



LONGITUDINAL SURVEYS OF AUSTRALIAN YOUTH
RESEARCH REPORT 60

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Publisher's note

Please note that figure 3 on page 19 was replaced on 14/9/12.

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This document should be attributed as Vu, H, Gørgens, T & Bray, JR 2012, *How did young people fare in the 1990s economic downturn?*, NCVER, Adelaide.

This work has been produced by NCVER through the Longitudinal Surveys of Australian Youth (LSAY) Program, on behalf of the Australian Government and state and territory governments, with funding provided through the Australian Department of Education, Employment and Workplace Relations.

COVER IMAGE: GETTY IMAGES/THINKSTOCK

ISBN 978 1 922056 12 2

TD/TNC 108.19

AMENDED 14/9/12

Published by NCVER, ABN 87 007 967 311

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About the research

How did young people fare in the 1990s economic downturn?

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As new entrants to the labour market, young people generally fare less well in economic downturns. They experience much sharper rises in unemployment rates and, relative to more experienced older workers, slightly longer periods of recovery. With this increased risk of being unemployed and of potentially lower earnings, young people face decisions about whether to seek employment or to undertake additional education and training.

To provide insights into how young people may fare in the current economic downturn, this study examines the experience of young people between 16-26 years of age in a previous downturn. Specifically, the study seeks to tease out the effects of the major economic downturn of 1990–91 on young people's employment and their participation in education.

The dataset used for the analysis in this paper consists of eight waves of the Australian Youth Survey (AYS) 1989–96 – the predecessor to the Longitudinal Surveys of Australian Youth (LSAY) – which covers the previous economic cycle and therefore includes the downturn of 1990–91. It is rare in Australia to have this span of longitudinal data for examining long-term trends and the effects of cyclical events such as recessions.

Key messages

- Young people are clearly more vulnerable in the labour market during economic downturns by comparison with the older population, with young men feeling the impact more than young women (with a one-percentage-point increase in the adult unemployment rate associated with a 1.7-percentage-point increase for males, compared with a 1.2-percentage-point increase for females).
- In poor economic times young people 'retreat' into education, in particular undertaking additional secondary education. Again, this effect is more marked for young men (with a one-percentage increase in the adult unemployment rate associated with a 2.9% increase in school participation for males aged 17, compared with a 1.5% increase for females aged 17).
- The greater impact of tougher economic times on young men's employment is likely to be a reflection of their working in occupations affected by business cycles.
- In examining whether the risk of being unemployed varies across young people of different backgrounds, the analysis undertaken in this paper did not find statistically significant results.

Tom Karmel
Managing Director, NCVET

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Executive summary

The Global Financial Crisis marked the end of 15 years of strong economic growth in Australia. While the immediate impact of this crisis on the Australian economy was not as substantial as on most other advanced economies, it nevertheless resulted in a marked increase in unemployment.

As new entrants to the labour market, young people generally fare less well in economic downturns. They experience much sharper rises in unemployment rates and slightly longer periods of recovery, relative to more experienced older workers.

In economic downturns, with an increased risk of being unemployed and potentially lower earnings, young people face decisions about whether to seek employment or undertake additional education and training. Given the reduced opportunity cost of education, educational participation among young people is expected to increase in economic downturns.

To provide insights into how young people may fare in the current economic downturn, this study examines the experience of youth in a previous downturn. While it is recognised that each downturn is unique and that the pattern of the Global Financial Crisis is different from earlier downturns, these previous experiences are still useful for informing the current policies. In particular, this study examines the impacts of economic conditions on youth unemployment and education outcomes.

The dataset used in this paper consists of eight waves of the Australian Youth Survey (AYS) 1989–96. Survey participants were aged between 16 and 26 years. The dataset covers the previous economic cycle, which includes the major economic downturn of 1990–91. We use the state-level adult unemployment rate as our main indicator of economic conditions. Specifically, the study seeks to tease out the effects of economic downturns on young people's risk of unemployment and on their participation in education, and to answer two related research questions:

- How do economic conditions and background characteristics affect young people's risk of unemployment, and does the impact of poorer economic conditions vary across different background groups?
- Is there evidence that young people retreat into full-time education and training in times of poorer economic conditions?

The impact of economic conditions on labour force outcomes

The results of the analysis indicate that a one-percentage-point increase in the state-level adult unemployment rate is associated with a 1.7-percentage-point increase in the unemployment rate for young males aged up to 26 years and a 1.2-percentage-point increase in the unemployment rate for young females aged up to 26 years. These results suggest that young people are indeed much more vulnerable to economic downturns by comparison with the older population and that the adverse impacts of economic downturns are particularly strong for young males.

Alternative modelling using employment-to-population ratios indicates that a one-percentage-point decrease in the adult state-level employment-to-population ratio was associated with 2.3-percentage-point fall in the employment-to-population ratio for young men and a 1.4-percentage-point fall for young women.

These results clearly demonstrate the sensitivity of the labour force outcomes of youth and in particular young men to changes in economic conditions.

Other important results include:

- Health is an important determinant of unemployment: having a work-limiting disability significantly increases the probability of being unemployed for both males and females.
- Completing Year 12 and attending a non-public secondary school reduce unemployment incidence, with stronger effects for females than for males.
- Background characteristics, in particular, migrant status and parental occupation status, are strong predictors of unemployment incidence, after controlling for individual educational attainment, specifically:
 - Being born in a non-English speaking country, relative to being Australian-born, is associated with an 11 to 12-percentage-point higher rate of unemployment.
 - Living in a family at age 14 years with a parent employed in an unskilled job generates an estimated unemployment rate some 4–7 percentage points higher than if the parent was highly skilled.
 - If no parent was employed, the gap increases to some 9–13 percentage points.

A specific focus of the research was to examine the extent to which these characteristics do not merely affect relative labour market outcomes but also whether the impact of poorer economic conditions varies across different groups. To do this the study estimated an alternative model, in which these background variables were interacted with the unemployment rate as a measure of the economic cycle. Since this analysis was largely inconclusive, we refrain from drawing strong conclusions from the estimation analysis.

The impact of economic conditions on participation in full-time education

A similar approach was used to model the impact on educational participation. We found that the propensity to participate in full-time education is positively related to the unemployment rate. Specifically, a one-percentage-point increase in the state-level adult unemployment rate is associated with:

- a 2.9-percentage-point increase in school participation for young males aged 17 years and younger and a 1.5-percentage-point increase for young women in this age group
- a 1.3-percentage-point increase in full-time post-school education participation for both young males and females aged 18 years and over.

There is clear micro-level evidence of young people ‘retreating’ into education in poor economic conditions, again with this effect being most marked for males. Furthermore, changes in economic conditions are more likely to affect the educational participation of those aged 17 or younger. By implication, school participation seems to be more sensitive than post-school education to these changes. The other main results can be summarised as follows:

- Completing Year 12 and attending non-government schools increase subsequent post-school education for both males and females.
- Health is also an important variable: having a work-limiting disability reduces the probability of undertaking full-time study.

- Family backgrounds are also important predictors of post-school education. Young migrants from non-English speaking countries are much more likely to participate in education.
- Young people whose parents are in highly skilled professions are more likely to study. On the other hand, the probability of youth from jobless households studying does not differ from that of young people from unskilled households. Similarly, youth with highly educated parents are also more likely to study, as are those young people who attend non-government schools.

On the whole, the estimation results from this study suggest that young people are most vulnerable to unemployment. Furthermore, with tougher economic conditions, some respond by undertaking education. In terms of magnitude, for both unemployment and education outcomes the impacts of economic conditions are stronger for males. This result is consistent with general observations that, by comparison with young women, young men are more likely to work in occupations that are more affected by business cycles. Males are more adversely affected by an economic downturn and thus have a stronger incentive to mitigate the effects through educational participation.

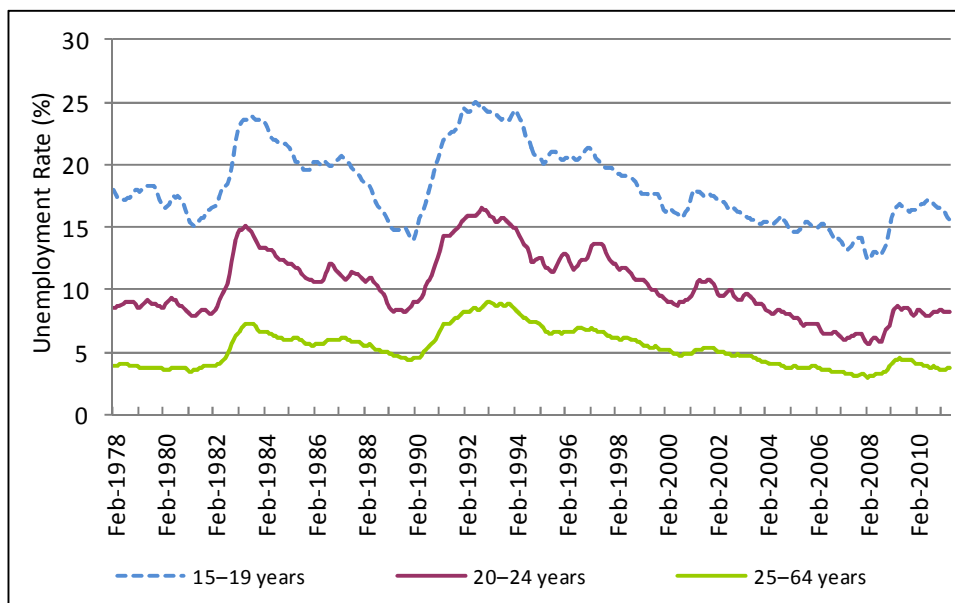
This research confirms previous research which shows that young people are more vulnerable than the older population to the impact of economic downturns on their employment opportunities, including unemployment. It also confirms that many young people respond to this by increasing their participation in education, with the response particularly strong in relation to secondary education. While the research also aims to quantify the extent of disadvantage for various population subgroups, it did not find sufficient evidence to form a view on the degree to which this relative vulnerability changes in poorer economic circumstances. However, it provides new estimates of the labour market and educational responses of young people which clearly demonstrate the greater sensitivity of young males to the economic climate.

Introduction

The 15 years to 2008 was a period of strong economic growth in Australia. However, with the arrival of the Global Financial Crisis the Australian economy took a downward turn. Although the impact of this crisis on the Australian economy was not as great as on most other advanced economies – due in large part to the mining boom, but also potentially as a consequence of economic stimulus – the pace of recovery has slowed and the economy currently faces an uncertain and potentially volatile future.

As young people are new entrants to the labour market, they generally fare less well in economic downturns. Figure 1 shows Australian unemployment rates over the last 30 years for young people aged 15–19 years and 20–24 years, along with the rate for those aged 25–54 years. In addition to clearly showing how youth unemployment rates have been persistently above those of older age groups, the graph highlights the marked spikes in unemployment associated with economic downturns in 1982–83 and 1990–91, and to a lesser degree in 2008. The graph clearly suggests that young people in the labour market are much more sensitive to economic downturns, with much sharper rises in unemployment rates during these times, and slightly longer periods of recovery relative to more experienced older workers.

Figure 1 Trend unemployment rate by age: February 1978 – June 2011



Source: Derived from ABS (2011, estimated using Demetra).

Focusing on the impact of the current economic downturn, the unemployment rates of youth aged 15–19 and 20–24 years increased rapidly over late 2008 and 2009 and since then, notwithstanding some declines, have remained at comparatively elevated levels. While these rates are well below those experienced after the earlier economic downturns, they clearly mark a less than favourable labour market environment.

In this paper, we analyse the experience of young people in earlier economic downturns and, in doing so, we aim to provide insights into the potential effects of the current cycle on young people. While both the short- and long-term consequences of experiencing recessions during early adulthood are important in developing the appropriate policy responses for mitigating the impacts of adverse

economic conditions on young individuals, due to the lack of appropriate data we choose to focus on the short-term effects.

We are aware that individual economic downturns do differ considerably and that the experience of any particular group in one economic cycle is not necessarily replicated in another. Notwithstanding this, many elements of the experience appear to persist across cycles. Central to this is the relatively greater sensitivity of young people and the choices they face, including the option of remaining in, or returning to, education. For these reasons we believe that these past experiences can inform us about the current circumstances and suggest appropriate policies.

To examine the full short-term impact of economic downturns, it is important to understand how young people respond to different economic conditions. Theoretically, in economic downturns young people have greater incentives to retreat into education and training. With fewer employment opportunities for new starters, young individuals are more prone to unemployment. In addition, even if they can obtain employment, they potentially face lower earnings because of the weak labour market.¹ A consequence is that the expected income foregone for undertaking further education in such a period is lower. As a result it can be postulated that educational participation among young people is likely to be counter-cyclical, increasing in recessions and decreasing in booming economic conditions.

Figure 2 shows Australian full-time education participation rates for young people since 1986, along with the rate of unemployment among the adult population, which assists to gauge the empirical relationship between economic conditions and educational participation. The dominant feature of these graphs are the strong increases in educational participation over this period. Amongst those aged 15–19 years, the full-time education participation rate for males has increased from 52.5% in 1986 to 69.9% in 2011; for females the increase was from 54.2% to 75.3%. For the older age group, those aged 20–24 years, the proportion in full-time education rose for males, from just 8.5% in 1986 to 27.4% in 2011, and for young women over the same period, from 7.8% to 32.9%.

The pattern of change differed between the two age groups. In the teenager group most of the increase occurred between 1986 and 1996. In the older age group, the trend was more consistent over time. When the patterns of change in participation in education are considered in association with the corresponding rates of unemployment, there is some suggestion in the graphs, especially for the younger age groups, that stronger growth in full-time education participation is associated with periods of higher unemployment, with the rate of growth declining in periods of reducing unemployment. This pattern is most marked with regard to the recession of the early 1990s and the period of recovery.²

¹ The potential for lower earnings occurs through several mechanisms. It may involve people taking employment at a lower skill level than they otherwise would; it might involve casual or part-time employment with possible gaps for job search, and opportunities for overtime earnings might also be lower. In addition there is the possibility of some downward real wages pressure.

