

Understanding the persistence of inequality in higher education: evidence from Australia

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Abstract

During the latter half of the twentieth century, Australia, like many OECD countries, experienced rapid expansion in participation in higher education which was supported by government through increases in the number of publicly funded university places. However, in spite of this expansion, a disproportionately large share of the undergraduate student population is still drawn from higher socio-economic backgrounds. This paper seeks to understand the persistence of inequality in higher education by examining changes in patterns of participation in Australian universities since the 1970s. Using logistic regressions to analyse data collected by three Australian surveys conducted between 1987 and 2005, the authors examine the influence of having a university-educated parent on an individual's chances of obtaining a higher education degree. They find that although the expansion of higher education has had some impact in terms of reducing inequality, having a university-educated parent continues to exert a direct effect on an individual's propensity to graduate from university. The paper draws on the theories of Maximally Maintained Inequality and Relative Risk Aversion to interpret institutional and student behaviour. The policy challenges of addressing structural inequality in higher education are also discussed.

Key words: higher education policy; participation; access; social class; students; intergenerational mobility; low socioeconomic status

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Introduction

Policy goals to increase higher education graduation rates are justified in economic terms as global demand for university graduates remains strong and the attainment of a higher education degree rewards individuals with higher earnings compared to people with lower level qualifications (OECD 2010). In Australia, between 2005 and 2010, 70 per cent of new jobs created were in highly skilled professional and managerial occupations whereas jobs in occupations requiring the lowest levels of skills such as sales assistants and labourers grew by just two per cent (DEEWR 2010).

Australia now ranks seventh out of 31 OECD countries in terms of the percentage of its population aged 25 – 64 years (26 per cent) holding university-level qualifications (OECD 2010, 36). However, although the total number of domestic undergraduate students more than trebled over the 36 years from 1974 to 2010 (DEETYA 1996; DEEWR 2011), the proportion of people from the bottom socio-economic quartile who participate in higher education has hovered between 14 and 15 per cent since 1989 (Australian Government 2009, 12).

The persistence of inequality in access to higher education has been investigated by policymakers and researchers in many English-speaking countries (Adelman 2004; Bradley et al. 2008; Blanden and Machin 2004; Chapman and Ryan 2003; Harrison 2011; James et al. 2008; Marks 2009a). The lower rates of university participation among young people from lower socio-economic backgrounds have been attributed to several factors including: a lack of financial resources to undertake university study; lower educational aspirations; lower levels of educational attainment and a lack of awareness of the possibilities and benefits of tertiary education (Bradley et al. 2008). Sellar and Gale (2011, 129) argue that student equity is more than removing barriers, it is also about changing institutions so that participation is more accessible and desirable to a wider variety of groups of individuals. At an individual level, cultural capital and family expectations can influence low-SES students' perceptions about the difficulties and risks of undertaking higher education compared to being in the full-time labour market (Ball 2003; Holm and Jaeger 2008; Savage 2011). At the institutional level, universities also perpetuate structural inequalities through the power and control they exert over the curriculum taught in secondary schools (Alon 2009; Teese 2000) and their institutional habits

and traditions which may deter young people from low-SES families from applying (Harrison 2011).

This paper seeks to understand the persistence of inequality in higher education by examining changes in patterns of participation in Australian universities. Using data collected by three Australian surveys conducted between 1987 and 2005, we examine the influence of having a university-educated parent on an individual's chances of obtaining a higher education degree. After a brief overview of the Australian higher education system, existing research and relevant theoretical perspectives, we present the results from our analyses and then discuss the challenges policy-makers need to address.

The Australian higher education system

Australian universities operate within a national publicly funded higher education system that has grown steadily over recent decades. The total number of domestic undergraduate students increased from around 200,000 in 1974 to 605,000 in 2010 (DEETYA 1996; DEEWR 2011). The predominant means of accessing higher education for young people is through the completion of secondary school through to Year 12. With education being a state/territory responsibility, educational systems vary between states with some offering external examinations and others using a continuous assessment model to determine students' final scores. Students in most states complete six years of secondary school, however, students in Queensland currently complete five years of secondary school (in the future, when Year 7 is transferred from primary school to secondary school, Queensland students will complete six years of secondary school). To alleviate the differences between educational systems, Year 12 students' results are converted to an Australian Tertiary Admission Rank (ATAR¹) which enables students to be ranked against their peers Australia-wide. Universities use the ATAR to offer places to students on merit. Through this method, the most prestigious universities and the more popular courses usually attract students with higher scores. Other eligibility options include the completion of an appropriate VET (Vocational Education and Training) program or the Special Tertiary Admissions Test. In 2010, around one quarter of domestic undergraduate students were mature-age students aged 25 years or more (DEEWR 2011).

