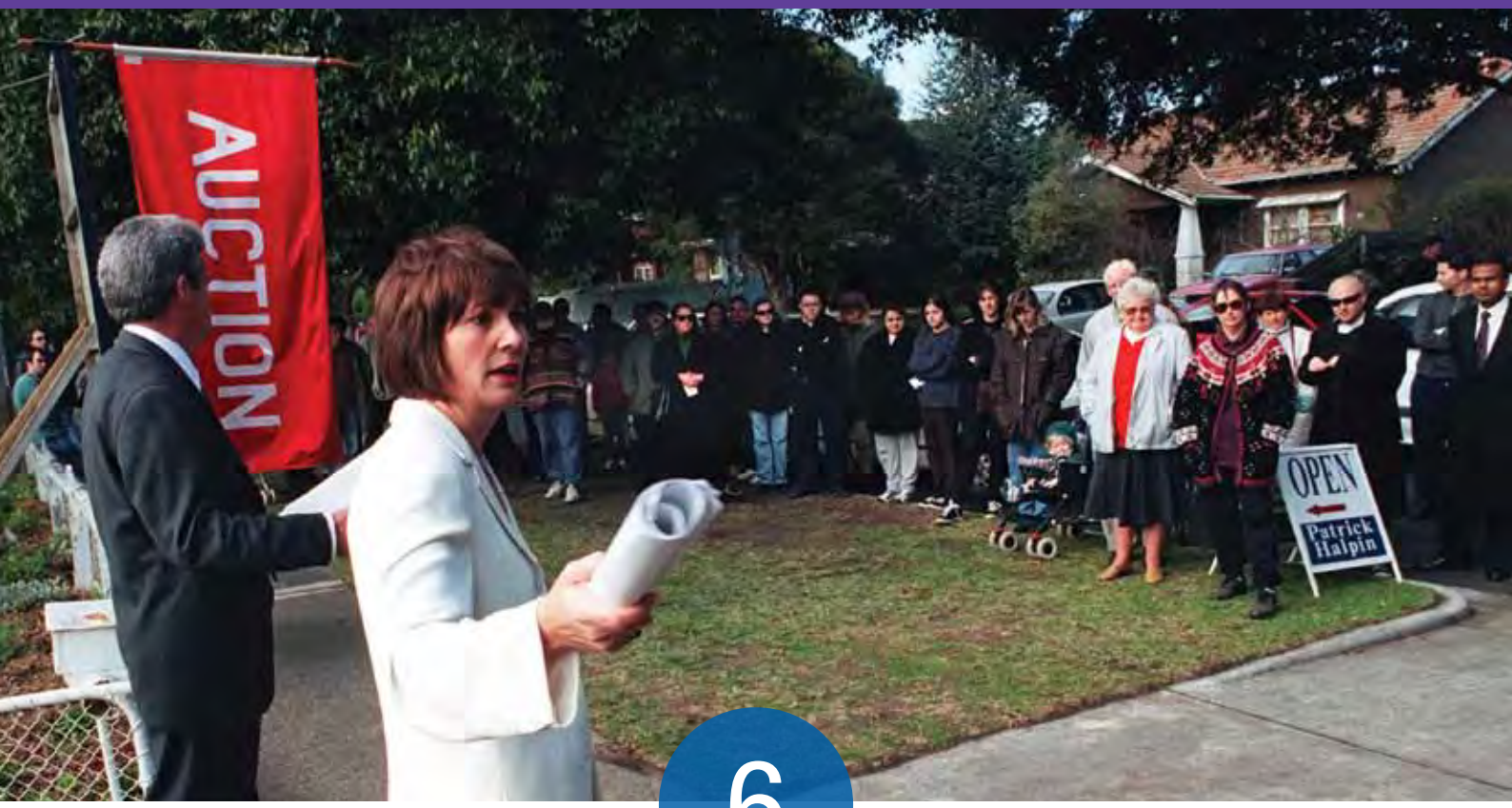
THE FUTURE of inequality



6

Intergenerational inequality

Professor Peter Whiteford

This chapter explores trends in income and wealth between generations in Australia and internationally.

Professor Peter Whiteford is a Professor in the Crawford School of Public Policy at the Australian National University. Between 2008 and 2012 he worked at the Social Policy Research Centre at the University of New South Wales. He previously worked in the Directorate of Employment, Labour and Social Affairs of the OECD. His work at the OECD encompassed pension and welfare policies in OECD countries, Eastern Europe and China. He was a member of the Reference Group for the Harmer Review of the pension system. He has published extensively on various aspects of the Australian and New Zealand systems of income support.

Income inequality in Australia

There has been considerable debate about trends in income inequality in Australia in recent years as discussed in earlier chapters of this report. With the most recent surveys showing levels of income inequality in 2015–16 being about the same as in 2007–08[1], and data from the Household Income and Labour Dynamics in Australia (HILDA) survey conducted by the University of Melbourne showing income inequality being about the same in 2016 as in 2001.

Recent international evidence[2] suggests however, that for most of the period since the 1980s income inequality in Australia has been around if not a little higher than the average for similar high-income OECD countries. In 2014, the Gini coefficient for household disposable income in Australia was around 0.34 compared to an OECD average of around 0.32[3]. In addition, as in many other countries, income inequality has increased in Australia since the first large-scale income surveys in the early 1980s, with the Gini coefficient being around 0.27 in 1981–82.

Earlier chapters in this report discussed in detail recent trends in income and wealth inequality in Australia and the considerable debate and public commentary that has emerged around these trends. In truth, of course, there are many dimensions to inequality, particularly over time, and the experiences over time and between generations. There is particular focus in this context on the degree of economic mobility between generations, and the separate question of

whether young people today – millennials in particular – are likely to do as well economically as previous, older generations. A specific aspect of this concern is the position of millennials compared to baby boomers and how this relates to disparities in wealth and even more specifically whether young people are being priced out of the housing market which is a dominant form of wealth accumulation in Australia.

Intergenerational mobility – what does the evidence tell us?

Intergenerational mobility therefore relates to the idea that everyone should start with the same opportunities in life. Equality of opportunity can be undermined if children are likely to inherit the economic status of their parents. This can be either the advantages or the disadvantages experienced by parents.

D'Addio[4] notes for example, "Social mobility refers to the extent to which … individual's social status changes either within the life course (intra-generational) or across generations (intergenerational)."

Dr Andrew Leigh[5] has also argued that there is an instrumental reason to be concerned about inequality because of its impact on social mobility.

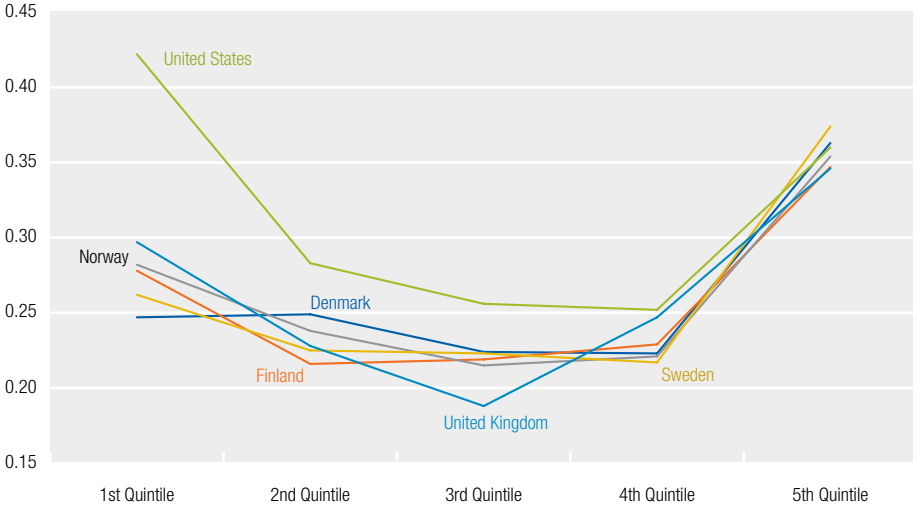
> "To see this, imagine a ladder in which mobility reflects the extent to which a child climbs up or down from their birth rung. In a fully mobile society, the rung you end up on is independent of the place you started. In a static society, people are born and die on the same rung. Most of us viscerally recoil at the thought of such a feudalistic outcome, with the waste of talent that it implies. But yet there is mounting evidence that inequality and immobility go together.
>
> "If mobility is the extent to which a person moves up or down the ladder, mobility can be thought of as the gap between the rungs. A society with high inequality – with large gaps between rich and poor – is one in which the ladder is hard to climb."

Mobility can be measured by the "intergenerational earnings elasticity" which is the correlation between the incomes of children and that of their parents – most commonly measured as the correlation between the earnings of fathers and sons.[6]

For example, an intergenerational elasticity of 0.25 means that a 10 per cent difference in a father's earnings is associated with a 2.5 per cent difference in a son's earnings, while an elasticity of 0.5 means that a 10 per cent difference in a father's earnings is associated with a five per cent difference in a son's earnings.

If there were no intergenerational mobility at all, the intergenerational income elasticity would be equal to one and all poor children would become poor adults and all rich children would become rich adults. If the intergenerational income elasticity was equal to zero, there would be no relationship between family background and the adult income outcomes of children. A child born into poverty would have exactly the same likelihood of earning a high income in adulthood as a child born into a rich family.

FIGURE 1
INTERGENERATIONAL EARNINGS ELASTICITY BY QUINTILE OF FATHERS' EARNINGS



Source: D'Addio, 2007.

Figure 1 shows estimates of the intergenerational earnings elasticity by income quintiles (20 per cent of the population ranked from the poorest to the richest) for four Scandinavian countries, the United Kingdom and the United States. The relationship in these countries can broadly be described as "V-shaped" – the correlation between the earnings of sons and their fathers is strongest at the two ends of the income spectrum – sons of both low income and high income fathers are more likely to "inherit" their fathers' income position than those born into middle income groups.[7] It is notable that the children of high income parents have rather similar correlations in all these countries, while the sons of poor fathers are much more likely to be poor themselves in the United States than elsewhere.

The relationship between income inequality and earnings mobility across countries has been highlighted by the so called "Great Gatsby curve"[8], shown in Figure 2 which shows the relationship between income inequality (measured by the Gini coefficient) and income mobility (measured by intergenerational earnings elasticity).