² In discussing these changes it is to be emphasised that analysis of youth labour market participation is complex. In addition to the need to take account of changes in the relative role of full- and part-time employment, we also need to keep in mind that many young people combine labour market participation with education, making simple dichotomies between education and employment misleading. The extent of some of these changes can be seen in observing the employment-to-population ratios of the 15 to 19-year age group since the late 1970s. At the end of that decade just over 40% of this age group were in full-time employment and around 10% in part-time employment. Currently the rates are around 14% for full-time employment and around 32% for part-time employment.

Overall, figure 2³ provides some empirical evidence of possible increases in education attendance among young people in economic recessions. However, the increases cannot be clearly distinguished in the graphs, given the presence of an underlying upward trend in education participation. This trend in educational participation has been driven through a combination of active government policies and by structural changes in the labour market, including a shift in labour demand towards more skilled, and service, industries, more flexible employment arrangements and changes in skills formation. As employment opportunities for unskilled individuals are diminishing and there are higher levels of earnings dispersion, young individuals have a stronger incentive to invest in education. In addition, the flexibility of the labour market, which allows young people to support themselves while studying, arguably increases the ability of young people to participate in education.⁴

These questions are outside the scope of this paper, but the extent to which these underlying trends exist reinforces the need to undertake multivariate analysis to distinguish the effects of cyclical economic conditions from other time-varying factors in order to understand the effects of economic conditions on youth's educational participation.

Using Australian Bureau of Statistics (ABS) labour force data, a recent Longitudinal Surveys of Australian Youth (LSAY) briefing paper (Anlezark 2010) explored the impact of the current economic downturn on young people. The paper posited that changes in the structure of the labour market over the past 20 years have altered the likely impact of the downturn on the three million young Australians aged between 15 and 24 years. It suggested that recent structural changes, such as the rising rates of participation in education and the introduction of the traineeship model, should provide some protection for young people against unemployment in the current economic downturn. Balanced against this, the author noted that full-time employment for 15 to 19-year-olds had become even more concentrated in cyclically affected industries.

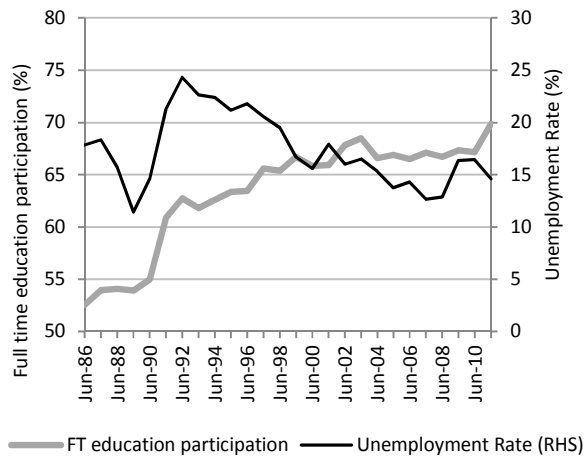
The briefing paper concluded that, on the basis of data for the period up to late 2009, young people appeared to have withstood the current economic downturn relatively well, although there had been a decline in their full-time work opportunities, including apprenticeships, and unemployment rates had gone up. In seeking to tease out the effects of the structural changes in education and in the labour market relative to those of the economic downturn, the briefing paper gave rise to two important research questions, which will be explored in this paper.

³ These graphs present unemployment and education as separate states; however, this is not necessarily the case. In March 2012 for example, some 4.6% of people aged 15–19 years are unemployed and looking for full-time employment; of these 12 100, or some 17.7% are in full-time education.

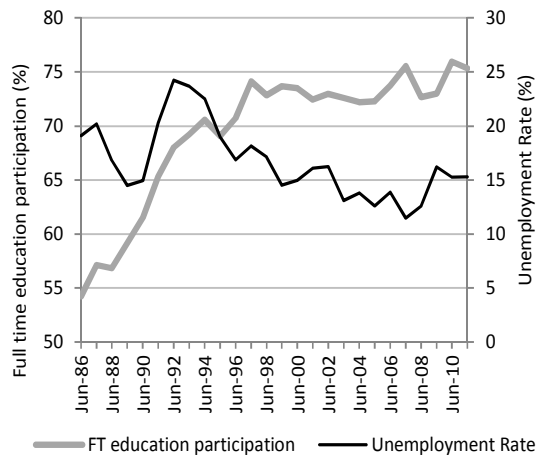
⁴ Another significant change in the structure of the youth labour market has been the increasing trend for young people to combine work and study. This phenomenon is again both complex and important. It is, however, not a focus of this paper.

Figure 2 Education attendance by age and gender: June 1986 – June 2011

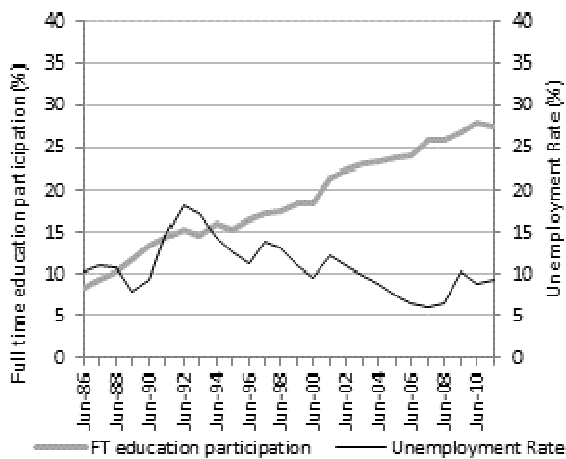
Male aged 15–19 years



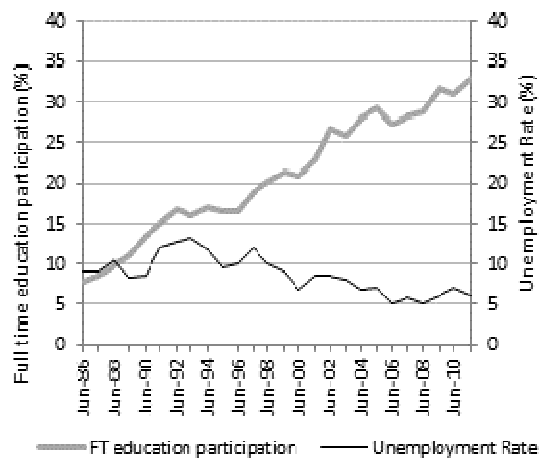
Female aged 15–19 years



Male aged 20–24 years



Female aged 20–24 years



Source: Derived from ABS (2011).

The first research question relates to youth unemployment.

- How do economic conditions and background characteristics affect young people’s risk of unemployment and does the impact of poorer economic conditions vary across different backgrounds?

The second concerns the extent to which young people ‘retreat’ into education and training when it becomes more difficult to find a job, and again the role of individual characteristics in this.

- Is there evidence that young people retreat into full-time education and training in times of poorer economic conditions?

To answer these two research questions, we employ both descriptive and multivariate modelling approaches. The dataset used in this paper consists of eight waves of the Australian Youth Survey 1989–96.⁵ The dataset is well suited for our intended multivariate analyses for several reasons. The first is that the timeline encompasses the previous economic cycle, including the period in which the

⁵ The Australian Youth Survey (AYS) was established to provide policy-relevant information on young people’s education and training pathways and their access to, and success in, the labour market. It forms part of the Longitudinal Surveys of Australian Youth (LSAY) research program.

impact of the downturn of 1990–91⁶ was felt, and thus allows us to examine the effects of such an economic shock on youth outcomes. Secondly, it is a very rich dataset, with detailed information on individual characteristics and family background. These two features enable us to examine a wide range of determinants of education and employment outcomes and their interaction with the economic cycles, permitting us to specifically identify the effects of economic conditions.

⁶ While the economic downturn occurred in 1990–91 the labour market impact of this was felt for a number of years, with the unemployment rate peaking during the 1992–93 period.

Related research

Unemployment is not an unusual experience for young people in Australia. In a study of youth unemployment using the Longitudinal Surveys of Australian Youth (LSAY), Anlezark (2011) notes that a third of young people from the LSAY Year 95 cohort aged 18–19 years in 1999 experienced at least one month of unemployment. The author reports that, while for the majority the experience is short and most are optimistic about getting a job and go on to achieve satisfactory education and labour market outcomes by their mid-20s, this is not the case for all. A small proportion (estimated by Anlezark at less than 10% of the population) experience an extended duration of unemployment, finding it hard to enter or re-enter the labour market and are therefore at risk of being ‘affected’ or ‘scarred’ by their unemployment experiences.

The short-term consequence of youth unemployment has been investigated in Australian literature. In their analysis of the Australian Longitudinal Surveys, Chapman and Smith (1992) found that the probability of finding employment among young unemployed people does not decrease with time spent in unemployment, after controlling for individual and family characteristics. By contrast, Miller and Volker (1987) and Junankar and Wood (1992) modelled the impact of labour market experience, with both studies finding, in relation to the youth labour market, that previous incidences of unemployment reduce the subsequent chances of being employed. A recent paper by Doiron and Gørgens (2008) investigated the persistence of unemployment in the labour market outcomes for young unskilled Australians. Consistent with the studies mentioned above, they found evidence of occurrence dependence, but no lagged duration dependence; that is, while experiencing unemployment decreases the probability of employment in the future, the length of the unemployment experience does not matter.

Marks and Fleming (1998) used data from the Youth in Transition (YIT) survey, which covered the employment outcomes of young people during the 1987 stock market crash and the subsequent world recession in the early 1990s, to investigate the determinants of youth unemployment in Australia. In this study they found that Year 12 completion and higher academic ability measured at Year 9 were effective in reducing the probability of unemployment. Of interest, they also found that, after controlling for Year 12 completion, post-school qualifications were of little benefit in preventing unemployment.

This same research also identified that young men were more vulnerable to unemployment in poorer economic conditions, compared with young women. Their analysis indicated that this was in part due to the large number of young men who were working in construction and mining, industries which tend to be more affected by economic cycles. Another contributing factor noted by the authors is that young women were more likely to withdraw from the labour market in poor economic conditions, and therefore many were no longer counted in unemployment statistics.

Another Australian study which investigated the impacts of economic conditions on the employment and education participation outcomes of young people is Herault et al. (2010). Their analysis was based on the combined data from the Longitudinal Surveys of Australian Youth and the Youth in Transition survey. Herault et al. jointly modelled the employment and education decisions of youth who left school and thus explicitly highlighted the close relationship between the two decisions. In line with Marks and Fleming (1998), they found that economic downturns increased unemployment risks among non-students, especially for males and those with low educational attainment.

As for post-school education, in contrast to their expectations, derived from anecdotal evidence, their results suggest that economic downturns did not encourage education. Rather, the analysis indicated that economic recessions tend to discourage further education. A potential reason for this finding was the particular definition of post-school education adopted by the study, which included trainees and apprentices, as well as those undertaking other forms of post-school education. As the number of apprenticeship and trainee positions is sensitive to labour market conditions and tends to decline in poorer economic conditions, it is quite probable that the finding reflects this. The authors reported that they had used this broader definition because of limitations in the Youth in Transition survey.

The relationship between economic conditions and school retention rates was considered by Karmel (1996). Using data from a variety of sources to examine the factors affecting participation in high school from 1986 to 1993, he found that the retention rate increases when unemployment increases. Larum and Beggs (1989) examined the association between school and the labour force participation of teenagers and various measures of economic conditions. They found that school retention rates decrease when employment opportunities increase.

There is a substantial international literature on the impact of economic downturns on youth. This encompasses the direct impact on employment, the relationship with education and the longer-term consequences of this. With regard to the immediate impact, Baker (1992) found evidence of negative effects of the recessions of the 1980s on the durations of unemployment of young people in the United States. Similarly, subsequent studies of Organisation for Economic Co-operation and Development (OECD) countries (for example, Blanchflower & Freeman 1996, 2000; OECD 2008) also provided evidence that youth are vulnerable in economic downturns, with youth unemployment rates being far more sensitive to business-cycle conditions than the adult unemployment rate.

In terms of the effects of economic conditions on participation in education, the weight of evidence suggests that educational attendance is counter-cyclical. In relation to the United States, Betts and MacFarland (1995) examined the impact of the business cycle on enrolments between the late 1960s and the mid-1980s at individual community colleges. They found that a one-percentage-point increase in the unemployment rate of recent high school graduates was associated with rises in full-time educational attendance of up to four percentage points. Also in the US, Bozick (2009) examined the cyclical behaviour of educational enrolments among a nationally representative sample of graduates from the high school class of 2003–04, and found that the pattern of educational participation is also mostly counter-cyclical. Rice (1999), who analysed the relationship between local labour market conditions and educational participation of youth in Britain, also found that youth in areas with high levels of unemployment are more likely to participate in further education.

A more limited set of research has concentrated on the long-term consequences of recessions. Two possible effects have been suggested. The first is scarring, that is, lower levels of employment during recessions can have long-lasting effects on the affected individuals because of skill depreciation and foregone work experience. Counter to this is the potential of recessions to result in higher levels of human capital for those who delay entering the labour market and who decide to undertake more schooling, thus improving their long-term employment prospects.

Oreopoulos, von Wachter and Heisz (2008) examined the short- and long-term effects of graduating in a recession. Their analysis was based on Canadian data and their results showed that young graduates suffer a significant loss in earnings in the first year, with the negative effect eventually fading after ten years. In a study on German low- and medium-skilled male workers, Stevens (2007) also found

similar scarring patterns. Kahn (2010) examined the situation in the US, focusing on the labour market outcomes and education attainments of white male college graduates. In line with Stevens (2007) and Oreopoulos, von Wachter and Heisz (2008), they found recessions have persistent and negative effects on individual earnings.

Literature on the experience in the United Kingdom arrives at similar conclusions. Gregg (2001) focused on scarring in terms of unemployment, and his results show that unemployment experience in the younger years could be used to predict unemployment experience between five and 20 years later. Gregg and Tominey (2005) examined the effects of unemployment on future wages, and their results suggest that there is a significant wage penalty flowing from youth unemployment on males: repeated exposure to unemployment could impose a wage penalty of 13–21% at age 41, although this penalty is lower at 9–11% if repeated spells are avoided.

On the whole, the literature on the effects of recessions on youth in Australia is limited and, to the extent it exists, it has concentrated on the short-term impact, because of the limited availability of long-term longitudinal data. As cited above, two notable studies which have used micro data for this purpose are Marks and Fleming (1998) and Herault et al. (2010).