¹ ATAR is a number between 0 and 99.95 with increments of 0.05 and is calculated from an aggregate of scaled marks in 10 units of ATAR eligible courses. Using a common scale overcomes the difficulties of comparing students from different states and territories (UAC 2011).

The higher education system in Australia has experienced several decades of expansion and many changes in funding. Until 1973, universities charged students up-front tuition fees which were supplemented by scholarships offered on the basis of merit (mainly funded by the government). Between 1974 and 1989, tuition fees were abolished and undergraduate university education was free. Since 1989, when the Higher Education Contribution Scheme (HECS) was introduced, university students have been required to make a contribution towards the cost of their higher education through an income-contingent student loans scheme (Chapman 1997; Marks and McMillan 2007). Originally, all courses attracted an equal level of student contribution, however, in 1997 and in 2005 further policy changes were introduced which resulted in different charges being levied for different courses (see Marks 2009a for a full review). Students receive an interest-free loan (although the balance is adjusted each year to take account of inflation) from the government which they then repay via the taxation system once their income reaches a threshold, currently set at \$47,196.

Since 1974, the Australian government has provided a means-tested scheme of income support to help full-time students meet their living expenses. In 2010, almost 158,000 students in undergraduate level programs were in receipt of this financial assistance (Australian Government 2011). Full-time students from low-income households aged between 16 and 24 years may qualify for Youth Allowance, whereas those aged 25 or older may qualify for Austudy. Eligible students may receive up to \$256 per fortnight if they live in the family home or \$389 per fortnight plus rent assistance of up to \$119 per fortnight if they live away from the family home. Students receiving these payments are permitted to undertake paid work in conjunction with their studies, however, their payment is reduced by 50 cents for each dollar they earn over \$236 per fortnight (Centrelink 2011).

Despite the expansion of the higher education sector, the availability of income support and the realities of the labour market, Australian researchers have generally found little change in the proportion of university students with low socio-economic backgrounds (Bradley et al. 2008; Chapman & Ryan 2003; James et al. 2008; Marks 2009a). As Chapman and Ryan (2003) note, this is largely due to the lower levels of educational attainment by secondary school students from low socio-economic backgrounds. The Year 12 completion rate for students from low socioeconomic backgrounds was around 20 percentage points lower than that of students from high socioeconomic backgrounds (59 per cent compared with 78 per cent) in 2006 (Bradley

et al. 2008: 27). Therefore, although Year 12 retention rates increased from 28 per cent in 1969 to 79.5 per cent in 2011- see Table A.1 in the Appendix (ABS 1979- 2011), students from low socio-economic backgrounds continue to be less likely to graduate from secondary school.

Theoretical Perspectives

Two theories which may shed light on why the expansion of the higher education sector has not resulted in more students from low socio-economic backgrounds undertaking university study are the Relative Risk Aversion (RRA) theory and the Maximally Maintained Inequality (MMI) theory. Researchers using Relative Risk Aversion theory suggest that inequalities in educational attainment persist because young people, regardless of socio-economic background, are more concerned with avoiding downward mobility than with achieving upward mobility (Breen and Goldthorpe 1997; Goldthorpe 1996; Goldthorpe 2007; Goldthorpe and Breen 2007; Holm and Jaeger 2008). Breen and Goldthorpe (1997, 283) argue that parents seek to ensure that their children ‘acquire a class position at least as advantageous as that from which they originate’ therefore students from low-SES families have weaker incentives to pursue higher education compared to their peers from high socio-economic backgrounds because a university degree is not necessary for students from low socio-economic backgrounds to maintain their social position (Holm and Jaeger 2008). For a young person whose parents do not hold a university qualification, the drive to maintain class position (and avoid downward mobility) would be best satisfied by securing paid employment rather than staying on at school. Moreover, the perceived risks of aspiring to higher education – in terms of foregone income and the prospects of academic failure – would be magnified for prospective students from low socio-economic backgrounds (Savage 2011, 53). In contrast, for a young person from a high socio-economic background, the decision to stay on at school and pursue higher education is necessary simply to maintain their social position.