> "The relationship between income inequality and earnings mobility across countries has been highlighted by the so called 'Great Gatsby curve'...more inequality is associated with less mobility across the generations."

Figure 2 shows that more inequality is associated with less mobility across the generations. Along with the United States and Italy, the United Kingdom has both relatively high income inequality and relatively low mobility. The Nordic countries have both low inequality and high mobility, consistent with their rankings in Figure 1.

FIGURE 2
THE "GREAT GATSBY CURVE" – THE RELATIONSHIP BETWEEN INCOME MOBILITY AND INCOME INEQUALITY

Source: Corak (2013).

Australia appears to fall between these two ends of the spectrum having a level of income inequality similar to that in Italy, but a level of mobility similar to that in Sweden, and about twice that in Italy.

The estimates for Australia come from pioneering work by Dr Andrew Leigh[9], who, in 2007, used data from the HILDA survey as well as earlier surveys undertaken between 1965 and 1987–88.

As shown in Figure 2, Leigh estimated that the earnings elasticity in Australia is likely to be between 0.2 and 0.3 (compared to 0.4 to 0.6 in the United States). Since then two studies have extended Leigh's analysis.

Huang, Perales and Western[10] use more recent HILDA data. They conclude that the father-son elasticity in Australia ranges between 0.11 and 0.30, "situating Australia as a country with moderately high income mobility".

However, Mendolia and Siminski[11] replicated Leigh's approach but used many more waves of the HILDA survey to estimate the intergenerational earnings elasticity, which they estimate to be around 0.35 rather than 0.25, concluding that intergenerational mobility in Australia is not particularly high, and that this is more consistent with Australia's higher than average level of static income inequality.

In summary, there is some uncertainty about Australia's international ranking in income mobility with the evidence tending to point to the conclusion that as with annual income inequality, Australia is not as highly ranked as often assumed.

Trends in incomes across time and generations

Income mobility is not only a result of economic opportunity but also reflects changes for individuals over time. Over the course of their life, individuals leave school or tertiary study, move into part-time and full-time work, partner and have children and, in many cases, advance in work and earnings and then move into retirement. As discussed below, this life course has changed significantly over time in Australia and elsewhere, but it can generally be expected that earnings increase as individuals age and acquire greater work experience and skills. Patterns for women, of course, may differ due to the likelihood of interruptions in their working career related to having and raising children.

Since the 1970s, Australia – like other high-income countries – has experienced significant structural changes in its labour market, including a fall in male labour force participation rates particularly at older ages and an increase in female participation rates, mainly an increase in part-time employment.

There have also been major changes in the processes of youth entry to the labour market. Where once young men took on full-time employment after finishing secondary education and young women had a relatively short period of employment before marrying and having children, now longer educational participation – both in terms of finishing high school and attending university or other forms of tertiary education – has become the norm for men and women. The proportion of persons of working age with post-school qualifications has risen from 35.5 per cent in 1984 to 61 per cent in 2016, and exceeds 75 per cent for those in their 30s.[12]

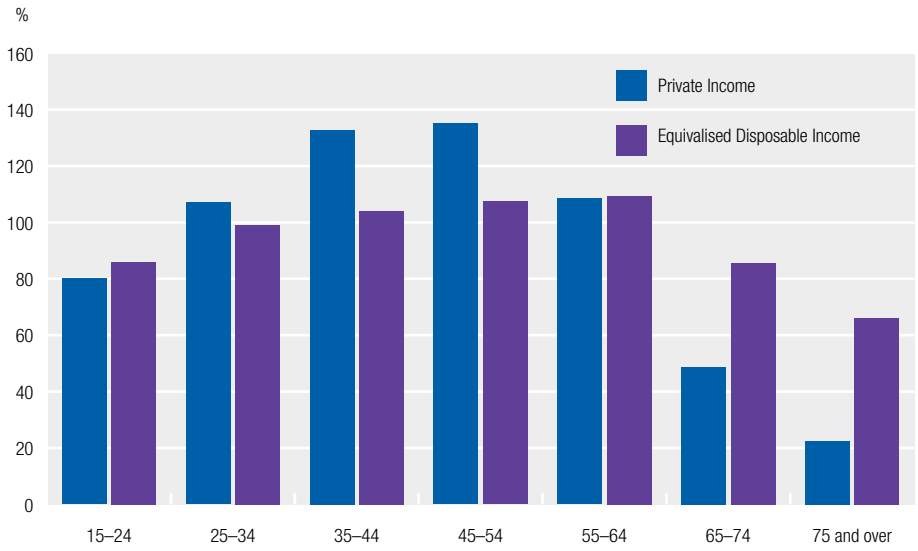
"Family formation has been also delayed. Age at first marriage for women has increased from around 20.9 in 1975 to 28.3 in 2013 and age at first childbirth from 24.0 to 31.2 between 1975 and 2014."

This has also been accompanied by significant changes in workforce participation for young people. In 1978, around 60 per cent of young men aged 15–24 years were in full-time employment and seven per cent in part-time employment. By 2017 the corresponding proportions were 30.9 per cent in full-time employment and 26.4 per cent in part-time employment.

Over the same period, full-time employment for young women fell from 44.7 per cent to 20.8 per cent and part-time employment increased from 10.3 per cent to 37.2 per cent. The falls in full-time employment were particularly marked in the recessions of the early 1980s and again in the early 1990s, with both periods seeing falls in full-time employment for young men of 10 percentage points.

Family formation has also been delayed. Age at first marriage for women has increased from around 20.9 in 1975 to 28.3 in 2013 and age at first childbirth from 24.0 to 31.2 between 1975 and 2014. Some of these changes appear to have given rise to the concerns about the prospects for younger age cohorts.

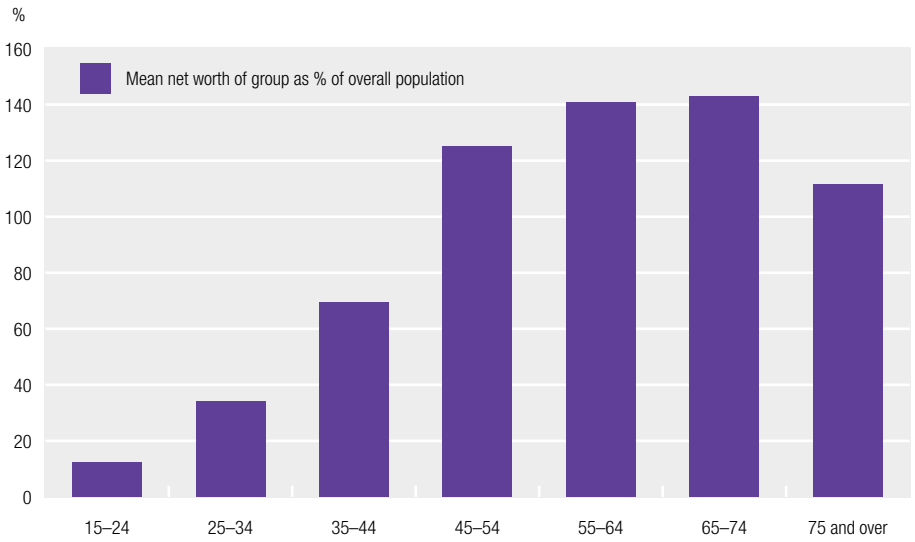
FIGURE 3
MEAN PRIVATE INCOME AND MEAN EQUIVALISED HOUSEHOLD DISPOSABLE INCOME BY AGE OF HOUSEHOLD REFERENCE PERSON, AUSTRALIA 2015–16
Mean income of group as percentage of overall population mean



Source: ABS, Household Income and Wealth, Australia, 2015-16, Catalogue No. 6523.0

Figure 3 shows average income by the age of the household reference person in Australia in 2015–16. Private incomes (*before* taxes and social security) initially increase with age to peak for the 45 to 54-year-old age group, and then decline quite substantially as people enter retirement. Equivalised household disposable incomes[13] also initially rise with age before declining, although the variation is not so marked, because middle-age households tend to have children to support and also pay higher taxes. Incomes decline less after the age of 65 years because of the receipt of social security payments, notably the Age Pension.

FIGURE 4
MEAN NET WORTH BY AGE OF HOUSEHOLD REFERENCE PERSON, AUSTRALIA 2015–16



Source: ABS, Household Income and Wealth, Australia, 2015-16, Catalogue No. 6523.0

Wealth also accumulates across the life course – savings accumulate, those buying their home pay off their mortgages, and superannuation balances grow through more years of contributions and compounding returns.

As shown in Figure 4 the age profile of wealth differs significantly from that for income, with younger households holding much lower levels of wealth. Mean net worth peaks for those between 65 and 74 years, and while it declines thereafter, it still remains significantly higher than for households up to the age of 45 years.

While life course differences in income and wealth are only to be expected, there has been increasing concern that current younger generations will not be able to attain the same degree of comfort and security as older generations – in other words that their opportunities are different to previous generations. This is expressed in the fear that "young Australians are becoming the first generation since the Great Depression to be worse off than their parents."[14]

This concern has been strongly expressed in a 2016 article in the UK edition of *The Guardian* entitled "Revealed: the 30-year economic betrayal dragging down Generation Y's income".[15] The article noted that:

> "The full scale of the financial rout facing millennials is revealed today in exclusive new data that points to a perfect storm of factors besetting an entire generation of young adults around the world. A combination of debt, joblessness, globalisation, demographics and rising house prices is depressing the incomes and prospects of millions of young people across the developed world, resulting in unprecedented inequality between generations … an investigation into the prospects of millennials – those born between 1980 and the mid-90s, and often otherwise known as Generation Y – has found they are increasingly being cut out of the wealth generated in western societies. Where 30 years ago young adults used to earn more than national averages, now in many countries they have slumped to earning as much as 20 per cent below their average compatriot. Pensioners by comparison have seen income soar."

In support of these conclusions, the article cited data specially prepared for the newspaper by researchers working at the Luxembourg Income Study (LIS) – a cross-national research centre based in Luxembourg and directed and used by leading international experts in the analysis of income distribution statistics.

Table 1 shows the results of the analysis by these researchers, comparing the rate of growth in household incomes by the age of household head compared to the average rate of growth for all households. For example, in the case of the United Kingdom, households with a head aged 25–29 years have seen income growth that is two per cent less than the overall national average for all households. At the same time households with a head aged 65 years and over have seen income growth between 62 and 66 per cent higher than the national average. This suggests that older households have become much better-off and younger households have become slightly worse off relative to the population as a whole.