In this paper, we analyse the short-run effects of the previous economic downturn on youth unemployment and education outcomes. We aim to enrich the existing literature in several ways. We model the impact of an economic downturn on the risk of being unemployed using state-level unemployment rates as a proxy for economic conditions, as opposed to Marks and Fleming's study, where the overall national unemployment rate was used. This approach allows for more sensitivity of estimates to local labour market conditions. Further, we explicitly investigate the role of a wider set of personal characteristics and also model the impacts of economic conditions using the employment-to-population ratio and the unemployment rate as the proxies. With regard to the question of educational participation, in contrast to the study by Herault et al., we use the Australian Youth Survey, which allows us to more directly focus on full-time educational participation.

Data and descriptive analysis

The data source used in this study is the Australian Youth Survey. Designed to be representative of the Australian population of young people, with the exception of those living in sparsely populated areas, this survey was conducted between 1989 and 1996 and is the predecessor of LSAY, which began in 1995. The initial cohort was aged between 16 and 19 years in September 1989, with additional cohorts of 16-year-olds added to this original sample in each of the years 1990–94 to give a total of six entry cohorts. From 1989 to 1994, face-to-face interviews were conducted. These were followed in 1995 and 1996 by phone interviews, to which no additional sample was added.

Table 1 provides some statistics about the evolution of the AYS sample over the eight waves. The initial sample for the survey in Wave 1 was 5350 individuals, with the additional samples comprising 1500 in Wave 2, and a little over 1000 in the subsequent waves. Over the period of the survey the actual number of respondents varies, representing the effect of the additional sample and the extent to which individuals left the survey (that is, sample attrition). The aggregate number of respondents was increasing up to Wave 6, when the respondents were aged 16–24 years and numbered 8350, before declining. The survey experienced quite high levels of attrition, and by Wave 8 only 51.0% of the original sample was still participating. Similar patterns can be observed with the supplement cohorts; however, their rates of attrition are smaller.

Table 1 Number of respondents by wave (year) and cohort

	Wave 1 1989	Wave 2 1990	Wave 3 1991	Wave 4 1992	Wave 5 1993	Wave 6 1994	Wave 7 1995	Wave 8 1996
Wave first interviewed								
Wave 1 cohort	5350	4746	4396	4045	3620	3212	2952	2731
Age	16–19	17–20	18–21	19–22	20–23	21–24	22–25	23–26
Wave 2 cohort	-	1501	1405	1300	1178	1050	959	895
Age		16	17	18	19	20	21	22
Wave 3 cohort	-	-	1146	1090	1012	944	883	839
Age			16	17	18	19	20	21
Wave 4 cohort	-	-	-	1198	1123	1031	976	925
Age				16	17	18	19	20
Wave 5 cohort	-	-	-	-	1088	997	934	901
Age					16	17	18	19
Wave 6 cohort	-	-	-	-	-	1116	1050	1013
Age						16	17	18
All	5350	6247	6947	7633	8021	8350	7754	7304
Age	16–19	16–20	16–21	16–22	16–23	16–24	17–25	18–26

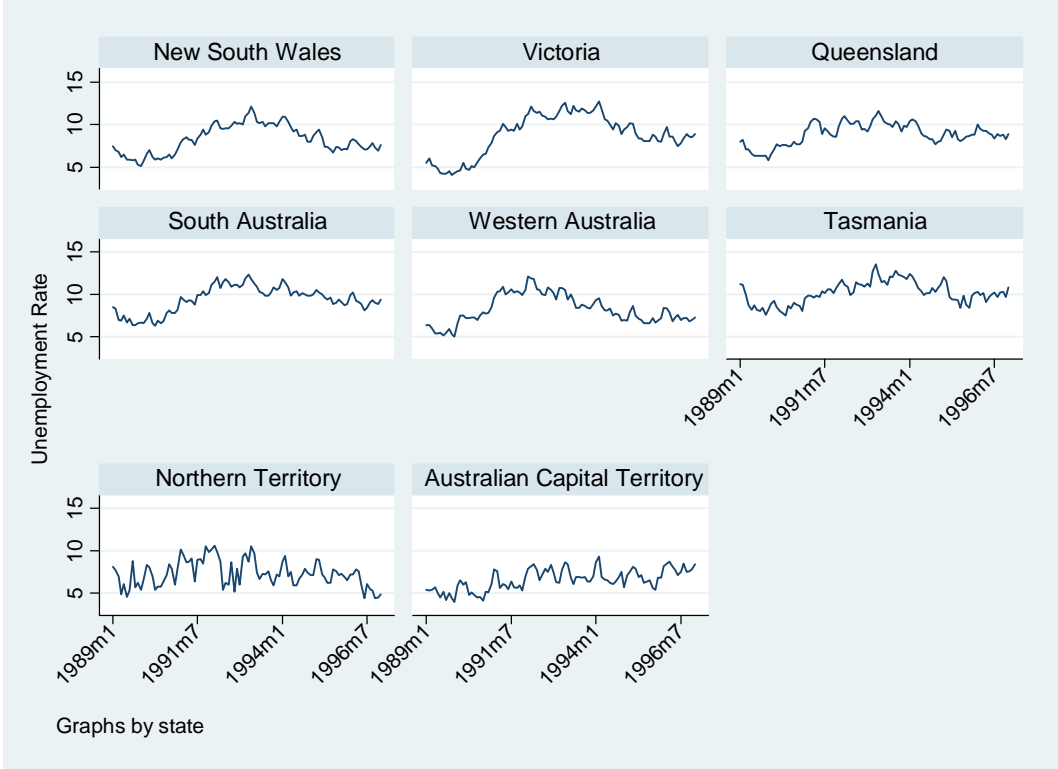
Table 1 highlights two main limitations of the AYS sample. The first is that the age profile of the sample is changing over time. In Wave 7, there were no participants aged 16 years and in Wave 8, there were none aged 16 and 17 years. The second limitation of the survey is, as noted above, the

high rate of non-response. The level of non-response is in part due to the fact that young individuals are more likely to move and thus are more likely to drop out of the survey. The consequences of these two limitations are that the composition of the sample changes over time, limiting the scope for descriptive analysis, especially for comparisons across waves; and the relatively smaller sample available for longitudinal analysis. To correct for non-response, we use the sample weights provided in the dataset to produce summary statistics in the subsequent tables.

Despite these drawbacks, the AYS dataset also has some marked strengths, in particular, the extent to which it contains detailed demographic and labour market information on each respondent. Amongst this information are the details of the residential postcode of respondents in each wave of the study. We use this information and external data sources to merge measures of economic conditions with AYS data. In particular, we link labour market measures at the state level to the state residence of the respondents. In this paper, we use the state (adult) unemployment rate (aged 15 or older) as the main proxy for the labour market and economic conditions faced by the respondents. There are two main reasons for using the state-level unemployment rate rather than using the national unemployment rate. First, the former reflects the labour market conditions better than the latter. Second, using the state unemployment rate also utilises the variation in economic conditions across states to identify the effect of economic conditions.

Figure 3 shows the unemployment rate across states during our sample period, which enables us to appreciate the benefit of using the state unemployment rate as opposed to using the national unemployment rate. There was significant variation in unemployment rates across states. Although every state experienced an economic downturn, the timing and intensity varied across each of them.

Figure 3 Adult unemployment rate by state: 1989–96



Source: Derived from ABS (1989–96).

The key outcomes considered in this report are the labour force status and education participation of individual young people, as measured at the time of the interview. In measuring labour force status, we closely follow ABS definitions. A person is classified as employed if he or she reported having a paid job, no matter how short the working hours are. A person is classified as unemployed if she or he is not employed, looking for work, and is available to start work. Finally, people who were not currently employed and were not looking for work (not employed but not unemployed) are classified as being out of the labour force (or not in the labour force).

Table 2 provides the composition of labour force status of the AYS sample across waves. The percentage of individuals in full-time employment (working 35 hours or more per week), while relatively stable over the first four waves, is increasing over time in the latter four. The increase in full-time employment is matched by decreases in the number of individuals unemployed or not in the labour force. These patterns reflect the ageing of the sample over the period, with an increasing number of individuals completing their education and entering the labour force in the latter years of the survey. The impacts of economic conditions can also be seen. There was a dip in the proportion in full-time employment from the trend and a spike in the proportion in unemployment, following on from the 1990–91 economic downturn.

We also present the statistics for a subsample of those aged 18–19 years (a teenager group), that is, a constant age group across waves. Compared with the overall sample, the labour market trends for this subsample differ markedly. The proportion of individuals in full-time employment fluctuated in the opposite direction from the overall unemployment rate (top line of the table), whereas the proportion of individuals in part-time employment increased over time. The proportions of individuals classified as being unemployed and not in the labour force were in line with the overall unemployment rate. Together, these patterns clearly illustrate the extent to which economic downturns increase the risk of being out of work among youth and reduce the probability of being in full-time employment.

Table 2 Labour force status by year (%)

	1989	1990	1991	1992	1993	1994	1995	1996
Adult unemployment rate ^(a)	6.0	6.8	9.3	10.5	10.6	9.5	8.2	8.2
Full AYS sample								
Employed FT	33.5	34.3	32.5	33.4	36.7	42.4	51.4	56.5
Employed PT	26.3	25.5	25.7	26.4	26.6	26.8	23.6	22.0
Unemployed	12.0	12.3	13.6	13.8	12.8	10.5	8.3	8.7
NILF	28.2	27.9	28.2	26.4	23.8	20.4	16.8	12.9
<i>No. of obs.</i>	5350	6247	6947	7633	8021	8350	7754	7304
AYS aged 18–19 years								
Employed FT	46.8	41.3	34.3	31.8	32.0	35.3	38.4	35.2
Employed PT	23.0	25.0	25.0	27.0	30.0	31.6	31.3	33.7
Unemployed	10.7	13.1	16.7	16.1	14.8	12.9	11.5	13.0
NILF	19.6	20.6	24.1	25.2	23.2	20.2	18.7	18.1
<i>No. of obs.</i>	2286	2524	2471	2402	2138	1964	1930	2015

Notes: FT, PT and NILF denote full-time, part-time and not in the labour force respectively. Labour force status is as at the time of the interview.

(a) Annual national unemployment rate. Population-weighted statistics.

In analysing labour market outcomes in this paper, we focus primarily on the incidence of unemployment. Accordingly, appendix table A1 presents the unemployment rate of youth by single

years of age, as derived from the AYS sample. The two central features of this table are that: the younger a person is, the higher their risk of being unemployed; and unemployment rates for individuals aged up to 20 increased substantially after the recession hit.

As discussed earlier, economic conditions do not only affect labour market outcomes but also decisions about participation in education. Appendix table A2 provides the composition of the AYS sample by type of educational participation. For this we classify respondents into five different categories: still at school; undertaking an apprenticeship or a traineeship; in full-time post-school education; in part-time post-school education; and not studying. For the overall sample (first panel), the proportion of youth still at school declines dramatically over time and this decline reflects the ageing effects. A similar trend is observed for the proportion of individuals undertaking apprenticeships, but to a lesser extent, whereas the percentages in 'post school education' and 'not studying' increased with time. For the sample of constant-age teenagers aged 18 and 19 years, the proportion in post-school education increased sharply at the onset of the economic downturn, and then remained more or less at the new high level. Table A3 in the appendix represents a more compressed classification of the rate of full-time attendance in education (either school or post-school education) observed in the AYS dataset by single year of age.

Several observations can be made from these statistics. First, the age effects are very pronounced. While the majority of individuals aged 16 or less were in full-time education (mostly at school), the rate of participation in full-time education declines rapidly as people get older. Second, rates of participation increased when the recession hit. Third, the magnitude of the increase tends to differ across the age groups: the increase in education attendance for individuals aged 16 years (or less) is much higher than the respective increases for the older groups.

As highlighted in these tables, consistent with the findings of other research and data from household surveys, the data from the AYS show that education and employment decisions are strongly related to each other across the economic cycle, with a reduction in labour force participation accompanied by an increase in education participation. This finding motivates the next descriptive table, which combines information on labour force and educational status to provide a much more detailed snapshot of the way in which these are combined. Specifically, we categorise employment and education outcomes into the following mutually exclusive groups:

- undertaking an apprenticeship(or traineeship)
- employed full-time: study (either part-time or full-time)
- employed full-time: no study
- employed part-time (PT): full-time study
- employed part-time (PT): part-time study
- employed part-time (PT): no study
- unemployed: study
- unemployed: no study
- not in the labour force (NILF): full-time study
- not in the labour force (NILF): part-time study
- not in the labour force (NILF): no study.

Table 3 presents the distribution across these 11 groups. This table, in combination with the statistics in table 2 and appendix table A2 (focusing on the sub-group of teenagers aged 18 and 19 years), provides several insights:

- The majority of teenagers who were not in the labour force were engaged in full-time education.
- Around two-thirds of the unemployed teenagers were not studying, and around one-third were (full-time) students.
- The majority of teenagers who were in part-time employment were also full-time students.