Several European researchers have found evidence to support Relative Risk Aversion Theory (Goldthorpe and Breen 2007; Holm and Jaeger 2008; Van de Werfhorst and Hofstede 2007). For example, Van de Werfhorst and Hofstede (2007) found that children from all social backgrounds were equally concerned with maintaining their social position and avoiding downward mobility and hence there was a strong correlation between having highly educated parents and wanting to achieve university qualifications. Holm and Jaeger (2008) came to a

similar conclusion that students from higher social class positions were more likely to aspire to and attain higher levels of education.

Maximally Maintained Inequality theory argues that before the impact of social class on educational attainment can be reduced, 'saturation' among the privileged class needs to be achieved (Raferty and Hout 1993, 57). Therefore, educational expansion will not necessarily reduce educational inequality. If the increase in opportunities only allows more students from the privileged class to enter higher education, there will be no change in the relative proportions of students from the various social class positions (Arum et al. 2007, 31). An increase in the number of students from low socio-economic backgrounds will only occur when all of the students from the privileged class are accommodated and supply of university places continues to exceed demand. That is, when 'saturation' is reached and the expanding sector needs to attract greater numbers of students from low socio-economic backgrounds to fill universities. The results of a cross national comparison of 13 countries conducted by Arum, Gamoran and Shavit (2007) found support for Maximally Maintained Inequality theory concluding that expansion alone does not alleviate inequality; it is only when 'saturation' is reached that inequality is reduced. Alon (2009,732) examined inequality in post-secondary enrolments in the US finding relative class differences persisted during the expansion of higher education because when saturation point at a certain level of education occurred, inequality shifted to the next level of attainment.

With these theories in mind, we now turn to our empirical analyses to examine the effect of parents' education on child's education. The aim is to understand why inequality in higher education participation has persisted in an era of educational expansion, and what this information means for higher education policy. Previous Australian policy makers have relied on the postcode of the respondents' home address to determine their socio-economic status. However, Lim and Gemici (2011) argue that an ideal measure of individual socio-economic status would include measures of income and wealth, study resources, computing resources and cultural resources available to the individual. Given that there are no national surveys which have included measures for each of these factors, we use the educational attainment of parents to indicate the socio-economic status of individuals in this study. The educational level of parents is a reasonably strong proxy indicator of a family's income and wealth (Lim and Gemici 2011) and is also an appropriate proxy for the likely levels of resources for studying provided in the home

(Alon 2009; Goldthorpe 2007; Lim and Gemici 2011; Pfeffer 2008). The Australian Curriculum, Assessment and Reporting Authority (ACARA) developed a comprehensive measure of the level of advantage of the student populations in schools- the Index of Community Socio-Educational Advantage (ICSEA) which includes student level information on parents' occupations and parents' educational attainment as well as school level information (ACARA 2012).

Method

Data

The data analysed in this paper are derived from three Australian nationally representative surveys. The 1987-88 NSSS (National Social Science Survey) collected data from 1663 respondents using a self-complete mail-out questionnaire (Kelley, Evans et al. 2009). The 1994 NSSS collected data from 1378 respondents using a self-completed mail-out questionnaire (Kelley, Bean et al. 2009). The 2005 Neoliberalism, Inequality and Politics Project collected data from 1623 individuals using computer assisted telephone interviews (Western et al. 2005). Each of the three surveys was designed to collect cross-sectional data. Thus, there is no relationship between respondents in each of the datasets. Although international researchers are able to conduct analyses of longitudinal data sets which allow a more comprehensive examination of the effects of parents' education on child's education, Australia does not have longitudinal data spanning these decades. The Household, Income and Labour Dynamics in Australia (HILDA) project, the only nationally representative longitudinal Australian survey, began in 2001 and is therefore, unsuitable for the purposes of this study. The Longitudinal Survey of Australian Youth (LSAY) has collected data on several cohorts of Year 9 students starting in 1995 and surveying the participants on an annual basis for 10 years. The LSAY project has been plagued by very high attrition rates making these data unsuitable for the analysis required for this paper. For example, of the 13,613 Year 9 students interviewed in 1995, only 1630 were interviewed in 2006 (Ryan 2011, 14). Using cross-sectional data collected at three time points allows for an examination of trends over time using cohort analysis. Respondents less than 21 years of age at the time of the survey were dropped from the analytical sample on the basis that it would be unlikely for them to have acquired a university degree. Respondents who were missing on birth year were also dropped from the analytical sample (n= 4464).