Countries are initially ranked by the change for younger households, with this group showing increasing losses relative to the national average. Those in the USA have experienced growth nine per cent less than the national average, those in Spain 12 per cent less and in Italy 19 per cent less, while in all these countries, older households have done better than the national average, although none as well as in the United Kingdom.

TABLE 1
PERCENTAGE GROWTH IN HOUSEHOLD DISPOSABLE INCOME ABOVE OR BELOW NATIONAL AVERAGE GROWTH RATE BY AGE OF HEAD OF HOUSEHOLD OR SPOUSE

	Change relative to average by age of household head			National average growth rate	
	25–29	65–69	70–74	Ratio 2010 to start year	% real change per year
United Kingdom, 1979 to 2010	–2	62	66	1.91	2.2%
Canada, 1987 to 2010	–4	5	16	1.25	0.8%
Germany, 1978 to 2010	–5	5	9	1.20	0.5%
France, 1978 to 2010	–8	49	31	1.29	0.7%
USA, 1979 to 2010	–9	28	25	1.23	0.5%
Spain, 1980 to 2010	–12	33	31	1.66	1.7%
Italy, 1986 to 2010	–19	12	20	1.21	0.6%
Australia, 1985 to 2010	27	14	2	1.51	1.5%

Source: Barr and Malik, 2016; "Revealed: the 30-year economic betrayal dragging down Generation Y's income", *The Guardian*, 7 March; Luxembourg Income Study (LIS). National average growth rates are estimated by the author from LIS data in Thewissen, S., Nolan, B., and Roser, M. (2016). *Incomes across the distribution database*. Accessed from: https://ourworldindata.org/incomes-across-the-distribution.

What is most striking in the case of Australia – which shows the reverse of the other seven countries – is that younger households have experienced household income growth that is 27 per cent higher than the national average, while households with a head aged 70–74 enjoyed growth only two per cent higher than the national average.

"What is most striking in the case of Australia – which shows the reverse of the other seven countries – is that younger households have experienced household income growth that is 27 per cent higher than the national average…"

Further context to these trends is given in the table, which shows the ratio of average real household disposable incomes at the end of the period to the beginning of the period and also calculates the average annual percentage change in real disposable income, given that the starting point is not the same year for all countries. Australia has enjoyed the third highest level of real growth in average household incomes behind Spain and the United Kingdom (which were much less prosperous in 1980 than they were in 2010).

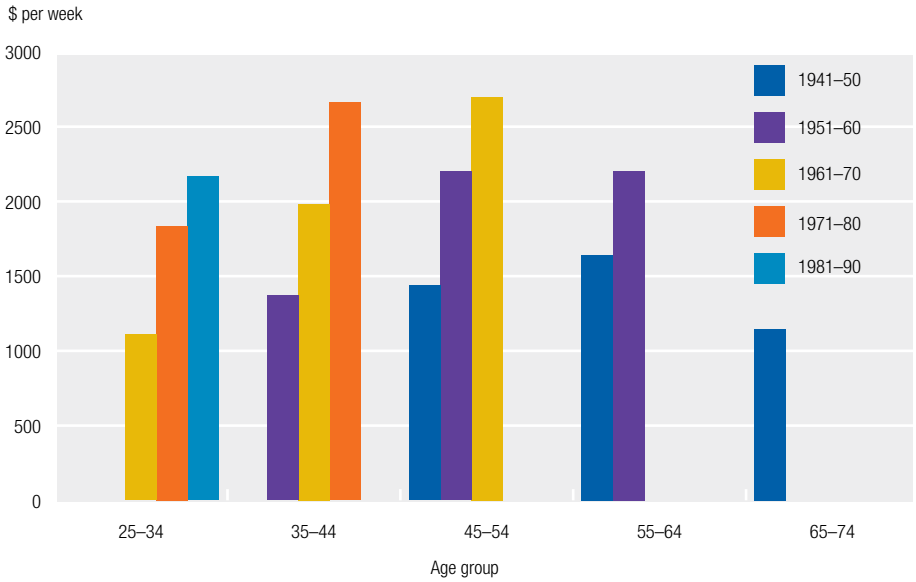
Income changes and differences between age cohorts

The ABS income surveys have been conducted since the early 1980s, with the most recent survey referring to the 2015–16 year. These surveys provide details of incomes by the age of the household reference person. That is, households with a head aged 15–24 years, 25–34 years, 35–44 years, 45–54 years, 55–64 years, and in the most recent survey 65–74 years and 75 years and above. Because of 10-year age groupings, it is possible to analyse trends in incomes on the basis of "quasi-cohorts"[16]. People who were aged 25–34 years in 1995–96 will by definition be aged 35–44 years in 2005–06 and 45–54 years in 2015–16, while those aged 35–44 in 1995–96 will be 45–54 in 2005–06 and 55–64 in 2015–16 and so on. By looking at households with different aged reference persons at these fixed intervals it is therefore possible to throw some light on trends in incomes as people age and compare them across groups between different birth cohorts.

This method is only approximate, since these are not real cohorts as the composition of the sample changes over time. In addition, people can die or leave the country and new migrants can enter Australia, although this is less likely for older people than for younger people.

Figure 5 shows trends in real average incomes for different birth cohorts at different ages in 2015–16 values. Results are not included for households with a head aged 15–24 years in any year because these are likely to be strongly affected by the changes in employment and educational participation referred to previously. Also, because the quasi-cohorts are compared across a period of only 20 years

FIGURE 5
REAL MEAN EQUIVALISED HOUSEHOLD DISPOSABLE INCOMES (2015–16 $ PER WEEK) FOR BIRTH COHORTS AT DIFFERENT AGES, 1995–96, 2005–06 AND 2015–16



Source: Calculated from ABS Surveys of Income and Housing, 1995–96, 2005–06 and 2015–16.

the progression from household formation to retirement cannot be shown from the available data, but the currently retired can only be traced from when they were aged 45–54. Those born between 1981 and 1990 can only be shown when aged 25–34 years.

The oldest cohort were born between 1941 and 1950 and include the first baby boomers, who show an increase in average incomes between 1995–96 and 2005–06, and then a decline as they enter retirement. The next generation of middle baby boomers born between 1951 and 1960 show a marked increase in average incomes between the age of 35–44 years and 45–54 years (from $1370 per week to $2200 per week). But they only experience a very small increase in the next decade, possibly because some of them retired before the age of 65. Those baby boomers born slightly later between 1961 and 1970 show substantially higher real incomes than those born a decade earlier – more than 20 per cent higher in real terms at the age of 45–54 years.

Those born between 1971 and 1980 also show large increases in real incomes – nearly 45 per cent – across the last decade and are about 34 per cent better off than the preceding cohort were at the same age. Finally, Generation Y born between 1981 and 1990 have higher real incomes at age 25–34 than the preceding two birth cohorts – about 18 per cent higher than those born a decade earlier. However, the real increase is proportionately much lower than in the previous decade, which saw those in their mid-20s to mid-30s with incomes 65 per cent higher in real terms than those a decade earlier. At this stage we cannot follow this birth cohort further.

"...analysis of Australian income surveys tends to support the conclusion of analysts using the LIS database, showing that younger Australian households have continued to enjoy increases in real incomes over time, a trend which seems to differ from experiences for the same cohort internationally."

In summary, analysis of Australian income surveys tends to support the conclusion of analysts using the LIS database, showing that younger Australian households have continued to enjoy increases in real incomes over time, a trend which seems to differ from experiences for the same cohort internationally.

Having said this, it is clearly premature to conclude that those belonging to Generation Y will continue to enjoy the same patterns of increase over time, since they only begin to figure in the most recent 2015–16 survey as an identifiable age cohort. It can also be noted that the increase in their real average incomes compared to those born a decade earlier is nowhere near as strong as those born in the 1970s compared to those born in the 1960s. It should be acknowledged in this context, however, that this intermediate age cohort born in the 1970s would have benefited from the enormous increase in Australian household incomes experienced between 2003 and 2008 as a result of the mining boom. This would also have had some positive impact on those born between 1981 and 1990, although income trends after 2008 are much less favourable.

Inequalities of wealth

Does the same story apply for wealth? How have levels of wealth changed across age groups? Here data are more limited since the ABS has only conducted surveys of household wealth since the early 2000s, so it is not possible to construct the same detailed picture as it is for trends in income.

Table 2 shows trends in net worth by the age of the household reference person between 2005–06 and 2015–16. Those with a reference person under 35 years of age are worse off than in 2005–06, although separate analysis finds that they are slightly better off than in 2003–04. Over the whole period, the increases were greater for those at older ages, with the net worth of the youngest age group falling by around eight per cent, but for those aged 65 and over the increases were closer to 40 per cent.

Table 2 also disaggregates the changes between 2005–06 and 2015–16 by the main components of net worth. For all groups financial assets increased in real terms, primarily due to an increase in the value of superannuation assets. Increases in the value of non-superannuation financial assets were generally more modest, except for households with a reference person aged 45–54 years.

The value of owner-occupied dwellings also fell for the youngest age group, although only marginally, but older households enjoyed large increases in the value of homes as well as large increases in the value of other property. Overall, all age groups saw real increases in the value of their total assets, including the youngest age group. This suggests that the fall in the net worth of the youngest age group was due to an increase in their liabilities, which is confirmed by Table 2.