Table 3 Labour force and education status by year (%)

	Wave 1 1989	Wave 2 1990	Wave 3 1991	Wave 4 1992	Wave 5 1993	Wave 6 1994	Wave 7 1995	Wave 8 1996
Unemployment rate ^(a)	6.0	6.8	9.3	10.5	10.6	9.5	8.2	8.2
All sample								
Apprenticeship	9.6	9.1	8.2	6.6	6.4	6.0	4.8	5.0
Emp. FT: study	3.9	4.6	4.1	5.2	5.3	5.7	7.2	8.0
Emp. FT: no study	20.5	20.9	20.7	22.1	25.4	31.2	39.7	43.8
Emp. PT: FT study	18.8	19.2	18.6	18.2	17.2	16.6	12.1	10.4
Emp. PT: PT study	0.8	0.9	1.3	1.6	1.7	1.6	1.5	1.9
Emp. PT: no study	6.3	5.2	5.5	6.4	7.4	8.2	9.9	9.6
Unemp: study	5.4	5.4	5.9	5.9	5.3	4.2	2.3	2.5
Unemp: no study	6.6	6.8	7.6	7.8	7.4	6.2	5.9	6.1
NILF: full-time study	23.0	24.1	24.3	21.8	19.0	15.5	10.5	7.2
NILF: part-time study	0.1	0.3	0.3	0.5	0.5	0.4	0.6	0.5
NILF: no study	5.0	3.6	3.6	4.1	4.3	4.5	5.7	5.0
<i>No. of observations</i>	<i>5350</i>	<i>6247</i>	<i>6947</i>	<i>7633</i>	<i>8021</i>	<i>8350</i>	<i>7754</i>	<i>7304</i>
Aged 18–19								
Apprenticeship	11.9	12.1	11.5	10.1	12.7	12.5	9.4	11.1
Emp. FT: study	6.2	5.9	3.5	4.0	2.6	3.3	5.2	3.4
Emp. FT: no study	29.3	23.8	20.1	18.6	18.1	20.8	24.4	21.2
Emp. PT: FT study	14.1	16.7	16.0	17.1	19.4	21.1	19.2	23.0
Emp. PT: PT study	1.1	1.3	1.3	1.7	1.5	1.5	1.5	1.5
Emp. PT: No study	7.3	6.7	7.3	7.8	8.2	8.3	10.2	8.9
Unemp: study	3.2	4.1	6.5	6.3	6.1	4.9	3.7	4.8
Unemp: no study	7.4	8.9	9.9	9.5	8.5	7.7	7.8	8.0
NILF: full-time study	13.7	16.4	19.7	20.3	19.2	16.8	14.6	15.4
NILF: part-time study	0.2	0.3	0.6	0.7	0.4	0.4	0.5	0.3
NILF: no study	5.6	3.9	3.7	4.2	3.5	2.9	3.4	2.3
<i>No. of observations</i>	<i>2286</i>	<i>2524</i>	<i>2471</i>	<i>2402</i>	<i>2138</i>	<i>1964</i>	<i>1930</i>	<i>2015</i>

Notes: Population-weighted statistics.
(a) Annual national unemployment rate.

Regression analyses

The descriptive analysis provides strong evidence that young people are particularly vulnerable to unemployment in recessions and that some turn to full-time education in these circumstances. The purpose of the multivariate analyses is to estimate the impacts of economic conditions while controlling for other factors. Specifically, we aim to address two related sets of research questions:

- How do economic conditions and background characteristics affect young people's risk of unemployment? Furthermore, does the impact of poorer economic conditions vary across different background characteristics?
- Is there evidence that young people retreat into education in times of poorer economic conditions?

For the purpose of the multivariate analysis the data from each year of the AYS have been pooled. As a result, the dataset contains multiple records for individuals and, to the extent that the omitted variables persist over time, the errors for those multiple records could be correlated. To account for this possible correlation, standard errors are allowed to be arbitrarily correlated at the individual level (clustered at the individual level).

Unemployment and economic conditions

In this section we examine the impacts of economic conditions on the labour market outcomes of youth. We are chiefly interested in estimating the effect of economic conditions on the unemployment outcome. Accordingly, in our first (main) set of analysis, we restrict our sample to individuals who are in the labour market. This sample restriction is intuitive, given that people who choose to stay out of the labour market are, by definition, not at risk of unemployment. A total dataset of 43 420 records representing some 10 574 individuals is generated. (One potential problem with this sample exclusion is, however, that some young people may choose to stay out of the labour force because of tough economic conditions. This self-selection may cause bias to our estimates. For sensitivity analysis, later analysis in this section, where we focus on employment, considers an alternative sample that includes all individuals.)

We specify the unemployment outcome as a function of economic conditions and demographic variables. As noted earlier, we use the state-level unemployment rate for the adult population as the main proxy for economic conditions. The demographic variables reflect a range of 'standard' characteristics that have been identified as potential determinants of unemployment in the literature, to the extent these are available in the data. The variables consist of two main groups: social background and demographic variables; and educational qualifications. All the variables included in the model are described in appendix table B1.

Appendix tables B2 and B3 present the summary statistics of the control variables in the estimation sample for males and females respectively. The tables show the mean values for the total of each of these groups and for the population subdivided into whether people were employed or unemployed. Each sample includes all observations in which individuals were observed in the labour force, regardless of their study status. We include two dummy variables, one for being at school and one for being in full-time post-school education.

As for young men, around 25% of the sample is either at school or in full-time post-school education. The sample statistics by unemployment status suggest that young male labour market participants

who were at school or in full-time post-school education had a higher rate of unemployment than those who were not studying full-time. For those who had left school, males who have no qualifications are more likely to be unemployed than males with post-school qualifications. Likewise, males who did not finish Year 12 are more likely to be unemployed. Unemployment status is also correlated with the type of secondary school attended.

Health is an important factor: young males with a work disability have a higher rate of unemployment than those without disability. Age is shown to be negatively related to unemployment. This negative relationship in part reflects the fact that older males have higher skill levels than their younger counterparts, either through training or work experience. In terms of partnership status, men who are in relationships but without children are less likely to be unemployed.

While some 90% of the young males were born in Australia, those from non-English speaking backgrounds are over-represented among the unemployed. A range of measures were used to address family background. These included whether, at age 14, the person had lived with both parents, with a male single parent or a female single parent only, or had lived with neither parent; as well as parental education and occupational status; and the number of siblings. The majority of young people lived in two-parent households at the age of 14 years. Males from a single-parent family have a higher unemployment rate.

Young men whose parents worked in unskilled occupations and young men from jobless households are over-represented among the unemployed.⁷ Parental education is also correlated with unemployment status; young persons with more educated parents are under-represented among the unemployed.

The characteristics of the young women in the sample (appendix table B3) are broadly similar to the characteristics of the male sample, except with regard to educational participation and achievement and family status. Thirty-five per cent of young women are in full-time education, considerably above the 26% of young males. Young females who have left school also have higher levels of educational attainment than their male counterparts. With respect to family status, the number of females who are reportedly in a relationship or have dependent children living with them is proportionally higher than the number of males.

For the regressions, we choose a linear probability model because of its relative ease of interpretation.⁸ The dependent variable is unemployment outcome, taking value 1 for being unemployed and 0 otherwise (being employed). To investigate whether the impact of economic conditions differs across different types of individuals, we also estimate another set of regressions, where interaction terms between the unemployment rate and key background variables are added as explanatory variables.

⁷ Two of the family background characteristics are used to control for socioeconomic backgrounds. These are parental occupational status and parental education, measured when the respondents were aged 14 years. Parental occupational status is the highest occupational status (on a three-point scale: highly skilled, skilled and unskilled) of either parent (if both are employed) or the only available parent's occupational status (if only one parent employed). Households are divided into four different types, representing the three skill levels and those households where there was no employed parent.

Derived in a similar way to this measure, parental education corresponds to the highest level of educational qualification of either parent, if there are two, or otherwise to the educational qualification of a single parent. Households are divided into three categories – degree: either parent has a degree; certificates: neither has a degree but either parent has a certificate; no qualification: neither parent has a qualification.

⁸ We tried both linear and non-linear models and found that their results (in terms of marginal effects) are very similar.

Results for models without interaction terms

We first start interpreting the coefficient estimates for males (the first two columns of table 4). The coefficients from linear probability models are also the marginal effects and thus are easy to interpret.⁹ In the case of categorical variables, the results show the marginal impact of being in a particular state relative to an omitted reference state.

While our approach obtained a viable model, it is noted, as is common in this type of analysis, that the model fit is relatively low ($R^2 = 0.06$), indicative of a high level of variation in unemployment being unexplained by the model.

A key interest of the estimation results is the effect of economic conditions, as represented by the coefficient on the state-level unemployment rate. The estimate is positive and strongly significant. The magnitude of the estimate implies that a one-percentage-point increase in the unemployment rate would lead to a 1.7-percentage-point increase in the probability of being unemployed for young males who are currently in the labour force. This sizeable estimate suggests that the increases in youth unemployment in response to economic downturns are much larger than the corresponding changes in the overall unemployment rate. This finding is consistent with the observed patterns depicted in figure 1.

With regard to current study status, males who are in post-school education are (obviously) more likely to be unemployed than those who are not studying or those who are in secondary school. With regard to education level, post-school attainment does not have a strong impact on the probability of being unemployed for males.

In contrast, school-related variables have significant effects. In particular, having completed Year 12 reduces the probability of being unemployed by over three percentage points. Males from public schools who are in the labour force are 3.4 percentage points more likely to be unemployed than individuals from private and independent schools.

Poor health, or the presence of a disability, can affect individuals in many ways, including their ability to participate in the workforce and to compete for jobs. The estimated effect for having a disability is indeed substantial. Having a work-limiting disability increases the probability of being unemployed by 12.9 percentage points.

Age is also shown to be an important factor. The parameter estimates suggest that older people are less likely to be unemployed. This is expected, given that older individuals, on average, have higher levels of work experience. While age 16 is associated with a 7.4-percentage point higher rate of unemployment relative to an 18-year-old, being aged 23 years or over is associated with a 6.9% lower unemployment rate.

⁹ In general, for any variable, the absolute ratio between the estimate and the standard error (referred to as t-value) indicates the statistical significance of the estimate. We provide three symbols for the three levels of statistical significance of the estimate. One star (*) is a symbol indicating the effect is to be statistically significant from zero at the 90% level of confidence (when the t-value exceeds 1.645). Two stars (**) indicates that the t-value exceeds 1.96, that is, the effect is different from zero at the 95% confidence level. Three stars (***) is for a t-value exceeding 2.576, that is, the effect is statistically different from zero at the 99% level of confidence.

Table 4 Estimation results for unemployment outcome

	Males		Females	
	Coef.	SE#	Coef.	SE#
Unemployment rate	0.017***	0.002	0.012***	0.002
At school	0.007	0.013	-0.032**	0.013
Full-time post-school	0.048***	0.009	0.036***	0.008
<i>Post-school education (degree omitted category)</i>				
Certificate	0.006	0.011	0.028***	0.010
No qualification	-0.0002	0.011	0.006	0.009
Year 12	-0.031***	0.009	-0.035***	0.009
Attended public school	0.034***	0.007	0.031***	0.007
Disabled	0.129***	0.021	0.119***	0.018
<i>Age (age 18 omitted)</i>				
Age 16	0.074***	0.013	0.063***	0.013
Age 17	0.012	0.010	0.015	0.010
Age 19	-0.010	0.008	-0.019**	0.008
Age 20	-0.036***	0.009	-0.061***	0.009
Age 21–22	-0.048***	0.010	-0.081***	0.010
Age 23 or older	-0.069***	0.013	-0.099***	0.012
<i>Partner status (single, no children)</i>				
Partnered: no children	-0.028***	0.010	-0.017**	0.008
Partnered: with children	0.029	0.022	0.036*	0.019
Single: with children	0.030	0.070	0.150***	0.033
<i>Country of birth (Australian-born)</i>				
English speaking migrant	0.002	0.014	0.018	0.012
Non-English speaking migrant	0.113***	0.022	0.117***	0.019
Number of siblings	0.005*	0.003	0.010***	0.003
<i>At 14 lived with (both parents)</i>				
Mother only	0.000	0.018	0.011	0.016
Father only	0.045*	0.026	0.080***	0.027
Neither	-0.066*	0.039	0.073*	0.043
<i>At 14 parental emp. (highly skilled)</i>				
Employed: skilled	0.014*	0.008	0.015**	0.007
Employed: unskilled	0.065***	0.011	0.043***	0.010
Jobless household	0.125***	0.018	0.093***	0.017
<i>At 14 parental education (degree)</i>				
Certificate	-0.004	0.010	-0.003	0.008
No qualification	0.002	0.010	0.009	0.008
<i>State of residence (NSW)</i>				
Vic.	0.016*	0.010	0.046***	0.009
Qld	-0.018**	0.009	0.013	0.009
SA	0.025*	0.015	0.023*	0.011
WA	0.012	0.012	0.013	0.012
Tas.	0.033	0.027	0.048*	0.026
NT	-0.002	0.032	0.023	0.029
ACT	0.043**	0.021	0.045**	0.019
Time trend (year)	-0.005***	0.002	-0.004***	0.002
Constant	-0.018	0.021	-0.005	0.021
R-squared	0.06		0.06	
No. of obs.	21 951		21 469	
No. of persons	5 277		5 297	

Note: SE# stands for robust standard errors that are clustered at the individual level. ***, **, and * indicate significance at the 1%, 5% and 10% level respectively. Sample is based on the population who were in the labour force. The italic category in bracket refers to the comparison (omitted) category.

While having children, either with or without a partner, is associated with a higher unemployment rate for males relative to being a single person with no children, this result is not statistically significant. The effect of having a partner and no children is however statistically significant. The parameter estimate indicates that partnered males with no children are the least likely to be unemployed of the four family types included in the model. Some dimensions of family background were also influential in the model of the incidence of unemployment. Young male migrants from non-English speaking countries are around 11 percentage points more likely to be unemployed than Australian-born males. However, young migrants from English-speaking countries are not different from those born in Australia, suggesting that they do not face any disadvantage in the labour market. The magnitude of this parameter suggests that institutional and language differences represent a major barrier in the labour market for young migrants from non-English speaking countries.

As to the family structure, all else being equal, living with fathers only increases the probability of being unemployed by 4.5 percentage points, while not living with either parent reduces the probability of being unemployed by seven percentage points, although very few respondents fell into this category. Along with the above characteristics, this result was only significant at the 10% level.

We have included parental occupational and educational status in the model as measures of socioeconomic background. Parental occupational status has a strong influence on the unemployment probability. Males with at least one parent employed in a highly skilled occupation are the least likely to be unemployed. Males from households which did not have an employed parent when they were 14 years of age are the mostly likely to be unemployed, followed by males with parents being employed in unskilled jobs. The magnitude of these effects is large, with the parameter value representing having no employed parent, relative to having at least one parent in highly skilled employment, representing a 12.5-percentage-point higher rate of unemployment. By contrast, parental education does not appear to have any impact. The coefficients for this variable are both small and not statistically significant.

We also include the state of residence and year of the interview date to control for the geographical differences and the general time effects on youth unemployment. Holding all other characteristics constant, the probability of being unemployed is significantly higher for those young males who live in the Australian Capital Territory, by comparison with those who live in New South Wales. As for the time trend variable, the estimate is statistically significant and negative.