Dependent variables

The dependent variable, respondent's education, divides respondents on the basis of whether or not they have completed a university degree and is included in the analysis using a dummy variable coded 1= university degree.

Independent variables

The predictor variables relate to the education of each of the respondent's parents. Father's education measures whether or not the respondent's father has a university degree and is coded 1= yes, has university degree. Mother's education measures whether or not the respondent's mother has a university degree and is coded 1= yes, has university degree. Pfeffer (2008, 545) used a similar approach on the basis that 'parental education exerted the strongest direct effect on an individual's educational attainment'.

Three control variables are also included in the analysis: gender, type of school attended and birth cohort. For the purposes of the logistic regression analyses they are all presented in dummy variable format. Gender is coded 1= female. School type is included as three dummy variables: Government school (reference); Catholic school; other non-government school. The latter two groups are commonly referred to as 'private' schools. Four dummy variables define birth cohort: born before 1940 (reference), Fees (born between 1940 and 1954), Free (born between 1955 and 1969), and Loans (born after 1969). The four birth cohorts divide respondents into groups that reflect the changes that have taken place during the latter half of the twentieth century. The higher education rate for the first cohort was particularly low. The second cohort finished secondary school during the era when up-front fees were payable for higher education. The third cohort finished secondary school after the national government abolished up-front fees in 1974. The final cohort started their university studies after the introduction of the Higher Education Contribution Scheme (HECS) in 1989 (Chapman 1997).

Descriptive Analysis Results

The descriptive statistics for the variables are reported in Table A.2 in the Appendix. Although the overall sample has equal percentages of men and women, men are slightly over-represented in 1994 and women are slightly over-represented in 2005. In 1987, 11 per cent of respondents held a university degree and in 2005, 32 per cent of respondents held a university degree. The level of reported parental education also increased over time. Just seven per cent of respondents

had a university-educated father in 1987 compared with 12 per cent in 2005. Only three per cent of respondents had a university-educated mother in 1987 compared with seven per cent in 2005.

Table 1 lists the percentage of men and women in each birth cohort who had a university degree by the year in which the data were collected. As expected, men in each birth cohort were more likely to have a university degree than men in the preceding birth cohort. For example, in 2005, 42 per cent of men born after 1969 had a university degree compared to 25 per cent of men born before 1940. The percentage of men with a university degree in each birth cohort increased dramatically during the period 1987 to 2005. For example, the percentage of men born before 1940 who had a university degree increased from 11 per cent in 1987 to 25 per cent in 2005.

There has also been a dramatic increase in the percentage of women obtaining university qualifications. In 1987, six per cent of women born before 1940 had a university degree and by 2005, 13 per cent of women in this cohort had a university degree. In 2005, 47 per cent of women born after 1969 had a university degree². The increase in the proportion of men and women with university degrees in the early cohorts implies that the expansion of higher education encouraged men and women to return to education as mature-age students undertake university studies.

[insert Table 1 about here]

To examine the effect of having a university-educated father on child's education, we compare the percentage of men and women in each birth cohort in each year who had a university-educated father with the percentage of university-educated men and women in each birth cohort in each year that had a university-educated father. Given the low percentages of respondents who had a university-educated mother in 1987 and 1994, and the high correlation between having a university-educated mother and a university-educated father, we do not conduct analysis to determine the effect of having a university-educated mother on respondent's chances of graduating from university here in the descriptive analysis, however, mother's education is included in the logistic regressions. If father's education had no effect on respondent's education we would expect that the proportion of university-educated men and

² The dramatic increase in the proportion of respondents with a university degree was somewhat unexpected so we replicated the analysis using the Australian Survey of Social Attitudes 2005 dataset (Wilson et al 2006) and achieved similar results.

women with a university-educated father would be the same as the proportion of all respondents with a university-educated father-see Table 2.

In 1987, men in the first cohort were 5.75 times more likely to have a university degree if their father had a university degree (23% compared to 4%). In 2005, men in the first cohort were twice as likely to have a university degree if their father had a university degree (16% compared to 8%). Although there is a gradual decline in the effect of having a university-educated father over time, father's education continues to predict child's education. Men in the youngest cohort in 2005 were 1.4 times more likely to have a university degree if their father had a university degree (40% compared to 29%). Overall, the percentage of university-educated men with a university-educated father was higher for each birth cohort at each time point than would be expected if father's education had no effect on respondent's educational attainment.