TABLE 2
CHANGE IN REAL VALUE (2015–16 $ THOUSANDS) OF HOUSEHOLD ASSETS AND LIABILITIES BY AGE OF HOUSEHOLD REFERENCE PERSON, AUSTRALIA, 2005–06 TO 2015–16

	25–34	35–44	45–54	55–64	65–74	75 and over	All households
Mean net worth							
2005–06	345.4	596.9	930.7	1057.5	954.2	738.4	722.6
2015–16	317.9	645.7	1161.9	1308.3	1329.4	1036.4	929.4
Change	–8.0%	8.2%	24.8%	23.7%	39.3%	40.4%	28.6%
2005–06							
Total superannuation	45.8	83.1	157.6	207.6	134.4	26.6	108.5
Total financial assets(a)	115.1	176.8	344.7	396.4	336.7	206.0	247.8
Non-superannuation financial assets	69.3	93.7	187.0	188.8	202.3	179.5	139.3

continued…

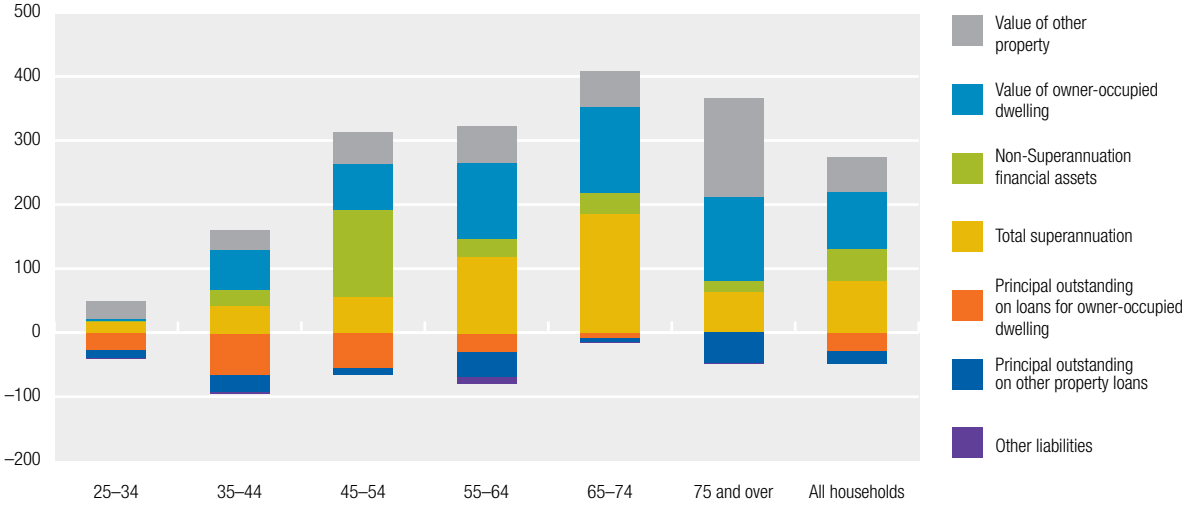
	25–34	35–44	45–54	55–64	65–74	75 and over	All households
2015–16							
Total superannuation	63.1	125.6	213.2	326.7	321.6	88.2	188.4
Total financial assets(a)	133.5	244.5	537.5	544.2	555.4	284.6	378.7
Non-superannuation financial assets	70.4	118.9	324.3	217.5	233.8	196.4	190.3
Change							
Total superannuation	37.7%	51.2%	35.2%	57.4%	139.3%	231.9%	73.7%
Total financial assets(a)	15.9%	38.3%	55.9%	37.3%	64.9%	38.1%	52.9%
Non-superannuation financial assets	1.6%	26.9%	73.4%	15.2%	15.6%	9.4%	36.6%
2005–06							
Value of owner occupied dwelling	214.9	359.3	453.8	455.5	430.4	405.5	367.3
Value of other property	79.8	122.0	165.7	159.7	111.9	46.9	116.4
Total property assets	294.7	481.3	619.5	615.1	542.4	452.4	483.6
Total non-financial asset	383.1	603.1	752.6	743.1	642.5	536.2	593.5
Total assets	498.3	779.8	1097.2	1139.5	979.2	742.2	841.2
2015–16							
Value of owner occupied dwelling	211.2	421.6	525.1	573.5	564.8	537.9	456.1
Value of other property	106.5	152.9	214.4	216.2	166.8	200.2	171
Total property assets	320.3	575.7	738.2	791.2	730.7	740.6	626.7
Total non-financial assets	381.7	670.7	854.2	906	836.9	824	722.5
Total assets	517.2	914.8	1392	1450.7	1399.7	1080.8	1097.4
Change							
Value of owner occupied dwelling	–1.7%	17.3%	15.7%	25.9%	31.2%	32.6%	24.2%
Value of other property	33.4%	25.4%	29.4%	35.4%	49.0%	327.3%	46.9%
Total property assets	8.7%	19.6%	19.2%	28.6%	34.7%	63.7%	29.6%
Total non-financial assets	–0.4%	11.2%	13.5%	21.9%	30.3%	53.7%	21.7%
Total assets	3.8%	17.3%	26.9%	27.3%	42.9%	45.6%	30.5%
2005–06							
Principal outstanding on loans for owner occupied dwelling	97.3	107.3	79.7	30.8	8.7	1.5	64.1
Principal outstanding on other property loans	38.4	50.2	61.7	36.7	11.0	1.0	37.5
Total property loans	135.7	157.5	141.5	67.5	19.6	2.6	101.5
Other liabilities	17.1	25.4	25.0	14.5	5.3	1.3	17.1
Total liabilities	152.9	182.9	166.5	82.2	24.9	3.9	118.7

	25–34	35–44	45–54	55–64	65–74	75 and over	All households
2015–16							
Principal outstanding on loans for owner occupied dwelling	123.4	172.6	133.6	59.2	15.6	2.9	92.9
Principal outstanding on other property loans	51.3	75.9	73	76.6	17.6	48.3	56.9
Total property loans	175.0	247.8	206.9	134.5	32.5	51.2	149.6
Other liabilities	18.5	21.1	24.5	24.7	6.7	2.9	18.2
Total liabilities	193.7	268.3	231.0	161.7	39.5	54.4	168.6
Change							
Principal outstanding on loans for owner occupied dwelling	26.8%	60.8%	67.6%	92.2%	78.7%	88.3%	45.0%
Principal outstanding on other property loans	33.7%	51.2%	18.2%	108.6%	59.4%	4603.2%	51.8%
Total property loans	29.0%	57.3%	46.3%	99.2%	65.5%	1894.2%	47.3%
Other liabilities	8.4%	–17.0%	–2.1%	70.3%	27.3%	125.9%	6.6%
Total liabilities	26.7%	46.7%	38.7%	96.8%	58.6%	1312.6%	42.0%
2005–06							
Net value owner occupied dwelling	117.6	251.9	374.1	424.6	421.7	404.0	303.1
Net value other property	41.5	71.8	103.9	122.8	100.9	45.8	78.9
Net value total property	159.1	323.7	477.9	547.6	522.7	449.7	382.0
2015–16							
Net value owner occupied dwelling	90.9	249.3	391.7	515.3	550	534.8	363.2
Net value other property	52.8	76.4	141	144.5	147.7	151.7	113.8
Net value total property	142.1	327.4	532.3	661.5	699.4	689.2	477.1
Change							
Net value owner occupied dwelling	–23%	–1%	5%	21%	30%	32%	20%
Net value other property	27%	6%	36%	18%	46%	231%	44%
Net value total property	–11%	1%	11%	21%	34%	53%	25%

Source: Calculated from ABS Surveys of Income and Housing, various years.

FIGURE 6

CHANGE IN REAL ASSETS AND LIABILITIES (000s OF 2015–16 $) OF HOUSEHOLDS BY AGE OF REFERENCE PERSON, AUSTRALIA 2005–06 TO 2015–16



Source: Calculated from ABS Surveys of Income and Housing, various years.

These overall trends are illustrated in Figure 6, which shows that the increase in the assets of the age group 25–34 years were offset by the increase in their liabilities. In contrast households with a head aged 65–74 years saw the largest real increase in their assets – both superannuation assets and owner-occupied dwellings, and the smallest increase in their debts.

Table 3 summarises trends in housing tenure by age. At all ages there has been a fall over the past decade in the share of households who are outright home owners, and a fall in the share of the youngest age group who are owners with a mortgage. For younger age groups there has been an increase in the share who are private renters – from 43 to 53 per cent for those aged 25–34 years and from 26 to 31 per cent for those aged 35–44 years. For those aged 65 years and over, however, there has been very little change in the overall share who own or are buying their home, compared to those renting publicly or privately. Around 85 per cent of households with a reference person aged 65 years and over were owners or purchasers in both 2005–06 and 2015–16.

Phillips[17] estimates that since the late 1980s the cost of living grew more strongly for renters than other tenure types. Renter households experienced growth of 111.2 per cent in living costs since 1988 compared to those purchasing a home at 103.6 per cent. This is driven mostly by rents increasing at a faster rate than mortgage repayments. As a result, renter households have experienced lower increases in real living standards. As Phillips[18] notes:

> "In spite of housing affordability concerns living standards of all tenure types have increased. The largest gains went to purchaser households with gains of 75 per cent since 1988. These households have gained significant income increases and lower cost of living increases with record low interest rates more than compensating for larger mortgages. Renter households have fared relatively poorly with gains of just 45.7 per cent since 1988."

TABLE 3
TRENDS IN HOUSING TENURE BY AGE OF HOUSEHOLD REFERENCE PERSON, AUSTRALIA 2005–06 TO 2015–16

	25–34	35–44	45–54	55–64	65–74	75 +	Total 65 years +	All households
Owner without a mortgage								
2005-06	6.5	12.4	29.3	53.7	..	..	79.3	34.3
2015-16	1.5	6.5	16.6	41.6	70.7	82.1	75.5	30.4
Owner with a mortgage								
2005-06	41.3	53.8	48.6	27.5	..	..	5.3	35.0
2015-16	38.8	55.8	55.5	37.8	12.3	4.6	9.1	37.1
Private renter								
2005-06	42.8	25.6	14.9	11.0	..	..	6.1	22.0
2015-16	53.3	31.1	21.1	13.1	9.1	5.2	7.4	25.3
Public renter								
2005-06	3.9	4.8	4.2	4.9	..	..	5.1	4.7
2015-16	2.1	2.7	3.6	4.3	5.1	3.3	4.4	3.5
Number of over-indebted households with property debt	415.8	529.7	454.5	237.0	61.1	12.4	69.3	1,739.5
As percentage of total indebted households	62.0	51.3	44.6	36.6	36.0	31.0	32.9	48.1
Over indebted households as percentage of all households	28.6	31.2	25.5	15.0	5.0	1.3	3.2	19.4

Note: Households are classified as over-indebted if their debt is either three or more times their income, or 75 per cent or more of the value of their assets. Some households will be over-indebted based on both criteria. Source: Calculated from ABS Surveys of Income and Housing, various years.