The third and fourth columns of table 4 report the estimated effects for females. In line with the estimates for males, the coefficient for the unemployment rate is positive and statistically significant. The size of the estimate suggests that a one-percentage-point increase in the overall unemployment rate would lead to a 1.2-percentage-point increase in the unemployment rate of those young females who are in the labour force. Thus, this estimated effect for females is 0.5 percentage point smaller than the estimated effect of 1.7 percentage points for males. Notwithstanding this, the result nevertheless indicates that the impacts of economic downturns are stronger for young females than for the older adult population.

Looking at the model for young women in more detail, we focus mainly on the areas where the results differ from those seen in the model for young men. With respect to study status, being at school decreases the estimated rate of unemployment for females. This statistically significant result stands in contrast to the positive but insignificant estimate for males. Post-school educational attainment shows the same pattern seen for males, an exception to this being those with a certificate as their highest qualification. Women with a certificate are around 3% more likely to be unemployed than

women with a degree. The effects of high school completion, types of schools attended, health and age are all strong for females, and are similar in magnitude to the effects for males.

The impacts of partnering and having children are more significant for females than they are for males. In particular, being a single parent increases the probability of a young woman being unemployed by 14.5 percentage points. The results are consistent with general observations that females play a dominant role in taking care of children and thus the presence of dependent children will have a larger impact on females than on males. For the rest of the variables, the effects are broadly in line with the effects found for males.

Results for models with interactions

So far, we have estimated the impact of economic conditions on the probability of being unemployed, assuming the effect is uniform across individuals. The estimates could be viewed as the average impact of economic conditions on the probability of being unemployed for the sample.

In this paper, we also aim to understand whether the impact of economic conditions varies across different background groups. Accordingly, we estimate an alternative model, whereby the background variables are interacted with the unemployment rate. In particular, we re-estimate the above model and introduce a series of interaction terms between the state-level unemployment rate and the key background variables, including immigrant status, father's and mother's occupational status.

Table 5 reports the estimated coefficients for those variables and their interaction terms with the unemployment rate. The remaining estimated coefficients are reported in appendix table C1. Using this more complex modelling approach does not result in any overall improvement in the fit of the model (appendix table C1). Furthermore, the interaction effects are mostly insignificant, and, taken with the coefficients on the background variables and the unemployment rate, the estimates do not provide a clear pattern on the heterogeneity in the impact of economic conditions. The results therefore hint at the possibility that the risk of being unemployed does not vary significantly across different background groups. However, we refrain from making strong conclusions from these estimation results since the imprecise estimates could be also due to the lack of variation in data.

Table 5 Estimation results for unemployment outcome – interaction effects

	Males		Females	
	Coef.	SE#	Coef.	SE#
Unemployment rate (urate)	0.015***	0.003	0.009***	0.003
English speaking migrants	0.072	0.056	0.074	0.058
Non-English speaking migrants	0.213***	0.080	0.194**	0.084
	0.213***			
	0.213***			
English speaking migrants #urate	-0.008	0.007	-0.007	0.007
Non-English speaking migrants #urate	-0.012	0.009	-0.009	0.010
Parental occupation (highly skilled omitted)				
Skilled	0.005	0.032	-0.044	0.030
Unskilled	0.006	0.039	-0.011	0.040
Jobless household	0.044	0.047	0.086*	0.046
Skilled #urate	0.001	0.004	0.007*	0.004
Unskilled #urate	0.007	0.005	0.006	0.005
Jobless household #urate	0.009*	0.005	0.001	0.005

Note: SE# stands for robust standard errors that are clustered at the individual level. ***, **, and * indicate significance at the 1%, 5% and 10% level respectively. Estimation sample includes observations of which individuals were in the labour force.

Robustness check: alternative sample and outcome measure

Calculated as the ratio of the unemployed to the total number of people in the labour market (employed and unemployed), the unemployment rate effectively also reflects the relative difficulty for the unemployed in finding jobs. This measure is therefore a powerful indicator of labour market conditions. The regressions in the previous section have shown that the unemployment rate among young people in the labour force is much more sensitive to economic conditions than the unemployment rate of the overall workforce.

The estimates are however subject to potential selection bias because young people are less likely to enter the labour force in economic downturns. For example, if the young people who choose not to participate in the labour market because of tough economic conditions are those who are more likely to be unemployed than those who remain in the labour market, then their actions will drive down the unemployment rate among young people. In this case, changes in the youth unemployment rate in response to changes in economic conditions understate the impact of economic conditions on the labour market outcomes of young persons.

In contrast, if the young people who choose not to enter/withdraw from the labour market in tough economic conditions are those who are much less likely to be unemployed than those who remain in the labour market, then their actions will drive up the unemployment rate among the labour force. In this case, changes in the youth unemployment rate in response to changes in economic conditions overstate the impact of economic conditions.

Similarly, the overall unemployment rate could reflect inaccurately the state of economic conditions when there is a strong presence of 'discouraged workers'. For example, individuals who want to work but perceive that it is hard to find work may decide to cease looking. For these individuals, they may still want a job but they are no longer counted in the unemployed statistics. When this occurs, it is plausible that the unemployment rate decreases when the economic conditions do not improve.

To examine whether our conclusions in the above analysis are sensitive to this self-selection problem, we estimate an extra set of regressions, in which we extend the sample to include people who are not in the labour force. By doing this, the sample is not subject to self-selection. Furthermore, instead of using the overall unemployment rate as the proxy for economic conditions, we use the overall employment-to-population rate. The employment rate is measured as the number of employed over the adult population and thus is not sensitive to the presence of 'discouraged workers'.

Table 6 reports the estimates for the basic model (without interaction terms). The control variables are similar to the variables in the previous regressions, with one exception: we do not include current study status because this is endogenous to employment status. The majority of people in full-time study are out of the labour force, and, as discussed earlier, their study status could be driven by changes in economic conditions. With the inclusion of individuals who are not in the labour force, the number of observations for estimation increases substantially (from 21 951 to 28 524 for males and from 21 469 to 28 934 for females). The goodness of fit for the employment status increases for both males and females. For example, for males, 14% of the total variation in employment status is explained by the model, in contrast to the model for the unemployment status, where only 6% of the total variation is explained by the model. Together with the fact that the increase in the model fitness results from the inclusion of people who are not in the labour force, it highlights the possibility that the decisions to enter the labour force can be explained quite well by the variables included in the model.

Table 6 Estimation results for employment outcome

	Males		Females	
	Coef.	SE#.	Coef.	SE#
Employment-to-population rate	0.023***	0.002	0.014***	0.002
<i>Education (degree omitted)</i>				
Certificate	-0.014	0.014	-0.020*	0.012
No post-school qualification	-0.082***	0.014	-0.097***	0.011
Year 12	0.003	0.009	0.048***	0.010
Attended public school	0.002	0.010	-0.020**	0.009
Disabled	-0.185***	0.020	-0.175***	0.017
<i>Age (age 18 omitted)</i>				
Age 16	-0.221***	0.011	-0.148***	0.011
Age 17	-0.129***	0.009	-0.097***	0.009
Age 19	0.057***	0.008	0.049***	0.008
Age 20	0.089***	0.010	0.092***	0.009
Age 21–22	0.125***	0.011	0.133***	0.011
Age 23 or older	0.153***	0.014	0.166***	0.014
<i>Partner status (single, no children)</i>				
Partnered: no children	0.071***	0.011	0.049***	0.010
Partnered: with children	0.002	0.025	-0.359***	0.020
Single: with children	-0.141	0.119	-0.435***	0.022
<i>Country of birth (Australian-born)</i>				
English speaking migrant	-0.030*	0.018	-0.026	0.017
Non-English speaking migrant	-0.267***	0.019	-0.259***	0.019
Number of siblings	0.000	0.003	-0.010***	0.003
<i>At 14 lived with (both parents)</i>				
Mother only	-0.010	0.019	0.032*	0.017
Father only	-0.037	0.027	-0.023	0.029
Neither	0.057	0.041	-0.003	0.040
<i>At 14 parental emp. (highly skilled)</i>				
Employed: skilled	0.020*	0.010	0.017*	0.010
Employed: unskilled	-0.025**	0.013	-0.017	0.013
Jobless household	-0.081***	0.018	-0.091***	0.019
<i>At 14 parental education (degree)</i>				
Certificate	0.056***	0.012	0.038***	0.011
No qualification	0.045***	0.012	0.017	0.011
<i>State of residence (NSW omitted)</i>				
Vic.	-0.044***	0.011	-0.050***	0.011
Qld	0.003	0.012	-0.012	0.012
SA	-0.013	0.016	-0.017	0.015
WA	-0.074***	0.016	-0.016	0.016
Tas.	-0.041	0.028	0.001	0.029
NT	-0.195***	0.046	-0.111***	0.038
ACT	-0.240***	0.031	-0.125***	0.031
Time trend (year)	0.003	0.002	0.004*	0.002
Constant	-0.617***	0.111	-0.104	0.104
R-squared	0.14		0.16	
No. of obs.	28 524		28 934	
No. of persons	5 676		5 723	

Note: SE# robust standard errors that are clustered at the individual level. ***, **, and * indicate significance at the 1%, 5% and 10% level respectively. The italic category in bracket refers to the comparison (omitted) category.

The key focus of interest, however, is the effect of economic conditions, as represented by the coefficient on the state-level employment rate. The estimate is positive and strongly significant. The magnitude of the estimate implies that a one-percentage-point reduction in the overall employment rate would lead to a 2.3-percentage-point reduction in the probability of being employed for the young male population. The corresponding estimate for females is smaller at 0.014. That is, a one-percentage-point reduction in the overall employment rate would lead to a reduction of 1.4 percentage points in the employment rate among young women. Together, the sizeable estimates suggest that the changes in youth employment in response to economic downturns are much larger than the corresponding changes in the overall employment-to-population rate. This finding is indeed consistent with our finding in prior estimations that the increases in youth unemployment in response to economic downturns are much larger than the corresponding changes in the overall unemployment rate. With this consistency in the findings, we conclude that the impact of self-selection, if present, does not change our substantive conclusions.

Summary

This section has estimated the relationships between economic conditions, key demographic variables and the labour market outcomes of youth.

The main results from the analysis can be summarised as follows:

- All else being equal, the unemployment rate among young individuals is found to increase much faster than the overall unemployment rate in economic downturns. This sensitivity is also reflected when the alternative measure of the employment-to-population rate is considered: the youth employment rate declines much more substantially than the overall employment rate in economic downturns. Together, these findings confirm the general observations that young people are more vulnerable in economic downturns than the older population.
- Furthermore, we find that the adverse impacts of economic downturns are stronger for young males, relative to young females. Each percentage point increase in the overall unemployment rate would lead to a 1.7-percentage-point increase in the unemployment rate of young males and a 1.2-percentage-point increase in the unemployment rate of young females.
- Health is an important determinant of unemployment: having a work-limiting disability significantly increases the probability of being unemployed for both males and females.
- The role of educational achievement in the models is complex. While there is clear evidence that non-completion of Year 12 relative to completion is associated with poorer labour market outcomes, the results with respect to certificates and degrees are less clear. Compared with women with a degree, women with certificates have a higher risk of unemployment. For young males, post-educational attainment has no significant impact on unemployment outcome.
- Attending a public school is associated with higher rates of unemployment, and for women lower levels of employment.
- Background characteristics, in particular, immigrant status and parental occupation, are strong predictors of unemployment incidence, after controlling for individual educational attainment.

Participation in education and economic conditions

In this section, we examine the relationship between the decision to undertake education and economic conditions. More specifically we focus on full-time education – a definition which encompasses all secondary schooling and full-time post-school studies (excluding apprentices and traineeships). We measure the participation status in full-time education at the time of the interview.

For this analysis we undertake a similar regression approach to that used in the previous section. In this case, using a linear probability model, we model the full-time study status as a function of the state-level unemployment rate, as a proxy for economic conditions, and a range of other individual and family characteristics. We again estimate separate models for males and females. In addition to estimating the model for the full population, we model older and younger young people separately in order to identify whether or not there are different relationships between the independent variables, including the economic cycle and school and post-school education participation.

The sample averages of all the control variables for males and females are provided in appendix tables D1 and D2 respectively and, analogous with the previous table of this type, we show the results separately for those who are in full-time study and those who are not. Our sample includes all observations to which individuals responded in the survey, regardless of their labour status. This increases the sample size to 57 458 observations for 11 399 respondents. As expected, young people who are still in school-age years are over-represented in the sample of full-time students.

Migrants from non-English speaking backgrounds are disproportionately represented amongst full-time students for both males and females. This is also true of both males and females who lived in two-parent households at the age of 14. By contrast, young people who had parents who worked in unskilled occupations or where parents were not employed are under-represented among the student group. Parental educational attainment is also correlated with the study status of youth, with young persons with more educated parents being over-represented among the student group.

Despite these areas of commonality, there are also some differences by gender, with young females having higher levels of educational attainment than their male counterparts. While 6% of males had a degree qualification, the proportion was 11% for females; similarly, 53% of females reported Year 12 as their highest level of qualification compared with 47% of males.

Estimation results: overall sample

Table 7 shows the results of the whole-population models of male and female full-time education participation. Looking firstly at model fit as represented by the R^2 statistics, the model predicts quite well, explaining 30% of the total variation in participation in education for males and 39% for females. In addition, these models reveal a large number of significant parameters. By comparison with the comparable statistics for the unemployment outcome model, this highlights the fact that unemployment incidences are more random and also driven by external factors, while educational participation is more a result of individual decisions.

We first focus on the results for males (the first two columns). Consistent with prior expectations, the estimated coefficient on the unemployment rate is strongly significant and positive for both males and females. The size of the estimate implies that, other things being equal, a one-percentage-point increase in the overall unemployment rate would lead to a 2.1-percentage-point increase in the propensity to study among young males and a 1.5-percentage-point increase in the propensity to study among females. This result is consistent with the literature, which suggests that educational participation is counter-cyclical.

The estimated coefficients for post-school educational attainment suggest that individuals with either a tertiary degree (omitted category) or a vocational qualification are less likely to still be studying. This result suggests that decisions to enter education are strongly state-dependent. Individuals who have finished a course necessary for their intended profession or occupation are less likely to re-enter education, by comparison with those without a qualification.

Individuals from public schools are less likely to study than those who attended non-public schools by around ten percentage points. Participation in full-time study decreases strongly with age, after controlling for other factors, including educational attainment. This effect is particularly marked for males. Note that the issue of age is considered further in the more detailed analysis.