[Insert Table 2 about here]

The effect of father's education is similar for women in each birth cohort in each year. In 1987, women in the first cohort were 5.5 times more likely to have a university degree if their father had a university degree (27% compared to 5%). In 2005, women in the first cohort were 2.5 times more likely to have a university degree if their father had a university degree (18% compared to 7%). Again, the percentage of university-educated women with a university-educated father is higher for each birth cohort at each time point than would be expected if father's education had no effect on respondent's educational attainment.

Logistic Regression Results

To isolate the effects of parents' education, gender, birth cohort, year interviewed, and type of school attended on child's education, we conducted logistic regression analysis using a series of models separately for each year data were collected and present the odds ratios in Table 3. The odds presented here refer to the effect of the predictor variable net of the effects of the other variables included in the regressions. We only discuss the results which are statistically significant. Women were less likely to have a university degree than men in all three surveys with odds of 0.5 in 1987, 0.6 in 1994 and 0.7 in 2005. In each year, both men and women with a university-educated father were more likely to have a university degree with odds of 5.5 in 1987, 2.5 in 1994 and 2.7 in 2005. Mother's education is not significant in 1987 or 1994 but is highly

significant in 2005 when having a university-educated mother increased the odds of having a university degree by 2.4 times. In 1987 and 1994, only around three per cent of respondents had a university-educated mother making it difficult to achieve statistical significance at these time points.

Attending a non-government (private) school also increased one's odds of attaining a university degree. In 1987, men and women who had attended a Catholic school were twice as likely to have a university degree and those who had attended another type of non-government school were 3.6 times more likely to have a university degree compared to those who had attended a government school. The impact of the expansion of the higher education sector is illustrated by the increasing odds of graduating from university for those interviewed in 1994 or 2005. In 1987, there is no effect for birth cohort suggesting that the odds of graduating from university were not dependent upon one's year of birth. However, in both 1994 and 2005, men and women born in later cohorts were more likely to have graduated from university than men and women born before 1940.

[insert Table 3 about here]

To examine whether these changes over time in the effects of birth cohort, parents' education and type of school attended are statistically significant, we merged the three datasets and included a time variable. To allow for differences in the odds of attaining a university degree according to gender, we conduct our analysis separately for men and women. The results of the logistic regressions are presented in Table 4. Again, the odds presented here refer to the effect of the predictor variable net of the effects of the other variables included in the regressions and only results which are statistically significant are discussed. Time has the expected effect on the likelihood of attaining a university degree with men interviewed in 1994 being twice as likely, and men interviewed in 2005 being three times more likely to have graduated from university than men interviewed in 1987. Men with a university-educated father were three times more likely to have a degree and those with a university-educated mother were 1.75 times more likely to have a degree than other men. Being educated at a non-government (private) school increased the odds of attaining a university degree by 1.9 times for men from Catholic schools and 2.6 times for men from other non-government schools. Although men born between 1940 and 1969 were more likely to have a degree than those born before 1940, men born after 1969 were no

more likely to have graduated from university than men born before 1940. In summary, each of the predictor variables had the expected effect on the likelihood of attaining a university degree for men with the exception that men born after 1969 were no more likely to graduate from university than men born before 1940.

For women, each of the predictor variables is associated with increased odds of attaining a university degree. As shown in Table 4, women interviewed in 1994 were twice as likely and women interviewed in 2005 were 3.5 times more likely to have a degree than women interviewed in 1987. Having a university-educated father increased the odds by 3.5 times and having a university-educated mother doubled the odds of having a university degree. Being educated at a non-government (private) school also increased the odds for women: by 1.6 times for those who attended a Catholic school and 2.4 times for those who attended other non-government schools. The odds of attaining a degree increased for each birth cohort: 2.6 times for those born between 1940 and 1954; 3.8 times for those born between 1955 and 1969; and 5.2 times for those born after 1969. In summary, the effect of birth cohort on the likelihood of graduating from university for women increased over time with women born after 1969 interviewed in 2005 being five times more likely to have graduated from university than those born before 1940.