Table 3 also shows ABS estimates of the number of over-indebted households by age in 2015–16. Around 30 per cent of all households with a head aged 25–34 years and 35–44 years are over-indebted – that is their debts are either three times their income or equal to 75 per cent of all their assets, with this rate falling with age so that only around one per cent of households 65–74 years are over indebted. For younger households, a majority of over-indebted households also have property debt.

Conclusion

Differences between generations are of growing policy concern. Australian trends show contrasting patterns. It is clear that the processes of entry to the labour market and family formation have changed significantly over time, with young people delaying childbirth and marriage and also spending more years in study, both at school and acquiring post-school qualifications. Higher educational attainment is associated with later entry to full-time work, but could be expected to result in higher wages once full-time employment is achieved.

Analysis of trends in household income by age suggests that the Australian experience over the last three decades is significantly different from the experience of younger age groups in a selection of other high-income countries, with Australians aged 25–29 years enjoying increases in real disposable incomes that are greater than the population average, whereas in other countries they have fallen behind in income terms.

Looking at the difference between age cohorts over the last two decades reinforces this impression, showing continuing increases in household disposable incomes, although with indications that the rate of income growth has slowed since the global financial crisis in 2008.

> "...it is clear that the wealth of older generations has increased much more rapidly than that of younger generations, due to both increasing superannuation wealth and increasing property wealth."

The picture of household wealth is different, however, although high-quality data on wealth are available for less than 20 years. Here it is clear that the wealth of older generations has increased much more rapidly than that of younger generations, due to both increasing superannuation wealth and increasing property wealth. Younger households have seen both declining rates of home purchasing and higher overall indebtedness associated with housing.

Rental costs have also increased faster than the recurrent costs of home ownership, and this may have increased the barriers that younger generations have faced in establishing themselves in home ownership.

Endnotes

1 Whiteford, P. (2017) "Income inequality ticks down as the rich see their incomes fall: ABS". *The Conversation*, 13 September. Accessed from: https://theconversation.com/income-inequality-ticks-down-as-the-rich-see-their-incomes-fall-abs-83883

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5 Leigh, A. (2015) "Why should we care about inequality?" - 2015 Economic and Social Policy Lecture, 21 May, 2015. Accessed from: http://www.andrewleigh.com/why_should_we_care_about_inequality_2015_social_and_economic_policy_lecture#_edn18

6 This approach is due to the significant increase in female labour force participation over the last four decades, which makes comparisons of the earnings of women now and their mothers in the past less meaningful than comparisons between men now and their fathers.

7 This result is influenced by the fact that sons with a middle income father can experience mobility both up and down the earnings distribution, while those in the extremes can only move in one direction, either up for the poor or down for the rich.

8 Corak, M. (2013) "Income Inequality, Equality of Opportunity, and Intergenerational Mobility." *Journal of Economic Perspectives*, 27 (3): 79-102.

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10 Huang, Y., Perales, F. and Western, M. (2015) "Intergenerational Earnings Elasticity Revisited: How Does Australia Fare in Income Mobility?" *LCC Working Paper Series: 2015-14*, page 18.

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17 Phillips, B. (2018), "Research Note: Living Standards and Cost of Living Indexes for Australian Households", *CSRM Research Notes 1/2018*, Centre for Social Research and Methods, Australian National University, Canberra.

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7

The future relationship between technology and inequality

Nicholas Davis

This chapter explores the risks and opportunities of technological change and if they will result in greater income and wealth disparity.

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Originally from Sydney, and previously a commercial lawyer, Director at Oxford Investment Research and the World Economic Forum's Head of Europe, Nick is a Certified Professional Facilitator and a Fellow of the Royal Society of the Arts (FRSA) in the UK. He sits on the board of the IMP^{3}rove European Innovation Management Academy and holds degrees in Arts and Law from the University of Sydney as well as an MBA from the University of Oxford.

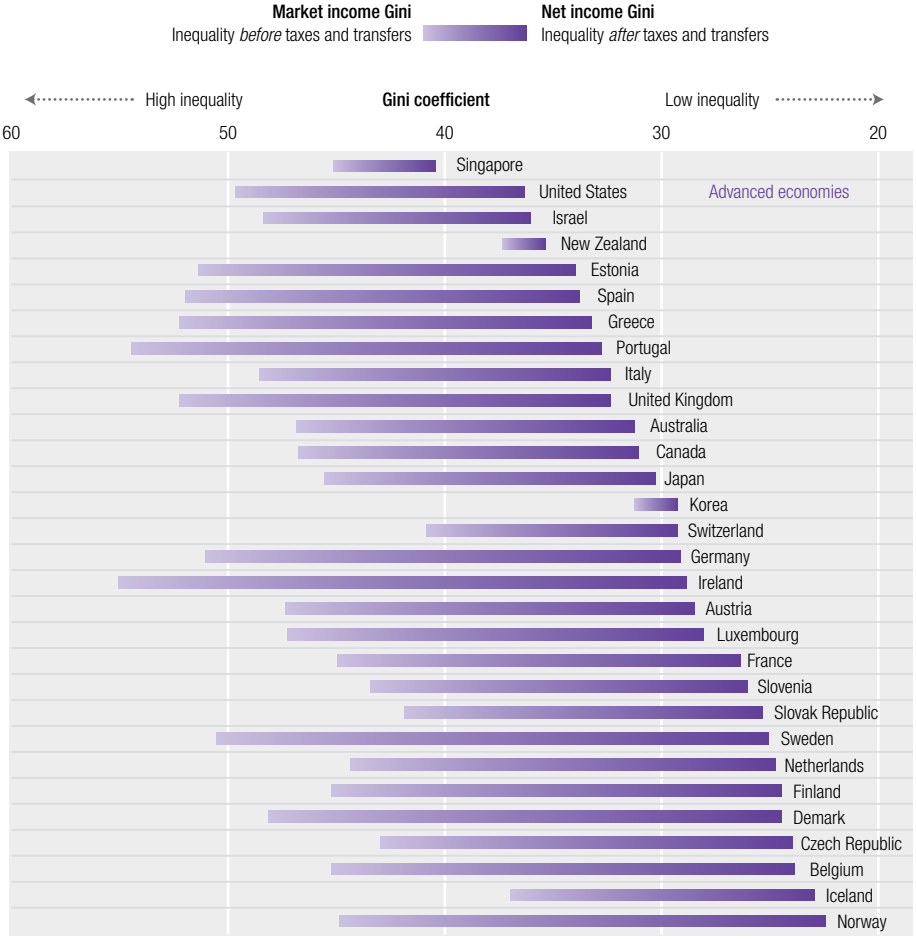
Understanding how future inequality will unfold

What will inequality look like in Australia in 10 years' time? While the complexity of the economy means that past trends are not a reliable basis for forecasts, it is important to understand how future inequality may unfold and why. The *2017 Global Risk Report* from the World Economic Forum identified rising income and wealth disparity as the most important trend driving global risks for the coming decade, with particularly negative consequences for wealthy economies such as Australia.[1]

One of the most important and uncertain drivers of inequality – and one of rising concern for Australia and the world – is how technologies emerge and are adopted across economic, social and political systems. This chapter therefore looks in further detail at how powerful emerging technologies could influence future levels of inequality.

As discussed in previous chapters, Australia's current and recent experience of inequality is an area of some debate. Taking income inequality as an example, the share of national income going to the top 10 per cent and one per cent of Australian workers has risen in the last few decades, with wage growth being significantly faster for high earners than for the median-income worker. To many, this is strong proof that inequality is high and rising.[2] A more moderate perspective comes from the Australian Bureau of Statistics, which reports that the Gini

FIGURE 1
MARKET INCOME AND NET INCOME INEQUALITY ACROSS THE ADVANCED ECONOMIES



Source: World Economic Forum

coefficient for equivalised disposable household income increased from 0.306 in 2003–04 to 0.336 in 2007–08 before falling to 0.323 in 2015–16.[3] Meanwhile, the Household, Income and Labour Dynamics in Australia (HILDA) longitudinal study of Australian households finds a small net decline in inequality in their sample over the last 15 years, with their measured Gini coefficient moving from 0.303 in 2001 to 0.314 in 2007 and falling back to 0.296 in 2015.[4] As figure 1 shows, these measures put Australia roughly in the middle of the ranking of advanced economies by inequality.

Whether you think that inequality is a huge issue today in Australia or not, the situation may be very different in the future. The levels and distribution of wealth and income inequality are dynamic, reflexive processes that can be highly sensitive to public policy such as taxation, transfers and investments in education, as well as cyclical factors in the economy. Social norms and corporate behaviour across the economy play an important role in how value is generated and dispersed. Furthermore, so-called "black swan" events[5] introduce further uncertainty as to the future path of inequality. As Claudia Goldin and others have shown[6], sudden shifts in demands on public and private resources, caused by wars, financial crises or political upheaval, can contribute to changes in the distribution of wealth and income, including over relatively short time periods.

Technology influences inequality in a number of ways. First, hand-in-hand with globalisation, technologies related to production, transport and communication expand markets, impacting the demand, supply and mobility of scarce inputs, including labour – while making collecting tax more challenging.[7] Technologies also increase the productivity of industries, groups and individuals to different extents, skewing the rewards of labour to those able to access and make use of the new technology, something visible in increasing skill premiums in labour markets.[8] While in the long run history has shown that the impact of technology is to expand overall demand for labour, there is evidence that technologies can in the short run be labour-substituting, contributing to unemployment and requiring investments in re-skilling for those affected.[9] Finally, technologies aren't neutral – by virtue of how they are conceived, designed and deployed, they embody and display the best and worst of the humans that create them.

As the capability and scalability of new technologies rise, and as countries and organisations invest heavily in how these are used for public and private purposes, the relationship between technology and future inequality becomes more important to anticipate. The world is experiencing a period of rapid technological change that builds on five decades of advances in digital communications, information storage and data processing. This is leading to the widespread use of powerful, multi-use technologies that include machine learning algorithms, secure and distributed forms of data sharing and management, advanced materials, biotechnologies and neurotechnologies, among others, which are combining in ways that disrupt organisations, industries, work environments and even challenging what it means to be human.[10]

"While in the long run history has shown that the impact of technology is to expand overall demand for labour, there is evidence that technologies can in the short run be labour-substituting, contributing to unemployment and requiring investments in re-skilling for those affected."