The estimated effect for having a disability on full-time education is negative and statistically significant, indicating that, other things being equal, males with a disability are 3.5 percentage points less likely to undertake full-time study, and females 4.4 percentage points less likely.

The probability of studying differs strongly by family status and immigrant status. Young people who are single are more likely to study. The effect of being partnered or having children is much more marked for young women than it is for men, but for both men and women it is negative. For young women the effect of having children is very strong – being associated with a 24-percentage-point lower probability of study for partnered women and a 22-percentage-point lower probability for single parents.

Young male migrants from non-English speaking countries are around 25 percentage points more likely to be studying than their Australian counterparts, with young female migrants from these countries being 19 percentage points more likely. While young migrants from English-speaking countries were also more likely to be studying than those born in Australia (3.5 percentage points for males and 4.9 for females), the difference, while statistically significant, is relatively small. Together with our previous finding that non-English speaking migrants are more prone to unemployment, the difference in the effects here might be seen as suggesting that non-English speaking migrants study more, in part because of their higher risk of unemployment. While this may be a factor, much more detailed analysis is required, including analysis by country of birth, before any substantive conclusion should be drawn.

Parental occupational status and highest level of parental educational attainment are both strongly associated with the propensity of children to study. This effect is seen for both males and females, with the highest rate of educational participation being associated with having a parent employed in a highly skilled occupation and where a parent had a degree. One interesting finding is that the negative impact of having no parent employed is slightly, although not statistically significant, less than having a parent employed in an unskilled job.

We also include the state of residence and year of the interview to control for the geographical differences and the general time effects. The estimates for different states suggest that, other things equal, both males and females living in Queensland and South Australia relative to New South Wales are much less likely to study, along with females in Western Australia and Tasmania, whereas living in the Australian Capital Territory increases the probability of studying, for both males and females. The time trend is positive for both males and females but fairly small.

Table 7 Estimation results for education outcome: overall sample

	Males		Females	
	Coef.	SE#.	Coef.	SE#
Unemployment rate	0.021***	0.002	0.015***	0.002
<i>Education (degree omitted)</i>				
Certificate	0.014	0.015	0.010	0.011
No post-school qualification	0.191***	0.015	0.281***	0.012
Year 12	0.078***	0.009	0.027***	0.009
Attended public school	-0.095***	0.009	-0.084***	0.008
Disabled	-0.035**	0.015	-0.044***	0.013
<i>Age (age 18 omitted)</i>				
Age 16	0.440***	0.009	0.367***	0.009
Age 17	0.252***	0.008	0.208***	0.009
Age 19	-0.091***	0.007	-0.058***	0.007
Age 20	-0.123***	0.009	-0.079***	0.009
Age 21–22	-0.177***	0.010	-0.165***	0.011
Age 23 or older	-0.228***	0.013	-0.208***	0.013
<i>Partner status (single, no children)</i>				
Partnered: no children	-0.102***	0.010	-0.197***	0.009
Partnered: with children	-0.089***	0.016	-0.241***	0.012
Single: with children	-0.022	0.059	-0.218***	0.017
<i>Country of birth (Australian-born)</i>				
English speaking migrant	0.035**	0.016	0.049***	0.016
Non-English speaking migrant	0.252***	0.017	0.190***	0.015
Number of siblings	0.035**	0.016	0.049***	0.016
<i>At14 lived with (both parents)</i>				
Mother only	0.000	0.003	-0.023	0.015
Father only	-0.047**	0.016	-0.108***	0.026
Neither	0.009	0.021	-0.060*	0.036
<i>At 14 parental emp. (highly skilled)</i>				
Employed: skilled	-0.049***	0.010	-0.052***	0.009
Employed: unskilled	-0.078***	0.012	-0.080***	0.011
Jobless household	-0.065***	0.017	-0.058***	0.016
<i>At14 parental education (degree)</i>				
Certificate	-0.115***	0.012	-0.078***	0.011
No qualification	-0.139***	0.011	-0.110***	0.010
<i>State of residence (NSW omitted)</i>				
Vic.	0.004	0.010	-0.003	0.009
Qld	-0.037***	0.011	-0.040***	0.010
SA	-0.041***	0.014	-0.059***	0.013
WA	-0.021	0.013	-0.054***	0.015
Tas.	-0.027	0.024	-0.113***	0.023
NT	0.022	0.037	-0.023	0.031
ACT	0.157***	0.021	0.108***	0.020
Time trend (year)	0.005**	0.002	0.012***	0.002
Constant	0.252***	0.024	0.286***	0.022
R-squared	0.32		0.39	
No. of obs.	28 524		28 934	
No. of persons	5 676		5 723	

Note: SE# robust standard errors that are clustered at the individual level. ***, **, and * indicate significance at the 1%, 5% and 10% level respectively. The italic category in bracket refers to the comparison (omitted) category.

Estimation results for different age groups and types of education

In the previous analysis we have modelled the probability of studying full-time for the overall sample. Although this approach allows for a simple analysis of the factors associated with participation in education, it does bring with it some limitations. In particular:

- While age is included in the models, no account is taken of the potential for interactions between age and other variables. It can be hypothesised that there may be different factors associated with decisions on education participation by older and younger youth.
- We did not distinguish participation by type of education and, in particular, whether there may be systematic differences in the factors driving school and post-school educational participation.

For these reasons two additional sets of models are considered here. As with our previous analysis, we utilise separate models for males and for females:

- The first models are for persons aged 18 years and over and focus on post-school participation only. For this reason we have excluded a small number of individuals aged 18 or older who are still at school. This model includes 39 155 observations for 9976 individuals. The estimation results for this age group are reported in table 8.
- The second set of models is for those under the age of 18 (table 9). While these models are primarily concerned with school education, we have not excluded those under this age who are attending some form of full-time non-school education. In the data only 5% of the observed incidences of full-time study involve non-school participation.

Post-school participation by persons aged 18 years and over

Looking firstly at model fit (table 8), the model still predicts quite well, with the total of variation in participation in education being explained by the model above as 20% for males and 27% for females.

For both males and females the estimated coefficient on the unemployment rate is strongly significant and positive in sign. The size of the estimate implies that, other things equal for both genders, a one-percentage-point increase in the overall unemployment rate would lead to a 1.3-percentage-point increase in the propensity to undertake post-school education. Compared with the effect of 2.1 percentage points and 1.5 percentage points respectively for males and females in the overall sample, this lower estimate suggests that the degree to which these older young people respond to changes in economic conditions by increasing their level of educational participation is weaker than it is for younger groups. This result is to be anticipated. Amongst this older group there are many who have either obtained a higher level of educational qualification or who, notwithstanding the potential impact of the economic cycle, have already established themselves in relatively secure employment. Nevertheless, it is clear evidence that the rate of educational participation for this group is sensitive to the state of the economy.

A second feature of these models is that the estimated coefficients on the other independent variables are often significantly stronger than the corresponding estimates for the overall sample. Both males and females who have already achieved a degree or a certificate are less likely to be studying than those who have not (or not yet) achieved such a qualification. This is again an expected result and reflects the fact that many of this group are still in the process of completing their education. As expected, individuals who have completed Year 12 are from 19 to 26 percentage points more likely to be studying than a person with a degree.

As with the whole sample, having attended a public school is associated with a lower level of participation in full-time study, with this model generating parameter estimates roughly in line with the whole model. This is also the case with having a disability, although only the estimate for women (a 3.8-percentage-point lower rate of participation) is significant. The parameter values of age are less marked in this model, again consistent with the model being restricted to a more homogeneous group.

The probability of undertaking post-school study differs strongly by family status and immigrant status. Young people who are single are more likely to study, with this being particularly marked for women. Young male migrants from non-English speaking countries are around 21 percentage points more likely to be studying, with females 19 percentage points more likely, estimates comparable with the corresponding effect found for the overall group.

The results with regard to parental socioeconomic status, that is, the skill level of parental employment and parental educational attainment, remain important in this model. One interesting result is, however, that parental joblessness appears to be less relevant as a factor, with its being statistically insignificant for males and only significant at the 95% level for women. More marked is the comparison between these results and those for the subsequent models for people under the age of 18 years.

The estimates by location for this model support the earlier analysis, which suggests that, other things being equal, young people living in Queensland and South Australia, and young women in Tasmania, are much less likely to be engaging in post-school education, whereas living in the Australian Capital Territory increases the probability of studying. As for the time trend variable, the estimate is statistically insignificant.

Educational participation of persons aged 17 years and younger

The final models considered in this paper concern the probability of individuals aged 17 years or younger undertaking education. The results are reported in table 9. These models use a total of 16 570 records for 9113 individuals. While the model fit for this age group is not as strong as for the group 18 years and over, the model still explains over 10% of the total variation in education for both males and females.

Focusing on the central question, the relationship between educational participation and labour market conditions, the estimated coefficient on the state-specific total unemployment rate is 0.029 for males and 0.015 for females, suggesting that a one-percentage-point increase in the overall unemployment rate would lead to a 2.9-percentage-point increase in the propensity to undertake education among school-aged males and a 1.5-percentage-point increase among females. These estimates are somewhat stronger than the estimates for the older age group. In addition to this lower overall elasticity for women, another significant difference in this model is the impact of being a migrant from a non-English speaking country. While, as with the other models, this is manifest as a factor contributing to higher participation, the effect of 0.217 for males is considerably higher than the effect of 0.158 for women.

In the previous model it was noted that the effect of parental joblessness, relative to having a parent employed in a highly skilled job, on educational participation was relatively subdued. This is not the case for this younger group. For young males, living in a family with no employed parent at age 14 was associated with an 8.9-percentage-point lower level of participation in full-time study, and for females it was an 8.0-percentage-point lower participation. It is however not clear whether this result

is driven by the greater proximity of the period of parental joblessness or whether the impact of parental joblessness declines with age.

Also, again in contrast to the model of post-school educational participation, the time trend in secondary education is positive and significant.

Summary

This section has estimated the impact of economic conditions on the participation of young people in full-time education. The main results from the analysis can be summarised as follows:

- The propensity to participate in full-time education is positively related to the unemployment rate. This result is consistent with prior expectations that economic downturns induce more young persons to participate in education.
- The educational participation impact of economic conditions is stronger for young males. Furthermore, males who are of school age respond most to changes in economic conditions. The stronger impact on males could be in part due to the fact that young males are more vulnerable to unemployment in economic downturns than females, because overall they have lower educational attainment and tend to work in the industries that are most affected by economic cycles, such as construction and manufacturing.
- Completing Year 12 and attending non-government schools increase subsequent post-school education for both males and females.
- Family backgrounds are also important predictors of education. Young immigrants with a non-English speaking background are much more likely to study. Similarly, youth with highly skilled and educated parents are also more likely to study. Other things being equal, youth from jobless households, however, have a similar propensity to participate in education as those from unskilled households.

Table 8 Estimation results for education outcome: aged ≥ 18 years

	Males		Females	
	Coef.	SE#	Coef.	SE#
Unemployment rate	0.013***	0.002	0.013***	0.002
<i>Education (degree omitted)</i>				
Certificate	0.092***	0.015	0.070***	0.012
No post-school qualification	0.192***	0.015	0.255***	0.012
Year 12	0.244***	0.008	0.220***	0.009
Attended public school	-0.082***	0.011	-0.085***	0.010
Disabled	-0.018	0.016	-0.039***	0.015
<i>Age (age 18 omitted)</i>				
Age 19	0.005	0.007	0.004	0.007
Age 20	-0.016*	0.009	-0.017*	0.009
Age 21–22	-0.069***	0.011	-0.108***	0.011
Age 23 or older	-0.124***	0.013	-0.152***	0.014
<i>Partner status (single, no children)</i>				
Partnered: no children	-0.080***	0.010	-0.141***	0.009
Partnered: with children	-0.048***	0.016	-0.150***	0.012
Single: with children	0.023	0.050	-0.096***	0.015
<i>Country of birth (Australian-born)</i>				
English speaking migrant	0.035*	0.019	0.050***	0.019
Non-English speaking migrant	0.208***	0.022	0.180***	0.021
Number of siblings	-0.008***	0.003	-0.003	0.003
<i>At 14 lived with (both parents)</i>				
Mother only	-0.014	0.019	-0.020	0.018
Father only	-0.052**	0.025	-0.085***	0.030
Neither	0.044	0.050	-0.010	0.035
<i>At 14 parental emp. (highly skilled)</i>				
Employed: skilled	-0.051***	0.011	-0.062***	0.011
Employed: unskilled	-0.065***	0.013	-0.071***	0.013
Jobless household	-0.024	0.020	-0.047**	0.020
<i>At 14 parental education (degree)</i>				
Certificate	-0.100***	0.014	-0.083***	0.013
No qualification	-0.129***	0.014	-0.118***	0.013
<i>State of residence (NSW omitted)</i>				
Vic.	0.006	0.012	-0.014	0.012
Qld	-0.033***	0.012	-0.032**	0.012
SA	-0.040**	0.016	-0.067***	0.016
WA	0.013	0.015	-0.011	0.016
Tas.	0.033	0.025	-0.063**	0.025
NT	0.003	0.050	-0.022	0.036
ACT	0.087***	0.032	0.072**	0.029
Time trend (year)	-0.002	0.002	0.004*	0.002
Constant	0.077***	0.027	0.108***	0.027
R-squared	0.21		0.27	
No. of obs.	19 436		19 719	
No. of persons	4 940		5 036	

Note: SE# robust standard errors that are clustered at the individual level. ***, **, and * indicate significance at the 1%, 5% and 10% level respectively. The italic category in bracket refers to the comparison (omitted) category.