[insert Table 4 about here]

Discussion

The results presented here show that although the expansion of higher education in Australia since the 1970s appears to have reduced inequality in educational attainment on the basis of gender, inequality related to socio-economic status persists. Our measure of socio-economic status, having a university-educated parent, has a positive effect on the likelihood of graduation from university. When we control for the effects of time (in Table 4) we find that men with a university-educated father were 2.8 times more likely to have graduated from university than other men and that women with a university-educated father were 3.7 times more likely to have graduated from university than other women. Mother's education also has an effect, net of father's education for both men and women.

We have also shown that men and women born in earlier cohorts and interviewed in 1994 and 2005 were more likely to have a university degree than their counterparts interviewed in 1987. This finding suggests that the expansion of higher education allowed men and women to

return to education (as mature-aged students) and attain university qualifications after spending some time in the workforce. According to DEEWR (2011), 24 per cent of university students were aged 25 years or more in 2010. Our results confirm those of other studies conducted in Australia and overseas on the impact of socio-economic status on higher education participation and attainment (Marks 2009b; Chapman and Ryan 2003; Pfeffer 2008) and the benefit to women from the expansion of higher education (Chapman and Ryan 2003; James 2007; Marks 2009b).

The dramatic increase in the likelihood of being university-educated for women born in the latter cohorts appears to provide support for both Maximally Maintained Inequality (MMI) theory and Relative Risk Aversion (RRA) theory. According to MMI theory (Raferty and Hout 1993), inequalities in educational achievement will persist until all members of the advantaged class (those with a university-educated parent) who want to attend university are accommodated. It is only after 'saturation' level for this class is attained that an increase in the number of students from the lower classes will occur. RRA theory predicts that people will only invest in their education to avoid downward mobility (Breen and Goldthorpe 1997; Goldthorpe 1996; Goldthorpe and Breen 2007). Women born before 1940 relied on marriage to secure their social position, therefore, women from high socio-economic backgrounds did not have to participate in higher education to avoid downward social mobility. When higher education expanded in the latter half of the twentieth century, it provided women with an alternative path to secure their social position. Breen and Goldthorpe (1997) came to a similar conclusion suggesting that changes in the labour market encouraged women from high socio-economic backgrounds to acquire qualifications for service-class occupations rather than to rely on marriage to suitably qualified men to avoid downward social mobility.

The findings presented here are consistent with those of other researchers examining the effect of the expansion of the higher education sector on inequality in educational attainment (Alon 2009; Arum et al. 2007; Blanden and Machin 2004; Breen and Goldthorpe 1997; Holm and Jaeger 2008). For example, Arum and others (2007) concluded that although the gender gap in educational attainment had diminished as women benefitted more than men from the expansion of higher education, class inequalities persisted. Blanden and Machin (2004) found that the benefits of quadrupling university student numbers over three decades were not distributed equally among people from richer and poorer backgrounds with the gap in educational attainment between the wealthiest 20 per cent and the poorest 20 per cent increasing

from 14 percentage points in 1981 to 37 percentage points in 1999. Blanden and Machin (2004, 247) concluded that the expansion of higher education had “disproportionately benefited children from relatively rich families”. Alon (2009, 742) found evidence of increasing inequality related to socio-economic backgrounds in the US between 1982 and 1992. In 1992, students from a low socio-economic background were half as likely to attend a four year institution as students from high socio-economic backgrounds.

Challenges for policy

The Australian government remains committed to growth in higher education participation and aims to have the proportion of its young adult population (25-34 years) holding a university degree reach 40 per cent by 2025, compared to 32 per cent in 2009 (Australian Government 2009, 12). This policy is underpinned by lifting the cap on publicly funded places in universities in 2012, thus allowing universities to enrol as many eligible students as they can accommodate (Gillard 2010). Along with its participation target, the Australian government has set an equity target, requiring universities to increase their intake of students from lower socio-economic backgrounds. Publicly funded universities are now expected to increase the proportion of students from the lowest socio-economic quartile of the population from its current level of 15 per cent to 20 per cent by 2020 (Australian Government 2009, 12). The government’s policy framework includes three new elements designed to assist universities to achieve the low-SES participation target. These include: a targeted program to encourage universities to build strategic links with low-SES schools; a supplementary payment to universities for enrolments of low-SES students; and the provision of additional funding to higher education institutions for meeting performance targets, in the areas of attainment, participation, engagement and quality, including the participation and progression rates of low-SES students (Australian Government 2009, 14).