One metaphor for appreciating the impact of these new technologies across the physical, biological and digital realms is to characterise their economic and social impact as being on par with previous periods where technological progress led to the wholesale restructuring of economic systems. Since 2015, the idea that ongoing transformations are on the scale of a Fourth Industrial Revolution have been developed as a way of indicating the scope and scale of change that emerging technologies will bring as they are developed, diffused, adopted and reinvented.[11]

It's therefore in a context of widespread economic restructuring that we should look more closely at four ways in which the emerging technologies of the Fourth Industrial Revolution might shape Australian inequality in the future.

First, the speed, scope and scale of new technologies as they spread in an interconnected world mean they are affecting a greater number and variety of organisations, industries and people than in previous periods of change. This heightens fear of widespread technological unemployment that could overwhelm existing economic and social systems, even if only in the short run, echoing Keynes' concern from 1933 of "means of economising the use of labour outrunning the pace at which we can find new uses for labour." [12]

Second, even if fears of technological unemployment turn out to be overblown for Australia, new or transformed jobs may well require high levels of skill or very different mindsets, which are difficult to attain for some workers. How can we ensure that transformed jobs and new technologies are opportunities available to all, rather than the lucky few?

Third, an important debate among economists is whether a more technologically-driven future is one where the rate of return between capital and labour will necessarily shift in favour of the former, exacerbating wealth inequality. Given the inherent difficulties of applying traditional mechanisms to assess and distribute the benefits of growth in the Fourth Industrial Revolution, do we need to consider entirely new ways of taxing companies, capital, consumption and labour?

Fourth and finally, powerful new technologies may contribute to inequality by having negative effects, both direct and indirect, on vulnerable populations. How can we recognise and manage the discriminatory potential of new technologies?

The prospect of widespread job destruction: will we be less equal in a jobless future?

So-called "automation anxiety"[13] has been a hallmark of both economic and popular literature in recent years, with the most significant concern being around the possibility of widespread unemployment as a result of artificial intelligence and other new and powerful technologies. However, while there are many novel and insightful assessments of why and how jobs may be replaced as new technologies develop and diffuse, the timeframe for impact tends to be the least certain aspect of the analysis. Joel Mokyr, Chris Vickers and Nicolas Ziebarth[14] conclude a concise history of technological anxiety by noting Amara's law: "We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run."

Most perspectives on the prospect of widespread job destruction due to technology combine worrying headline numbers with imprecise time periods. Frey and Osborne's innovative and much-cited 2013 paper identified that 47 per cent of all US jobs are at high risk, "meaning that associated occupations are potentially automatable over some unspecified number of years, perhaps a decade or two."[15] Analysis by Durrant-Whyte et al using similar approaches found that, "40 per cent of current jobs have a high probability (greater than 0.7) of being computerised or automated in the next 10 to 15 years."[16]

But a number of arguments (and some empirical evidence) suggest that, although these predictions sound dire and could well be true, a nightmare scenario of rapid, widespread job losses across industries which leads to rapid increases in inequality, deprivation and stress on Australia's social welfare systems is less likely or more manageable than such assessments suggest.

The first is to note that industries and societies have regularly experienced significant shifts in demand for labour as a result of productivity-enhancing technology. US data assembled by consultancy AlphaBeta indicate that the 1950s were a more turbulent time for job losses overall than the last decade.

What is perhaps most interesting here is that the industries affected have changed: previously, physical industries such as agriculture and manufacturing have been the most exposed to automation. As emerging technologies such as machine learning increase in capability and build upon ubiquitous, low-cost digital communication, storage and processing, a rising number of professions and service industries are being impacted.

A second somewhat ameliorating factor is that, while these technologies are indeed advancing rapidly, the media tend to overhype how capable they really are. For example, machine learning applications tend to be confined to narrowly-defined use-cases, and rely heavily on human labour in their development, training, deployment and interpretation. We therefore live at a time when there is an explosion of a range of very interesting, capable and specific tools that can be used to solve a wide range of challenges, but there does not yet exist an example of "artificial general intelligence" that can compete with the flexibility and context-sensitivity of human intelligence. As Yann LeCun, Facebook's Head of AI remarked, "it's not because there's a machine that can beat people at Go, there'll be intelligent robots running round the streets." [17]

"...there is rising evidence that the majority of the impact of new technologies on workers will not be from entire job categories disappearing, but rather shifts within professions in terms of demand for skills."

Third, the impact of new technologies also relies on them being actually adopted and implemented, which is often not a straightforward task, particularly when legacy systems must be reckoned with. Tesla produces some of the most innovative vehicles in the world, but they do so in a factory setting that relies on process control systems – programmable logic controllers – that were developed for the automotive industry in the 1960s.[18] Producing innovative, complex, physical objects, especially when a firm is simultaneously incorporating new approaches, requires years of learning across supply chain, factory and labour systems, elements of which are contributing to the delays Tesla has experienced in hitting their production targets for their mass market Model 3.[19]

Fourth, there is rising evidence that the majority of the impact of new technologies on workers will not be from entire job categories disappearing, but rather shifts within professions in terms of demand for skills. While a 2017 report from the McKinsey Global Institute estimates that 49 per cent of work activities globally have the potential to be automated, very few occupations – less than five per cent – are candidates for full automation.[20]

The impact of automation and other new technologies is most likely to involve a shift of skills within specific jobs, rather than the disappearance of the job altogether. A 2017 study by AlphaBeta indicated that more than 70 per cent of the impact of automation-enabling technologies on Australian workers will be experienced as people spend less time doing manual and routine tasks within the same jobs. In 2015, the average Australian worker spent an hour and a half more time per week doing interpersonal tasks such as talking to customers or conferencing with colleagues, and two hours less time doing routine, automatable tasks like cleaning, driving or scanning documents, when compared to 2001, and this trend is very likely to continue.[21] This is positive in two respects – both because fewer Australians will experience the impact of technology as a threat to their job, and because such task substitutions are associated both with higher wages and greater levels of job satisfaction.

Finally, it's also worth noting that a number of emerging technologies are by their very nature likely to spur entirely new professions or industries as strong complements to human ingenuity. Most notable among these are biotechnologies and neurotechnologies, which are likely to be transformative in the healthcare sector, a set of industries where a substantial increase in jobs is expected as demand rises.[22]

"To put it another way, how do we ensure that it's not just the well-educated, the well-connected or the wealthy that get to benefit from new technologies?"

All of this is not to say that technology will not have an impact on inequality via job destruction – just that a central driver of future inequality is less likely than many fear to be the emergence of sudden, widespread technological unemployment.

But, even assuming that Australia avoids a scenario where large numbers of jobs are rapidly destroyed, could new inequalities nevertheless emerge because technology puts existing or new jobs out of the reach of many people? To put it another way, how do we ensure that it's not just the well-educated, the well-connected or the wealthy that get to benefit from new technologies?

Changing skills, changing opportunities: how can we ensure that transformed jobs and new technologies remain inclusive?

There is no doubt that skill demands are changing in industry, nor that technology is an important factor in this change.[23] This is already a major concern for employers and workers today. A 2015 survey of OECD countries found that more than 25 per cent of people perceived a mismatch between their current skill sets and the skills or qualifications required to do their jobs.[24] Meanwhile, more than 40 per cent of employers responding to ManpowerGroup's Talent Shortage Survey, reported difficulties in finding skilled talent.[25]

Why does this matter for inequality? The conventional framework is that technological progress raises the demand for skills. Investment in skills development – through different forms of training and education – then meets that demand. This dynamic, first outlined by Jan Tinbergen[26] goes toward explaining a good portion of the changes over time in the distribution of earnings and employment across advanced economies. Taking a longer view, Goldin and Katz[27] argue that falling inequality in the US between 1940 and 1970 was the result of a world class education system running ahead of the technology-driven demands of the economy, producing an ample supply of highly skilled graduates. The implication for today, of course, is that this "race between education and technology" is now being won by technology, both thanks to accelerating technological progress and by public education systems where quality is suffering.

As Bakhshi et al[28] point out, much of the work done on what is known as skills-biased technological change does not do a good job of distinguishing between skills. In fact, most of the time distinctions are simply between those who have graduated from higher education and those who have not. On this measure, an Australian with a bachelor degree in 2015 earned, on average, 40 per cent more than someone who had only completed high school. Possessing a masters degree or doctorate increased this premium to 79 per cent.[29] This premium has risen substantially since the turn of the millennium – the same figures in 2001 were 20 per cent and 55 per cent respectively.[30]

"The implication for today, of course, is that this 'race between education and technology' is now being won by technology, both thanks to accelerating technological progress and by public education systems where quality is suffering."

Why has the so-called college wage premium gone up? One of the world's most authoritative voices in this area, MIT's David Autor, argues that workers in occupations that require abstract thinking benefit from information technology thanks to the combination of strong complementarities between routine and abstract tasks, the fact that demand for such services is elastic (therefore more people want them when the price falls), and because labour supply to these occupations tends to be inelastic over the short and medium term.[31] Hence, technology raises earnings in occupations with a high proportion of abstract tasks and among workers who have the skills to supply them.