Table 9 Estimation results for education outcome: aged ≤ 17 years

	Males		Females	
	Coef.	SE#	Coef.	SE#
Unemployment rate	0.029***	0.003	0.015***	0.003
Attended public school	-0.116***	0.012	-0.067***	0.010
Disabled	-0.035	0.027	-0.047**	0.023
<i>Age (age 17 omitted)</i>				
Age 16	0.186***	0.007	0.174***	0.007
<i>Country of birth (Australian-born)</i>				
English speaking migrant	0.002	0.024	0.037*	0.019
Non-English speaking migrant	0.217***	0.016	0.158***	0.016
Number of siblings	-0.015***	0.004	-0.012***	0.004
<i>At 14 lived with (both parents)</i>				
Mother only	0.011	0.024	-0.016	0.019
Father only	-0.020	0.035	-0.104***	0.039
Neither	-0.099	0.067	-0.184**	0.073
<i>At 14 parental emp. (highly skilled)</i>				
Employed: skilled	-0.025*	0.014	-0.024**	0.012
Employed: unskilled	-0.069***	0.018	-0.079***	0.015
Jobless household	-0.089***	0.025	-0.080***	0.020
<i>At 14 parental education (degree)</i>				
Certificate	-0.094***	0.015	-0.052***	0.013
No qualification	-0.100***	0.015	-0.074***	0.012
<i>State of residence (NSW omitted)</i>				
Vic.	0.027*	0.015	0.032***	0.012
Qld	-0.021	0.016	-0.042***	0.014
SA	-0.026	0.021	-0.027	0.018
WA	-0.040**	0.020	-0.110***	0.023
Tas.	-0.083**	0.038	-0.139***	0.039
NT	0.036	0.043	-0.004	0.039
ACT	0.196***	0.023	0.132***	0.021
Time trend (year)	0.008**	0.004	0.020***	0.003
Constant	0.602***	0.028	0.687***	0.025
R-squared	0.12		0.13	
No. of obs.	8177		8393	
No. of persons	4542		4571	

Note: SE# robust standard errors that are clustered at the individual level. ***, **, and * indicate significance at the 1%, 5% and 10% level respectively. The italic category in bracket refers to the comparison (omitted) category.

Conclusion

The aim of this study was to provide insights into how young people fare in economic downturns. We have used data from a longitudinal survey of youth – the Australia Youth Survey – which covers the period 1989–96 and which encompasses the previous major economic downturn. The AYS contains detailed demographic and labour market information for each respondent, including education and employment outcomes in each year. Furthermore, the AYS contains information on the residential regions in which respondents resided at the time of the interview, which has allowed us to use state-level unemployment rates as the proxy for the economic conditions faced by the respondents.

The key outcomes considered in this study are labour force status and educational participation. The descriptive analysis provided evidence that poor economic conditions negatively affect the labour market outcomes of youth. Following on from the 1990–91 economic downturn, there was a sharp decline in the proportion of youth in full-time employment. During the same period, there was a sharp increase in the proportion of youth experiencing unemployment and an increase in the proportion of youth not participating in the labour market.

One of the reasons for the increase in the number of young individuals outside the labour force is that young people tend to retreat into education in times of poorer economic conditions. Our analysis showed that the majority of individuals who were not in the labour force were indeed in full-time education.

The main aims of this study were to tease out the effects of economic downturns on youth unemployment and education outcomes. We modelled the unemployment outcomes of youth who were in the labour force as a function of the state-level unemployment rate, which is the proxy for economic conditions, and used a set of standard control variables. Based on our regression results, the unemployment rate among young individuals was found to increase much faster than the overall unemployment rate. This result confirms that youth are indeed much more vulnerable to economic downturns by comparison with the older population. Furthermore, the impacts of economic conditions are particularly strong for young males.

As for other determinants of unemployment, the estimated effects were mostly in line with prior expectations. Schooling is important in reducing the risk of being unemployed, whereas having a work-limiting health condition increases the risk of being unemployed. In addition, background characteristics, including parental occupation and immigration status, are important predictors of unemployment incidence.

A specific question in our research was whether or not the effect of economic conditions varies across individuals, based on these characteristics. This was investigated by re-estimating the models and introducing interaction terms between the unemployment rate and some key background variables. Most coefficients on the interaction terms are not statistically significant. This result hence does not support the hypothesis that the characteristics associated with higher unemployment per se are also associated with greater sensitivity to changes in the economic conditions. Given the data and other limitations and the nature of our findings, we are, however, reluctant to rule out the possibility of such a link being found.

A further variant upon our model used employment status as the outcome variable and the employment rate as the proxy for the labour market. This sought to deal with concerns about the

potential bias resulting from self-selection into the labour market and the shortcomings of the unemployment rate as a proxy for economic conditions. These results confirm the prior estimates that young people are particularly vulnerable in economic downturns.

To gauge the impact of economic conditions on educational participation, we modelled educational participation as a function of the state-level unemployment rate and other factors. The effect of economic conditions is statistically significant and substantial in magnitude. Consistent with the estimates for unemployment outcome, we also found that the impact of economic conditions is stronger for males, particularly for males of school age.

The estimation results also showed the importance of prior credentials and background influences in education. Completion of Year 12 is a strong predictor of further education. Similarly, young people who attend non-government schools and those with highly educated parents are more likely to study. The study status of young people is also related to parental employment status: youth from highly skilled households are much more likely to study than those from unskilled or jobless households. Migrants from non-English backgrounds are also more likely to engage in post-school education, compared with those young people who were born in Australia.

Together, the results paint a picture of how young people fare in economic downturns, in terms of labour market and education participation outcomes. Young people are most vulnerable to unemployment. In response, many choose to delay entering the labour market and instead undertake further study.

The insights from these estimation results are valuable in understanding the possible impacts of the current economic downturn and future economic downturns. As young people are more vulnerable to economic conditions, we can expect that the short-term effects on young people in the current downturn will be more dramatic than the impacts on the adult population. In terms of absolute magnitude, it is expected that the effects of the current downturn on youth unemployment and educational participation will be less dramatic than the previous economic downturn.

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Appendix A: descriptive tables

Table A1 Unemployment rate by age and year: derived from the AYS sample

	Wave1 1989	Wave 2 1990	Wave 3 1991	Wave 4 1992	Wave 5 1993	Wave 6 1994	Wave 7 1995	Wave 8 1996
Overall unemployment rate ^(a)	6.0	6.8	9.3	10.5	10.6	9.5	8.2	8.2
Age ≤16	22.1	23.8	22.8	29.1	29.3	25.1	.	.
Obs.	902	841	645	614	615	675	.	.
Age 17	20.6	17.7	20.7	19.6	22.7	18.2	16.6	.
Obs.	1017	846	785	613	656	598	737	.
Age 18	14.4	17.2	21.4	24.7	19.3	16.8	14.3	16.9
Obs.	1046	1014	874	896	737	795	750	871
Age 19	12.1	16.0	22.4	18.6	19.2	15.5	14.1	14.9
Obs.	783	978	997	877	888	768	815	775
Age 20	.	13.4	15.5	17.5	15.9	13.4	10.7	9.4
Obs.	.	686	899	957	838	829	739	786
Age 21	.	.	13.4	14.5	12.5	13.3	9.7	9.7
Obs.	.	.	638	853	894	797	779	717
Age 22	.	.	.	13.8	13.1	9.4	9.6	8.4
Obs.	.	.	.	587	765	824	737	758
Age 23	.	.	.	.	12.4	8.2	5.5	8.3
Obs.	.	.	.	.	530	704	730	691
Age 24	.	.	.	.	.	7.2	6.5	6.9
Obs.	.	.	.	.	.	471	624	705
Age 25	.	.	.	.	.	.	6.5	9.6
Obs.	.	.	.	.	.	.	427	585
Age 26	.	.	.	.	.	.	.	7.6
Obs.	.	.	.	.	.	.	.	407

Notes: Population-weighted statistics.

(a) Annual national adult unemployment rate.

Table A2 Education status by year (%)

	Wave 1 1989	Wave 2 1990	Wave 3 1991	Wave 4 1992	Wave 5 1993	Wave 6 1994	Wave 7 1995	Wave 8 1996
Unemployment rate ^(a)	6.0	6.8	9.3	10.5	10.6	9.5	8.2	8.2
All sample								
At school	33.9	30.2	26.7	24.2	21.0	17.9	8.0	1.8
Apprenticeship	9.6	9.1	8.2	6.5	6.4	6.0	4.8	5.0
Post school: FT study	14.2	19.0	21.7	21.3	20.2	18.6	17.8	18.5
Post school: PT study	4.0	5.2	6.0	7.6	7.9	7.4	8.3	10.3
Not studying	38.4	36.5	37.4	40.3	44.5	50.1	61.1	64.4
No. of obs.	5350	6247	6947	7633	8021	8350	7754	7304
Aged 18–19								
At school	8.0	9.8	9.3	10.3	11.6	9.1	7.4	8.5
Apprenticeship	11.9	12.1	11.5	10.0	12.6	12.5	9.4	11.1
Post-school: FT study	24.4	28.1	32.3	33.1	32.4	33.9	32.1	35.0
Post school: PT study	6.1	6.8	5.9	6.6	5.1	4.9	5.4	5.0
Not studying	49.7	43.3	41.0	40.0	38.3	39.6	45.8	40.4
No. of obs.	2286	2524	2471	2402	2138	1964	1930	2015

Notes: Education status is as at the time of the interview. Population-weighted statistics.

(a) Annual national adult unemployment rate.

Table A3 Educational attendance rate by age and year

	Wave 1 1989	Wave 2 1990	Wave 3 1991	Wave 4 1992	Wave 5 1993	Wave 6 1994	Wave 7 1995	Wave 8 1996
Unemployment rate ^(a)	6.0	6.8	9.3	10.5	10.6	9.5	8.2	8.2
Age ≤16	76.4	81.6	90.0	89.3	89.6	87.3	.	.
Obs.	1541	1493	1253	1194	1182	1188	.	.
Age 17	52.7	63.4	69.2	77.6	74.6	74.7	68.6	.
Obs.	1523	1396	1329	1085	1124	1011	1146	.
Age 18	34.9	41.9	46.2	48.6	51.7	48.1	41.7	51.0
Obs.	1327	1351	1233	1226	999	1038	949	1100
Age 19	29.6	33.9	37.2	38.5	36.4	38.0	37.2	36.0
Obs.	959	1173	1238	1146	1110	925	980	915
Age 20	.	28.7	31.5	33.7	34.4	30.7	30.3	32.0
Obs.	.	833	1089	1137	1048	989	877	934
Age 21	.	.	23.7	23.8	26.1	22.0	23.1	24.7
Obs.	.	.	775	1008	1027	922	910	825
Age 22	.	.	.	16.5	16.3	18.3	14.6	15.8
Obs.	.	.	.	702	885	920	847	846
Age 23	.	.	.	.	11.9	12.9	11.4	10.7
Obs.	.	.	.	.	617	776	826	776
Age 24	.	.	.	.	.	10.2	8.8	8.7
Obs.	.	.	.	.	.	558	698	778
Age 25	.	.	.	.	.	.	6.2	7.0
Obs.	.	.	.	.	.	.	504	646
Age 26	.	.	.	.	.	.	.	3.6
	.	.	.	.	.	.	.	466

Notes: Education participation status is measured at the time of the interview. Population-weighted statistics.

(a) Annual national adult unemployment rate.

Appendix B: variable description and sample statistics

Table B1 Variable description

Variable	Description
State unemployment rate	The (monthly) unemployment rate at the state level
<i>Highest post school educational attainment</i>	
Degree	Diploma/bachelor or higher degree (omitted category)
Certificate	Certificate
No qualification	No post-school qualification
Year 12	Dummy for completing Year 12
Public school	Dummy for attending public secondary school
Disability status	Dummy for having health conditions
<i>Age group</i>	
Age 16 or younger	Age 16 or younger
Age 17	Age 17
Age 18	Age 18 (omitted category)
Age 19	Age 19
Age 20	Age 20
Age 21–22	Age 21–22
Age 23 or older	Age 23 or older
<i>Family status</i>	
Partnered: no children	Lived with a partner: without children
Partnered: with children	Lived with a partner and dependent children
Single: with children	Single and have dependent children
Single: without children	Single without children (omitted category)
<i>Country of birth</i>	
Australian-born	Born in Australia (omitted category)
English speaking migrant	Migrant from an English-speaking country
Non-English speaking migrant	Migrant from a non-English speaking country
Number of siblings	Number of siblings (treated as continuous variable)
<i>Presence of parents at age 14</i>	
Both parents	Lived with both parent (omitted category)
Mother only	Lived with mother only
Father only	Lived with father only
Neither	Lived with neither
<i>Parental educational attainment</i>	
Degree	At least one parent with a degree (omitted category)
Certificate	Neither has a degree but at least one has a certificate
None	Neither has a post-school qualification
<i>Parental occupation status</i>	
Employed: highly skilled	Highest occupation: highly skilled (professional/managers)
Employed: skilled	Highest occupation: skilled (tradespersons/administrators)
Employed: unskilled	Highest occupation: unskilled (other occupations)
Jobless household	Neither parent employed (omitted category)
Time trend	Year of the interview (treated as continuous variable)
<i>State of residence</i>	
NSW	New South Wales (omitted category)
Vic.	Victoria
Qld	Queensland
SA	South Australia
WA	Western Australia
Tas.	Tasmania
NT	Northern Territory
ACT	Australian Capital Territory

Table B2 Mean sample statistics for males: unemployment outcome

	Employed	Unemployed	All
Unemployed	0.00	1.00	0.166
Current study status			
Not studying	0.75	0.67	0.74
Still at school	0.12	0.19	0.13
In full-time post-school study	0.13	0.14	0.13
<i>Highest level of post-school education</i> <i>(restricted to people who left school left school)</i>			
Degree	0.09	0.05	0.09
Certificate	0.29	0.27	0.28
No qualification	0.62	0.69	0.63
Year 12 completion (for those who left school)	0.60	0.49	0.59
Attended public school	0.74	0.82	0.75
Has a work-limiting disability (disabled)	0.03	0.06	0.03
Age category: age 16	0.08	0.16	0.10
Age 17	0.11	0.15	0.12
Age 18	0.16	0.18	0.16
Age 19	0.16	0.16	0.16
Age 20	0.13	0.12	0.13
Age 21–22	0.20	0.16	0.20
Age 23 or older	0.15	0.08	0.14
<i>Family status: Partnered with no children</i>	0.07	0.04	0.06
Partnered with children	0.02	0.02	0.02
Single with children	0.001	0.002	0.001
Single with no children	0.92	0.95	0.92
COB: English speaking (ES) migrant	0.07	0.06	0.06
Non-ES migrant	0.04	0.07	0.04
Australian-born	0.90	0.88	0.90
Number of siblings	2.14	2.25	2.16
<i>Parental presence at age 14: both parents</i>	0.86	0.78	0.85
Mother only	0.11	0.18	0.12
Father only	0.02	0.03	0.02
Neither	0.01	0.01	0.01
<i>Parental highest occupation at 14</i>			
Either parent employed: 'highly skilled'	0.34	0.23	0.32
Either parent employed: 'skilled'	0.35	0.29	0.34
Either parent employed: 'unskilled'	0.18	0.23	0.19
Jobless household: 'none employed'	0.14	0.25	0.15
<i>Parental education attainment</i>			
Either parent has a degree	0.21	0.18	0.20
Either parent has a certificate	0.35	0.32	0.34
None has a qualification	0.45	0.50	0.46
<i>State of residence: NSW</i>	0.33	0.31	0.33
Vic.	0.23	0.26	0.24
Qld	0.19	0.16	0.19
SA	0.08	0.10	0.08
WA	0.10	0.10	0.10
Tas.	0.03	0.04	0.03
NT	0.01	0.01	0.01
ACT	0.03	0.03	0.03

Note: The sample includes 21 951 observations for the male population who were in the labour force at any time during the sample period. COB = country of birth.