One of the structural impediments to reducing inequality in higher education is the lower number of ‘eligible’ higher education students within the lower socio-economic strata of society because these students are less likely to complete secondary school and those who do complete secondary school tend to have lower levels of attainment than their more privileged peers. Analysis of longitudinal data by Cardak and Ryan (2009) showed that although students with a given ATAR score are equally likely to attend university, irrespective of their socio-economic status, students with low tertiary entrance scores are typically students from low socio-economic

backgrounds. Interestingly, Australian studies have found that students from low socio-economic backgrounds tend to outperform students from higher socio-economic backgrounds with the same tertiary entry score during their first year at university (Dobson and Skuja 2005; Birch and Miller 2006).

Furthermore, 15 year-olds from the lowest socio-economic quartile are about half as likely to aspire to tertiary study compared to their peers from the highest socio-economic quartile (OECD 2008, 25). Cardak and Ryan (2009, 444) suggest that policies aiming to influence low-SES students' school performance and the development of their intentions regarding higher education should be implemented in the early years of secondary schooling, prior to Year 9. However, policies which simply aim to raise low-SES students' "awareness" of the value of higher education may not be adequate to overcome the complex social forces that influence student aspirations across the socio-economic spectrum.

Governments also need to consider the effect of the increase in the number of government-subsidised private schools in Australia. Around 40 per cent of secondary school students attend private schools which enrol, on average, a higher proportion of students from the upper end of the socio-economic distribution (Watson and Ryan 2010). Not surprisingly, private schools report, on average, higher student retention rates and higher levels of student performance in Year 12 than government schools. One analysis of the effects of individual and school factors on university students' academic performance during their first year in a major metropolitan university, found that the tertiary entrance score of students coming from private schools is "artificially inflated compared to that of students from government schools" (Win and Miller 2005, 12). The implication is that students from government schools who are eligible for university places can be expected to outperform students from private schools who have the same tertiary entrance score (Win and Miller 2005, 13). In recognition of this, it would be rational for universities to adjust their admission criteria for students from non-selective government schools. Indeed, many Australian universities now have programs to assist students from low socio-economic backgrounds to obtain places, and some of these programs offer to make an "adjustment" to low-SES students' tertiary entrance score to compensate for the "disadvantage" they have experienced (University of Western Australia 2011; University of Queensland 2011; The Australian National University 2011). The impact of these programs is yet to be demonstrated. It is not clear how many places such alternative entry schemes actually

provide to low-SES students and if they are distributed evenly across all courses and disciplines. There is also evidence to suggest that when such programs are too successful in admitting low-SES students to high-demand courses, such as medical degrees, they meet with elite stakeholder resistance and are pressured to wind back (Trounson 2011).

One further challenge for policy is the difficulty of reaching agreement on the definition of a low-SES student. While area-based measures that assign socio-economic status on the basis of a student's home address are useful at an aggregate level, they have been proven unreliable in determining the socio-economic status of individuals (Lim and Gemici 2011). This limitation is acknowledged in part by the government's decision to use a composite measure based on an area-based index and information drawn from its national welfare database to determine the number of low-SES students enrolled in each university (Australian Government 2010). However, the issue of how to accurately define a low-SES student in an administrative context is the subject of ongoing debate (Lim and Gemici 2011; Saunders et al. 2007; Scutella et al. 2009).

Conclusion

This paper finds that although the expansion of university places in Australia since 1974 has diminished the level of inequality in higher education, parents' education continues to be a strong predictor child's education despite the trebling of the undergraduate student population, the removal of up-front tuition fees and the introduction of means-tested living allowances for students. Our analysis indicates that in 2005, men with a university-educated father were almost three times more likely to have graduated from university than other men and that women with a university-educated father were almost four times more likely to have graduated from university than other women. Mother's education also had a positive effect on men's and women's education in 2005. Overall, the benefits of the expansion of higher education appear to have been enjoyed predominantly by women and men from higher socio-economic backgrounds.

While it is too early to evaluate the success of recent government initiatives to support its target for universities to enrol 20 per cent of their students from low socio-economic backgrounds by 2020, we note that the government's programs to support the achievement of the low-SES participation target are of relatively short duration (four years). In light of the evidence presented, we surmise that the task of changing institutional behaviour in a way that effectively

addresses persistent inequality in higher education will probably require a more long-term policy and funding commitment.