The issue of inequality arises given that these dynamics do not apply to all jobs, particularly those focused on manual tasks, which also tend to be those requiring lower levels of education: cleaners, drivers, security guards, fast food workers, and home aides etc. Such manual task-intensive occupations tend to be demand inelastic, and only minimally reliant on information or data processing for key tasks, with only limited opportunities for either direct complementarity or task substitution. A worrying issue is that the same dynamics apply to routine knowledge work, eroding the value of and limiting access to entry-level work in industries such as law, finance and the media.[32]

FIGURE 2

OPTIMISED VIABLE AND DESIRABLE JOB TRANSITIONS ACROSS JOB FAMILIES BY 2026

	Target job family								
Starting job family	Architecture and engineering	Arts, Design, Entertainment, Sports and Media	Building and Grounds Cleaning and Maintenance	Business and Financial Operations	Community and Social Service	Computer and Mathematical	Construction and Extraction	Education, Training and Library	Farming, Fishing and Forestry
Architecture and engineering									
Arts, Design, Entertainment, Sports and Media	0.1	11.9		0.1	0.1			0.1	4.5
Building and Grounds Cleaning and Maintenance									
Business and Financial Operations				36.9					
Community and Social Service									
Computer and Mathematical						22.6			
Construction and Extraction	0.4	0.2					0.3		
Education, Training and Library								3.9	
Farming, Fishing and Forestry			1.0				3.5		0.1
Food Preparation and Serving									
Healthcare Practitioners and Technical								1.7	
Installation, Maintenance and Repair	2.9	1.4	4.5			0.9	0.6		0.0
Life, Physical and Social Sciences									
Office and Administrative	0.0	5.0		221.1	2.5	11.8	20.9	8.2	8.8
Personal Care and Service		0.4		0.2					
Production	13.2	0.9	11.0	11		5.1	298.5	0.4	27.1
Protective Service				0.3					
Sales and Related				4.7		0.6			
Transportation	0.2						0.2		
Optimal number of transition to job family by 2026	16.7	19.8	16.6	264.4	2.6	41.0	324.1	14.3	40.5
Gross job creation by 2026	197.2	172.3	489.6	1333.9	346.1	660.2	799.9	793.3	81.4

Source: Burning Glass Technologies and US Bureau of Statistics Note: Units = 1000s of people

Food Preparation and Serving	Healthcare Practitioners and Technical	Installation, Maintenance and Repair	Life, Physical and Social Sciences	Office and Administrative	Personal Care and Service	Production	Protective Service	Sales and Related	Transportation	Viable job transition options found	Gross job destruction by 2026	Disrupted jobs without viable transition options
										N/A	0	0
1.4			1.0		0.9		0.9			21.0	26.2	5.2
										N/A	0	0
										36.9	–47.8	10.9
										0	–3.0	3.0
										22.6	–22.6	0
		0.1					0.1		0.1	1.2	–1.2	0
										3.9	–3.9	0
							9.2			13.8	–14.2	0.4
30.2	3.1									33.3	–33.3	0
	6.1									7.8	–9.8	2.0
		13.7	1.4							25.4	–28.9	3.5
										N/A	0	0
30.5	13.0	2.0		236.1	7.6	0.4	5.7	40.4	8.0	621.8	–642.0	20.2
										0.6	–0.6	0
3.0	2.1	60.9	10.5	20.2	5.2	6.7	0.6	2.0	21.4	489.9	–510.7	20.8
		2.4	0.7				34.8		3.5	41.7	–41.7	0
29.5					2.7		0.5	3.2		41.2	–41.3	0.1
5.5		1.5					0.4		0.6	8.4	–9.4	1.0
100.1	24.3	80.6	13.6	256.3	16.4	7.1	52.2	45.6	33.5	1369.4	–1436.6	67.2
1285.5	2339.3	411.4	124.8	751.3	1164.9	142.4	195.6	476.9	649.7	17415.7		

In accordance with this theoretical framework, shifts in skill demand do tend to affect those with lower levels of education and skills more, and with greater consequences. Those who are already missing out on wage premiums in the lower quintiles of income and wealth distributions are hence more exposed to future technology-driven shifts in skill demand. Brandes and Wattenhober[33] use O*NET data to show that there is a strong negative correlation between the level of education required for a job and its probability to be automated, while similar analysis by Bakhshi et al indicates that the majority of the jobs likely to experience a fall in employment are low or medium-skilled in nature.[34] As Alison Sheridan (Chapter 4) has discussed in this publication, shifts in demand for skills or tasks also affect women and men differently, which may result in higher levels of gender inequality.

So, what can we do to help those who do lose their jobs due to technology? One approach, taken by the World Economic Forum in its recent report *Towards a Reskilling Revolution*, is to map skill similarity across occupations, looking for skills that can be transferred from a job or occupation experiencing declining or negative demand to those which are growing.[35] While the analysis has so far only been applied to US job families, the results of the optimisation algorithm between job requirements, shown in figure 2, are fairly positive. It indicates that the vast majority of the workers currently holding jobs experiencing technological disruption in the US – 96 per cent, amounting to nearly 1.4 million people – have "good fit" transitions across jobs.[36]

This offers hope that, while lower-skilled workers may be more affected by technological disruption to jobs, there may be more options than commonly thought to match displaced workers with new opportunities. However, there are many factors beyond skill fit that go into a job transition – such as wage levels, worker mobility and job desirability. Ultimately the goal is not to simply find new jobs for workers, but to ensure that everyone has the opportunity to be better off in a fair work environment. Building on the World Economic Forum framework, when we control for the fact that target jobs should maintain or grow workers' current level of wages – by definition a critical factor for wage inequality – "good-fit" jobs are, on average, ones which require two years of additional education and two years of additional work experience, both of which are costly to attain and provide.[37]

"Ultimately the goal is not to simply find new jobs for workers, but to ensure that everyone has the opportunity to be better off in a fair work environment."

The critical issue therefore becomes how to inclusively support current and future workers to invest in the skills required to succeed in the Fourth Industrial Revolution. But which skills are the most important for workers today?

Both detailed job-family analysis and employer surveys,[38] indicate that interpersonal skills (teaching, social perceptiveness etc), higher-order cognitive skills (originality, active learning, problem-solving) and systems-related skills (understanding interconnections, identifying feedback loops) are rising in demand around the world. However, these tend to simply be the skills associated with tasks that involve abstract thinking and non-routine work.

Much of this work can be summarised by saying that one of the most important future-oriented skill-sets is a suite of practical and cognitive abilities that make someone able to work effectively alongside machines, particularly in contexts which require working closely with or relating to other humans. Deming found that nearly all job growth from 1980 to 2012 in the US had high social skill requirements, while jobs that were mathematically-intensive but less social shrank by three percentage points over the same period.[39]

"In fact, it is possible – and perhaps important – to view transitioning and supporting Australian workers in light of the Fourth Industrial Revolution as an opportunity, not a threat."

The good news is that Australia is well placed to provide these skill-sets to a broad cross-section of current and future workers. Not only does the country perform extremely well in access to primary, secondary and higher education, but various studies find relatively little variation in terms of the wage premium provided by different universities.[40] This implies that Australia does much better than other countries (particularly those dominated by private universities) in terms of providing relatively equal opportunities in higher education.

In fact, it is possible – and perhaps important – to view transitioning and supporting Australian workers in light of the Fourth Industrial Revolution as an opportunity, not a threat. AlphaBeta[41] estimated that, of the $2.2 trillion of value that can be captured from automation for the Australian economy, $1.2 trillion would flow from successfully preparing future workers, providing training and assistance to keep workers at high-risk of replacement in the labour force, and accelerating automation for low-risk, high-skill workers.

Capital, robots and tax: will human labour lose?

Stepping back from the specifics of whose jobs might be lost and which skills may be more or less in demand, an important consideration is whether new technologies will shift the relationship between capital and labour in ways that exacerbate inequality.

One argument is that, even if net job growth keeps pace with the labour supply, the process of automation will tend to shift returns in the economy away from workers and towards owners of increasingly smart, technology-intensive capital. This perspective recalls Piketty's theoretical framework that reignited the global inequality debate in 2014, upon the English-language publication of *Capital in the Twenty-First Century.* Piketty's framework focuses on wealth inequality, arguing that when the rate of return on capital (r) exceeds the rate of economic growth (g), then by mathematical identity wealth will accumulate more quickly to owners of capital than to workers, resulting in rising inequality.[42]

But new technologies do not inevitably reward capital over labour – even when organisations choose to replace workers with machines in ways that mean that labour's share of national income declines. Theoretical work by Acemoglu and

Restrepo suggest powerful countervailing effects exist that offset worker displacement and may serve to increase demand for, and hence returns to, labour. These operate partly through raising the productivity of both workers and existing capital, but primarily by creating new tasks in which labour has a comparative advantage.[43]

Nevertheless, as Laura Tyson, chair of the Council of Economic Advisers under President Clinton remarked, in a world with strong intellectual property protection and significant capital investments in new technologies, a critical question is "who owns the robots?"[44] Hot on the heels of the issue of ownership comes the very live question (particularly in Australia) of how we should tax companies, particularly the ones using the robots.

Both taxation and transfers are powerful and essential levers in managing inequality. Figure 1 shows that Australia's market income Gini coefficient – before taxes and transfers – is over 0.45, far higher than Australia's net income Gini in the low thirties. This is far from the most extreme swing – Sweden's market Gini is over 0.50, falling by half thanks to its generous welfare state.[45]

But does the effectiveness of tax and transfers in reducing inequality mean that Australian corporations should pay higher rates of tax? The answer, as almost always in economics, is it depends. It depends on the structure of the economy; the tax base and what types of firms already pay taxes where. It also depends on what other countries are doing; in a globalised world of mobile capital, particularly for a country like Australia that is dependent on inflows of capital from overseas for much of its investment, having a globally competitive tax rate matters.

It also depends on whether workers might have the ability to capture a higher share of the money that companies save with lower tax rates. A 2013 paper from the Institute of Study of Labor in Bonn,[46] found that higher rates of corporate taxation, at least in the collective bargaining, corporate governance and wage-setting context of Germany's regions, are associated with lower wages for workers. Interestingly, high- and medium-skilled workers experience relatively higher wage losses than low-skilled workers if corporate tax rates increase. These results are of course impossible to translate from Germany, given Australia's very different systems of corporate governance and labour relations. But they do indicate the important role that enterprise bargaining and unions could play in helping the Australian economy navigate structural change so as to benefit both firms and their employees.

"Hot on the heels of the issue of ownership comes the very live question (particularly in Australia) of how we should tax companies, particularly the ones using the robots."

Another idea, popularised by Bill Gates, is that governments should instigate a "robot tax".[47] The South Korean government moved in this direction when in August 2017 it announced that it was reducing existing incentives for businesses investing in automation.[48]

This approach runs up against the fact that raising productivity in Australia actually requires more firms to invest in new technologies – not to hold off. The trick, as Acemoglu and Restrepo emphasise[49], is to do so in ways that tend to augment the number of workers, their skills, their pay and their quality of life at work, all at the same time. This may sound challenging, but that is exactly what Australian workers have experienced, on average, through the last two industrial revolutions, when the labour force, education levels, wages and work satisfaction all rose significantly.

However, being successful in this regard in the future will mean rethinking not just how capital, firms, consumption and workers are taxed, but also the systems that protect people in terms of determining who is eligible, for which benefits and how these can be most effectively delivered.