Table B3 Mean sample statistics for females: unemployment outcome

	Employed	Unemployed	All
Unemployed	0.00	1.00	0.145
<i>Highest level of post-school education (restricted to people who left school left school)</i>			
Degree	0.17	0.07	0.15
Certificate	0.29	0.31	0.29
No qualification	0.55	0.62	0.56
Year 12 completion (for those who left school)	0.73	0.59	0.71
Attended public school	0.69	0.77	0.70
<i>Current study status: Not studying</i>			
Still at school	0.16	0.22	0.17
In full-time post-school study	0.18	0.19	0.18
Has a work-limiting disability (disabled)	0.03	0.07	0.04
<i>Age category: age 16</i>			
Age 17	0.12	0.16	0.12
Age 18	0.16	0.20	0.16
Age 19	0.16	0.18	0.16
Age 20	0.14	0.11	0.13
Age 21–22	0.20	0.13	0.19
Age 23 or older	0.14	0.06	0.13
<i>Family status: Partnered with no children</i>			
Partnered with children	0.03	0.03	0.03
Single with children	0.01	0.03	0.01
Single without children	0.86	0.90	0.87
<i>COB: English speaking (ES) migrant</i>			
Non-ES migrant	0.03	0.06	0.04
Australian-born	0.91	0.88	0.90
Number of sibling	2.14	2.35	2.17
<i>Parental presence at age 14: both parents</i>			
Mother only	0.13	0.21	0.14
Father only	0.02	0.03	0.02
Neither	0.01	0.02	0.01
<i>Parental highest occupation at 14</i>			
Either parent employed: 'highly skilled'	0.33	0.23	0.32
Either parent employed: 'skilled'	0.35	0.30	0.34
Either parent employed: 'unskilled'	0.18	0.22	0.19
Jobless household: 'none employed'	0.14	0.26	0.15
<i>Parental education</i>			
Either parent has a degree	0.23	0.19	0.23
Either parent has a certificate	0.35	0.31	0.34
None has a post-school qualification	0.42	0.50	0.43
<i>State of residence: NSW</i>			
Vic.	0.25	0.29	0.25
Qld	0.19	0.19	0.19
SA	0.09	0.10	0.09
WA	0.09	0.08	0.09
Tas.	0.02	0.04	0.02
NT	0.01	0.01	0.01
ACT	0.03	0.03	0.03

Note: The sample includes 21 469 observations for 5277 males who were in the labour force at any time during the sample period. COB = country of birth.

Appendix C: results of interaction models for unemployment

Table C1 Interaction models for unemployment outcome: remaining results

	Males		Females	
	Coef.	SE	Coef.	SE
<i>Study status (not studying)</i>				
At school	0.035***	0.013	0.006	0.013
In FT post-school study	0.048***	0.009	0.037***	0.008
<i>Education (degree)</i>				
Certificate	0.006	0.011	0.028***	0.010
No post-school qualification	0.000	0.011	0.006	0.009
Year 12 completion	-0.031***	0.009	-0.035***	0.009
Attended public school	0.034***	0.007	0.031***	0.007
Disabled	0.129***	0.021	0.119***	0.018
<i>Age (age 18)</i>				
Age 16	0.075***	0.013	0.063***	0.013
Age 17	0.012	0.010	0.015	0.010
Age 19	-0.011	0.008	-0.019**	0.008
Age 20	-0.036***	0.009	-0.061***	0.009
Age 21–22	-0.047***	0.010	-0.081***	0.010
Age 23 or older	-0.068***	0.013	-0.099***	0.012
<i>Partner status (single, no children)</i>				
Partnered: no children	-0.028***	0.010	-0.018**	0.008
Partnered: with children	0.028	0.022	0.035*	0.018
Single: with children	0.030	0.070	0.150***	0.033
Number of siblings	0.005*	0.003	0.010***	0.003
<i>At 14 lived with (both parents)</i>				
Mother only	0.000	0.018	0.011	0.016
Father only	0.046*	0.026	0.080***	0.027
Neither	-0.062	0.039	0.072*	0.043
<i>At 14 parental education (degree)</i>				
Certificate	-0.004	0.010	-0.004	0.008
No post-school qualification	0.002	0.010	0.009	0.008
<i>State of residence (NSW)</i>				
Vic.	0.016*	0.010	0.046***	0.009
Qld	-0.018**	0.009	0.013	0.009
SA	0.025*	0.015	0.022*	0.012
WA	0.012	0.012	0.013	0.012
Tas.	0.030	0.026	0.046*	0.026
NT	-0.003	0.032	0.023	0.029
ACT	-0.005***	0.002	-0.004***	0.002
Constant	0.000	0.028	0.019	0.027
R-squared	0.06		0.06	
No. of obs.	21 951		21 469	
No. of persons	5 277		5 297	

Note: SE# robust standard errors that are clustered at the individual level. ***, **, and * indicate significance at the 1%, 5% and 10% level respectively. The italic category in bracket refers to the comparison (omitted) category.

Appendix D: sample for educational participation

Table D1 Mean sample statistics for education outcome: all males

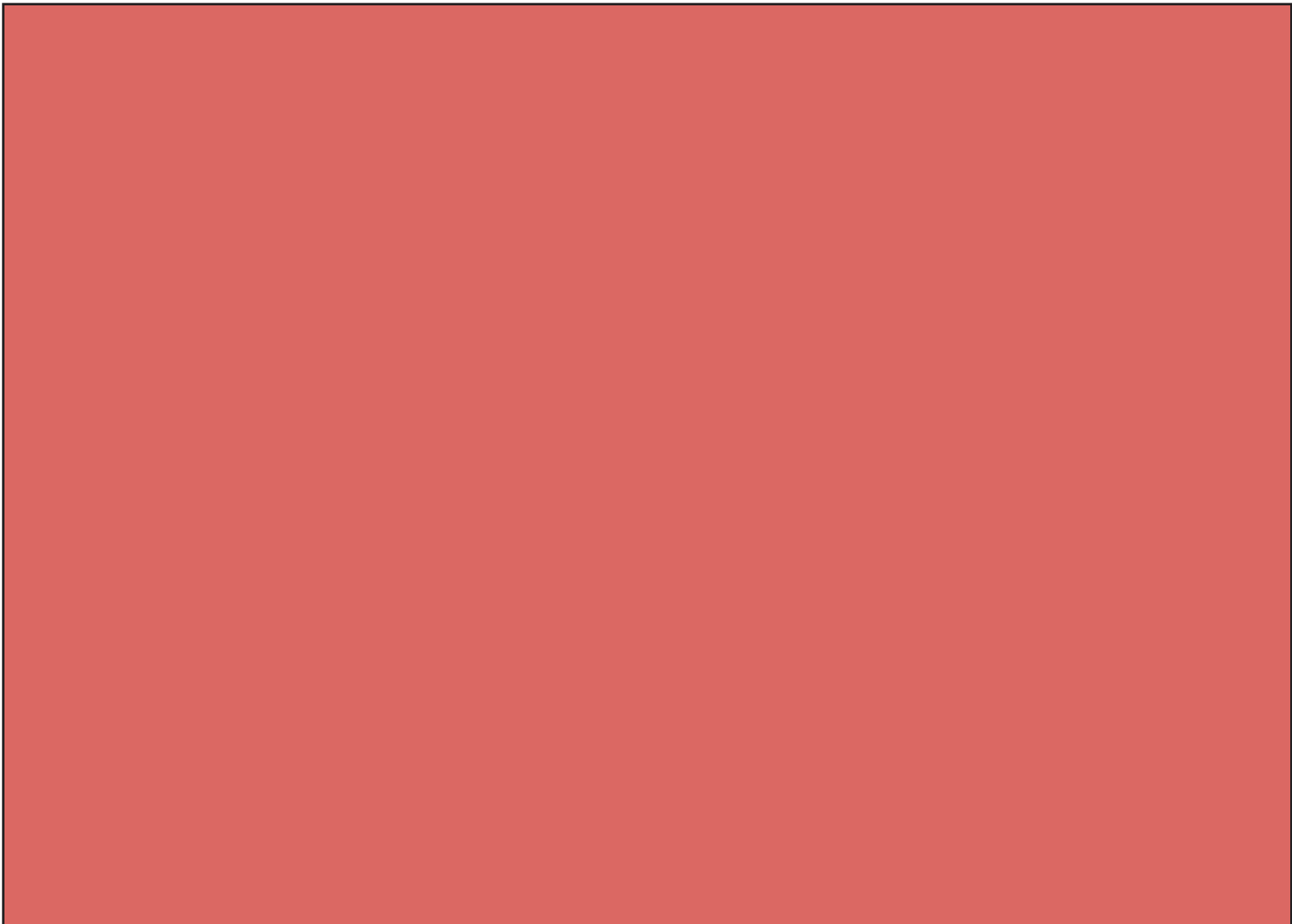
	Not studying	Studying	All
Studying status	0.00	1.00	0.41
<i>Post-school education for those who left school</i>			
Degree	0.09	0.02	0.06
Certificate	0.31	0.06	0.20
No qualification	0.60	0.92	0.73
Year 12 completion (for those left school)	0.53	0.39	0.47
Attended public school	0.78	0.70	0.75
Work-limiting disability (disabled)	0.04	0.03	0.04
<i>Age category: age 16</i>			
Age 17	0.09	0.24	0.15
Age 18	0.16	0.16	0.16
Age 19	0.17	0.12	0.15
Age 20	0.14	0.09	0.12
Age 21–22	0.23	0.09	0.17
Age 23 or older	0.18	0.03	0.12
<i>Family status: partnered without children</i>			
Partnered with children	0.02	0.002	0.01
Single with children	0.002	0.001	0.002
Single without children	0.90	0.99	0.94
<i>COB: English speaking (ES) migrant</i>			
Non-ES migrant	0.04	0.09	0.06
Australian-born	0.90	0.84	0.88
Number of siblings	2.21	2.03	2.14
<i>Parental presence at age 14: both parents</i>			
Mother only	0.13	0.11	0.12
Father only	0.03	0.02	0.02
Neither	0.01	0.01	0.01
<i>Parental occupational status at 14</i>			
Either parent employed: 'highly skilled'	0.29	0.38	0.33
Either parent employed: 'skilled'	0.33	0.33	0.33
Either parent employed: 'unskilled' skilled'	0.21	0.16	0.19
Jobless household: 'none employed'	0.17	0.14	0.16
<i>Parental educational attainment</i>			
Either parent has a degree	0.15	0.27	0.20
Either parent has a certificate	0.32	0.30	0.31
None has a post school qualification	0.52	0.43	0.48
<i>State of residence: NSW</i>			
Vic.	0.24	0.24	0.24
Qld	0.19	0.16	0.18
SA	0.09	0.08	0.09
WA	0.10	0.10	0.10
Tas.	0.03	0.03	0.03
NT	0.01	0.01	0.01
ACT	0.02	0.04	0.03

Note: COB = country of birth.

Table D2 Mean sample statistics for education outcome: all females

	Not studying	Studying	All
Studying status	0.00	1.00	0.46
<i>Post-school education attainment (for those who left school)</i>			
Degree	0.17	0.03	0.11
Certificate	0.33	0.06	0.20
No qualification	0.50	0.91	0.69
Year 12 completion (for those who left school)	0.61	0.43	0.53
Attended public school	0.75	0.65	0.70
Work-limiting disability (disabled)	0.05	0.03	0.04
<i>Age category: age 16</i>			
Age 17	0.08	0.24	0.15
Age 18	0.15	0.17	0.16
Age 19	0.16	0.13	0.15
Age 20	0.14	0.09	0.12
Age 21–22	0.24	0.08	0.17
Age 23 or older	0.19	0.02	0.11
<i>Family status: Partnered without children</i>			
Partnered with children	0.07	0.002	0.04
Single with children	0.04	0.005	0.03
Single without children	0.77	0.98	0.87
<i>COB: English speaking (ES) migrant</i>			
Non-ES migrant	0.03	0.08	0.05
Australian-born	0.91	0.85	0.89
Number of siblings	2.28	2.10	2.20
<i>Parental presence at age 14: both parents</i>			
Mother only	0.15	0.12	0.14
Father only	0.02	0.02	0.02
Neither	0.01	0.005	0.01
<i>Parental occupational status at 14</i>			
Either parent employed: 'highly skilled'	0.27	0.37	0.32
Either parent employed: 'skilled'	0.32	0.33	0.33
Either parent employed: 'unskilled'	0.21	0.16	0.19
Jobless household: 'none employed'	0.19	0.14	0.17
<i>Parental educational attainment</i>			
Either parent has a degree	0.16	0.29	0.22
Either parent has a certificate	0.31	0.30	0.31
None has a post-school qualification	0.53	0.41	0.47
<i>State of residence: NSW</i>			
Vic.	0.24	0.28	0.26
Qld	0.20	0.17	0.19
SA	0.10	0.08	0.09
WA	0.09	0.07	0.08
Tas.	0.03	0.02	0.03
NT	0.01	0.01	0.01
ACT	0.02	0.03	0.03

Note: COB denotes country of birth.



Longitudinal
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Australian Government
**Department of Education, Employment
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