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Tables

Table 1 Percentage with a university degree by gender and birth cohort in 1987, 1994 and 2005

Birth cohort	Year at which turned 19	Higher education era*	Survey Year (%)					
			1987		1994		2005	
			Men	Women	Men	Women	Men	Women
<1940	< 1959	Reference	11	6	18	4	25	13
1940 - 1954	1959 -1973	Fees	17	10	23	19	39	24
1955 - 1969	1974- 1988	Free	15	11	31	24	36	36
1970 - 1986	1989 - 2005	Loans	..	..	37	31	42	47

* indicates relevant higher education charging policy in year at which most of cohort turned 19 Note: There were no respondents born between 1970 and 1984 in the 1987 survey.

Table 2 Percentage of men and women with university-educated father by birth cohort in 1987, 1994 and 2005

Birth cohort	Men (%)						Women (%)					
	1987		1994		2005		1987		1994		2005	
	All	Uni Grad	All	Uni Grad	All	Uni Grad	All	Uni Grad	All	Uni Grad	All	Uni Grad
<1940	4	23	3	11	8	16	5	27	2	0	7	18
1940-1954	9	22	7	13	10	18	8	31	3	12	8	18
1955-1969	9	21	13	23	14	25	5	23	8	16	13	22
1970-1986	..	..	26	38	29	40	..	..	15	25	20	32

Table 3. Odds ratios from logistic regression for university degree versus no university degree: 1987, 1994 and 2005

	1987	1994	2005
	odds ratio	odds ratio	odds ratio
Male (ref.)			
Female	0.53***	0.63***	0.72**
University-educated father	5.49***	2.54***	2.69***
University-educated mother	0.74	1.72	2.42***
Gov. school (ref.)			
Catholic school	2.20***	1.66**	1.62**
Other non-gov. school	3.60***	2.36***	2.11***
Birth Cohort			
<1940 (Ref.)			
1940 – 1954 (Fees)	1.39	1.91***	2.06***
1955 – 1969 (Free)	1.46	2.55***	2.44***
1970 – 1986 (Loans)	..	2.67***	2.92***
n=	1537	1375	1552
Pseudo R2	0.1234	0.0824	0.0844

*p<0.05 ** p<0.01 *** p<0.001

Note. Although cases missing on school type were included in the analysis we do not show the odds ratio

Table 4 Odds ratios from logistic regression for university degree versus no university degree: men and women

	Men	Women
	odds ratio	odds ratio
Time		
1987 (ref.)		
1994	1.97***	2.15***
2005	2.90***	3.40***
University-educated father	2.83***	3.65***
University-educated mother	1.75*	1.82*
Gov. school (ref.)		
Catholic school	1.86***	1.64***
Other non-gov. school	2.62***	2.36***
Birth Cohort		
<1940 (Ref.)		
1940 – 1954 (Fees)	1.52**	2.56***
1955 – 1969 (Free)	1.47**	3.79***
1970 – 1986 (Loans)	1.43	5.22***
n=	2206	2258
Pseudo R2	0.1138	0.1511

*p<0.05 ** p<0.01 *** p<0.001

Note. Although cases missing on school type were included in the analysis we do not show the odds ratio

Appendix

Table A.1 Apparent retention rates of secondary school students

Year	Apparent retention rate
	%
1969	28
1972	32.4
1976	34.9
1979	34.7
1982	40.1
1986	48.7
1989	60.3
1992	78.6
1996	73.6
1999	74.4
2002	77
2006	76.2
2009	76.7
2011	79.5

Source: ABS *Schools, Australia* various issues 1979- 2011

Table A2. Proportion of respondents in each category of the variables

Variable	1987	1994	2005
	n=1537	n=1375	n=1552
Sex:			
Male	0.50	0.53	0.46
Female	0.50	0.47	0.54
Birth Cohort:			
<1940	0.35	0.28	0.22
Fees	0.35	0.35	0.31
Free	0.30	0.31	0.30
HECS	..	0.06	0.17
Education:			
Government school	63	68	71
Catholic school	18	16	14
Other non-government school	10	9	14
Missing	10	7	1
University degree 1=yes	0.11	0.21	0.32
Father with university degree 1=yes	0.07	0.07	0.12
Mother with university degree 1=yes	0.03	0.03	0.07