After all, new technologies aren't just opportunities to be grasped by large firms. Ubiquitous, mobile connectivity and powerful algorithms have together enabled what has been variously described as "the sharing economy", "crowd-based capitalism", "the gig economy", "the platform economy" and "collaborative consumption".[50]

Sundarajan[51] defines this sector as being a largely market-based activity, drawing on crowd-based networks to deploy assets (whether time, real estate, goods or services) closer to the full potential. It is also one that blurs the lines between the personal and the professional, between work and leisure, between full-time and casual labour and between independent and managed work.

"However, being successful in this regard in the future will mean rethinking not just how capital, firms, consumption and workers are taxed, but also the systems that protect people in terms of determining who is eligible, for which benefits and how these can be most effectively delivered."

While reliable data is lacking on the extent and growth of this activity in Australia, its rise does pose a number of challenges to social protection. While the majority of current users of the sharing economy do so as consumers or occasional producers, an increasing number of Australians are likely to become financially dependent on platform work, and therefore exposed to sources of economic insecurity that are unfamiliar in a system which relies on a sharp distinction between being employed versus self-employed. Data from the US suggests that the rise in alternative work arrangements is both rapid and constitutes the majority of net new job opportunities,[52] while the approximately one per cent of Australians who are currently part of the gig economy fall outside the super guarantee, potentially depressing their savings rate and pension sustainability.[53]

Technology, inequality and the importance of human rights

Just as important as the impact of technology on inequality via labour markets is the direct and indirect impact that new technologies can have through deliberate or unintended discrimination against groups or individuals.

Langdon Winner in his 1980 article "Do Artifacts have Politics" pointed out that "machines, structures and systems of modern material culture" embody political purposes, including how benefits are distributed or life is experienced among different groups of people. He cites the example of Robert Moses, the master planner of the city of New York, who (according to Robert A. Caro's deeply-researched biography) deliberately designed the height of bridges across roads into Long Island to prevent buses visiting beaches: "One consequence was to limit access of racial minorities and low-income groups to Jones Beach, Moses's widely acclaimed public park."[54]

Looked at from this perspective, it is not just important to consider who has the ability to afford, access and make productive use of new technologies. It means that there is value in understanding whether and how technologies are structured and governed to ensure they don't deliberately or inadvertently discriminate or oppress. As more and more organisations – both public and private – develop, purchase or customise automated decision-making systems, the issue of bias and discrimination becomes critically important to address.

This is not just an issue of fairness or good behaviour – rights to equality and non-discrimination are central features of the major human rights treaties.[55] Governments have a legal responsibility to uphold human rights, while businesses have a responsibility to respect them in all their operations.

Bias and discrimination in technology has entered the public consciousness along with our increasing reliance on machine learning – and our increasing awareness that all algorithms are inevitably biased in some way. This bias can flow from several (and in some cases, multiple) sources – because the algorithm was itself specified to include a discriminatory variable (e.g. including a variable for private school attendance in a loan application algorithm), because the training data was incomplete (e.g. failing to train the model with data representing minorities because such data is harder to find), because the training data is inherently biased (e.g. training a model using gender-skewed income data), or because it was deployed in an inappropriate context (e.g. deploying a model in a different cultural context from the circumstances under which it was originally trained).[56]

The outcome of such bias can, to pick three examples that involve race, range from an algorithm that offensively labels people of colour as animals[57], to an algorithm that delivers advertisements for criminal background checks at different rates for racially-associated names,[58] to a risk-assessment system in criminal justice that wrongly labels black defendants as high risk at almost twice the rate it does white defendants.[59]

These are not isolated cases – nor are they minor concerns. In *Weapons of Math Destruction*, Cathy O'Neil details how university admissions, online advertising, criminal justice, job search, financial services and insurance systems all can be biased against certain groups – and the difficulties that can result in the case where the system decides against you.[60] Virginia Eubanks (2018) complements this overview with three harrowing cases where automated systems are being integrated into human and social services systems in the US with huge impact on vulnerable populations, yet little or no political discussion about their impacts.[61]

There are three reasons to be particularly concerned. The first is that it is likely that automated decision-making systems will be applied more often, at a greater scale and more consequentially for those already marginalised. If you are unlucky enough to be in the criminal justice system, the decision on your bail application may be heavily influenced by an algorithm, yet, based on the experience in other jurisdictions, how it works is an almost complete mystery to the police, the prosecutor, the presiding judge and your legal team.[62] If you are applying for social services, your eligibility will almost certainly be decided by a computer. And, as the Centrelink automated debt recovery scandal demonstrated, existing benefits could be put at risk by an error-prone system that puts the burden back on you to prove your innocence, adding huge stress and threatening already-fragile living arrangements.[63] There exists a rising number of examples of countries and governments essentially "beta testing" novel uses of artificial intelligence and machine learning systems on populations who are extremely vulnerable to the consequences of failure – and this is taking place in the absence of common guidance, regulation, transparency or well-tested methodologies.

"The second, related, concern is that it is not easy to know whether, when or how such systems are discriminating against a group or individual, thanks to the fact that machine learning tends to involve proprietary algorithms that are inherently opaque and seemingly all-powerful."

The second, related, concern is that it is not easy to know whether, when or how such systems are discriminating against a group or individual, thanks to the fact that machine learning tends to involve proprietary algorithms that are inherently opaque and seemingly all-powerful. This means that a) it's extremely difficult to get access to the source code to inspect them, even if they are deployed in the public sector, since they are often owned and managed by private companies; b) even if you can get access to the code and data, a number of machine learning approaches use iterative approaches that are very difficult to "back out" and understand their working; and c) the fact that they are complex, inscrutable and expensive discourages users from questioning their output. Taken together these aspects make it challenging to assess the system, appeal the decision and redress the harm caused.

The third, and perhaps most important, reason to be concerned is that, as Eubanks[64] points out, systems of control that begin as targeted programs for particular groups often become widely accepted and applied across entire populations.

Thankfully, work is occurring around the world around the governance of new technologies to reduce their potential for discrimination and human rights violations more generally. In the area of artificial intelligence, these include the Asilomar Principles,[65] the IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems,[66] and the use of "Discrimination Aware Data Mining".[67] Common to these approaches is that machine learning systems should be safe and secure, transparent and auditable by third parties, responsible and inclusive to diverse users, non-discriminatory, and as far as possible give users and subjects control and autonomy over their own data.

"However there remain too many counter-examples of change that have been introduced without a deep commitment to protect human rights."

It is encouraging to note that since the modern era of human rights began with the Universal Declaration of Human Rights in 1948, human rights law and principles that promote equality and fairness have, in general, been successfully applied to a vast array of new political, social, economic and technological contexts. The key to success tends to be a conscientious, deliberate and persistent commitment to embed the protection of human rights into the context or environment as it changes. Research-focused groups looking to ensure that emerging technologies contribute positively to social inclusion in this way include the World Economic Forum's Center for the Fourth Industrial Revolution and the Australian National University's 3A Institute.

However there remain too many counter-examples of change that have been introduced without a deep commitment to protect human rights. Hence, as new technologies emerge, there is an urgent need to develop the intellectual, legal, institutional and cultural bulwarks that will ensure new technologies are applied in a way that conforms to Australian national values – especially equality.

Conclusion: recognising myths and shaping reality in a technological future

Two pervasive myths about technology are unhelpful when it comes to assessing and responding to the challenge of future inequality in Australia.

The first is that technologies are nothing more than tools – increasingly clever tools, to be sure, but tools which need only be deployed in the right way to get the right results. This ignores the fact that technologies are – whether we like it or not – inherently political and create an enduring context around us, with the power to exacerbate inequality in multiple ways for decades to come if we get things wrong today.

The second and contrasting view is that emerging technologies are completely exogenous and deterministic. They are forces of nature: waves or tsunamis or avalanches. There is little or nothing we can do except prepare for the future.

This perspective ignores the fact that, whether as a citizen, consumer, investor, policy maker, business executive, parent, social influencer or all of these simultaneously, we actively shape our relationship with new technologies – and the development of technologies themselves – in myriad ways every day. Moreover, we have a responsibility to act positively and proactively in this regard, simply by virtue of living at a time when organisations and governments are just beginning to adopt new norms and draft regulations around emerging technologies.

We can therefore take heart with the fact that the impact on inequality of new technologies – via the impact on productivity, employment and social systems – depends on how these technologies are designed and adopted within and across Australian organisations. Furthermore, it's not just individual organisations that matter – the approach taken by industry leaders, associations, unions and governments will all influence whether technologies such as machine learning will, on balance, augment or replace workers, and how laid-off workers fare afterwards.

Of these, governments are likely to be the most powerful. As economist Joseph Stiglitz puts it, "Technology and scarcity, working through the ordinary laws of supply and demand, play a role in shaping today's inequality, but something else is at work, and that something else is government."[68] Yet governments cannot and should not attempt to address the intersection of inequality and technology alone – as former US Secretary of State Madeleine Albright has observed[69], governments face the challenge of responding to a range of 21st-century challenges, armed with 20th-century mindsets and 19th-century institutions. The complex challenges posed by the structural shifts underway can only be tackled with a cooperative architecture across sectors that includes governments, businesses, unions, social movements, the media and researchers.

> "We do not have to choose between accepting or rejecting emerging technologies due to fears of future inequality."

Luckily, Australian industry and government have had experience at navigating industry-wide job impacts, collaborating on structural adjustment programs. For example, although Australia's car industry has reduced its workforce by tens of thousands of people since 2006, in 2011 only three per cent of automotive workers remained unemployed, with more than half of laid-off workers finding a new job in manufacturing or other sectors.[70]

Finally, while this chapter has focused on future inequality through the lens of technology and related considerations for public and private actors, it's important to note that Australia's future levels of inequality will in fact be determined by an ecosystem of structural policy incentives and institutions. Together, and as part of the process of economic growth and social development, a wide range of incentives and institutions act to diffuse (or concentrate) the benefits of growth, which include education and skills, basic and digital infrastructure, financial system

inclusion, asset building and entrepreneurship, employment, wage and non-wage compensation, taxation and social protection.[71] It is the combination of these factors and dynamic between them – not any single panacea – that will ensure inclusivity in a technologically-driven future.

We do not have to choose between accepting or rejecting emerging technologies due to fears of future inequality. Rather, we face the rather more difficult task of simultaneously accelerating the development and adoption of new technologies so as to continue the dramatic rise in living standards Australians want and deserve, while ensuring that no-one is unfairly excluded or discriminated against along the way.

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