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The Re-engagement in Education of Early School Leavers

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Abstract

By OECD standards, the share of the Australian labour force with at least a secondary school qualification is low. One way to rectify this shortfall is to improve rates of re-engagement in education among early school leavers. This paper examines the patterns of re-engagement among early school leavers in the HILDA sample. A key finding is that the early years after leaving school are crucially important, with rates of re-engagement dropping dramatically in the first three years out from school. For those who enter the labour market after school, results suggest that finding work, especially satisfying work, is an important driver for returning to study.

1. Introduction

According to the OECD (2009), around 68 per cent of Australians aged 25 to 64 years have attained at least an Upper Secondary School qualification, which places Australia equal 17th out of 29 OECD countries. The countries with the highest rates of upper Secondary School attainment, the U.S. and U.K., have rates of around 83 and 86 per cent respectively. Much of this gap in the attainment rates between Australia and the top performing OECD countries is due to low rates of attainment amongst middle-aged and older adults in Australia. For those aged 25 to 34 in Australia, around 80 per cent have an upper Secondary School qualification, which is above the OECD average and not far below the top performing U.S. rate of 87 per cent (OECD 2009).

Increasing engagement in education and training is a key part of the Australian Government's 'Education Revolution' (Gillard 2008), including engagement among those who do not have a secondary school qualification.[1] Increasing education levels of those without secondary school qualifications may help improve labour force participation, reduce income inequality and may give people the skills and confidence to undertake further education in an ever-changing labour market. However, to design measures to encourage greater engagement in education for people without secondary school qualifications, policy makers need a better understanding of the motivations and barriers to participation in education.

While there are numerous studies on the links between personal characteristics and school non-completion (see, for example Maani and Kalb 2007 and Curtis and McMillan 2008), to our knowledge, there is only one study by Hill and Jepsen (2007) that examined re-engagement of early school leavers in education in the United States.[2] This paper builds on the study by Hill and Jepson (2007) in three ways. First, it not only looks at the impacts of school-age factors, such as socio-economic background and social behaviour, but also on the impacts of post-school factors, such as labour market outcomes and time since left education.

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[1] Targets set by the Council of Australian Governments (COAG) include more people to gain foundation skills to prepare them to fully participate in employment and society.

[2] Results for the United States are not generally applicable to Australia because, unlike in Australia where re-engagement of early school leavers is mainly through the vocational education (VET) system, most early school leavers in the Unites States re-engage in education through the General Educational Development (GED) test to attain a secondary school equivalency.

Second, as well as examining patterns of re-engagement for youth (15-24), it separately examines the patters of re-engagement for older workers (25 and older), which is important in the Australian context given that this cohort has low rates of secondary school qualification attainment. Third, as well as examining the patterns of first re-engagement in education, this study examines patterns of all re-engagement in education by early school leavers. In examining all engagements in education, we are able to test whether the outcomes from the first re-engagement affect the chances of subsequent re-engagement. It is hypothesised that those who fail to complete their first re-engagement may be deterred from re-engaging again.

The analysis undertaken in this paper is conducted using the Household Income and Labour Dynamics Australia (HILDA) dataset and multivariate models.

2.   Data and definitional issues

2.1.   The HILDA Survey

The data source used for this paper is the first seven waves (which correspond to the period 2001 to 2007) of the Household, Income and Labour Dynamics in Australia (HILDA) Survey. HILDA is a large nationally representative survey of around 12,000 Australians aged 15 years and over.[3] The panel nature of the HILDA Survey, whereby the same individuals are interviewed in each year, allows us to examine how changes in an individual's circumstances over time affect their decision to re-engage in education.

Given that HILDA contains a representative sample of individuals, we are able to examine how re-engagement in education varies across the population of early school leavers, thereby giving a more complete picture of how policy changes may affect overall re-engagement and skill levels in the economy. As well as examining the overall patterns of re-engagement, we examine differences in the patterns of re-engagement between youth (aged 15-24 in their first wave) and adult cohorts (25 and older in their first wave). Given that youth who are yet to re-engage have different experiences and characteristics than older cohorts who are yet to re-engage, it is important to examine their re-engagement patterns separately. We choose 24 as

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[3] See Wooden and Watson (2007) for greater elaboration on the design and development of the HILDA Survey.

the upper-age for the youth cohort because it is the point where most early school leavers are within their first 10 years out from school.[4]

2.2. Identification of early school leavers

In the HILDA data we identify early school leavers using information regarding whether an individual has left school and the highest year of school they have completed. An individual is deemed to be an early school leaver if they report to have left school and if their highest reported level of school attainment is Year 11 or below. Based on this definition we are able to identify 8,196 individuals who are early school leavers in HILDA, and 7,571 individuals who are school (Year 12) completers.[5]

2.3. Re-engagement in education

First re-engagement is defined as an early school leaver returning to school or enroling in a vocational education and training (VET) course (Certificate level I to IV, Advanced diploma, Diploma or undefined certificate) or a higher education course for the first time since leaving school.[6] The vast majority of early school leavers return to education through VET without returning to school because there are a wide range of course levels available through VET, including certificate I and II, which cater for students without secondary school qualifications.[7] We note that this definition of re-engagement is broad and in many cases

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[4] We also estimated models with the upper bound of the youth cohort set to 22 and at 26. Results for these models are consistent with those reported in this paper.

[5] Based on these numbers, the rate of school completion in HILDA is around 48 per cent across the entire working-age population (7,571/(8,196 + 7,571)x100). However, it is important to realise that this figure does not represent all education attained, but rather only the percentage that completed school. Therefore, when comparing this rate to the OECD (2008) rate of 66 percent, we need to keep in mind that the OECD statistics include not only those who completed school, but also early school leavers who later returned to education to complete a course that was at least equivalent to finishing school.

[6] Re-engagement in HILDA is observed if an individual reports being in study in a given period or if they report to have undertaken any study in between periods. In the cases where an individual is observed to be enrolled in a course for two or more consecutive periods (waves), we assume that it is part of the same re-engagement, regardless of whether more than one course was completed.

[7] This contrasts to pathways followed by early school leavers in the United States, where most return to education in preparation for an exam to obtain a secondary school completion equivalency (known as the General Educational Development test (GED)).

individuals may leave school early with the intention of commencing post-school study, for example, to start an apprenticeship. However, there is no information in HILDA on why youth left school early.

Of the 8,196 early school leavers in HILDA, 4,436 re-engaged for the first time prior to HILDA ((i) plus (ii) in Table 1) and 3,760 did not ((iii)+(iv)+(v) in Table 1). For analysis on the re-engagement of early school leavers for the first time, we limit the sample to the 3,760 individuals who did not re-engage prior to HILDA. Of the 3,760 early school leavers who are yet to re-engage 854 are observed to re-engage for the first time in HILDA, or 23%.

INSERT TABLE 1

In most cases, it is straightforward to identify whether an individual has re-engaged prior to the HILDA survey. Difficulties arise, however, in cases where we observe early school leavers with no prior post-school qualification who report in their first interview that they are enrolled in a course. In such situations, we cannot determine whether the current re-engagement is their first or whether they had previously enrolled and dropped out of a course prior to their commencement in the survey. Because most of these cases are youth we assume that they had not re-engaged prior to the survey.[8] Thus, their reported enrolment in their first wave of the survey is assumed to be their first re-engagement in education.

The probability of early school leavers re-engaging in education for the first time in the years since leaving school is depicted in Figure 1. From Figure 1, we can say that the chance of re-engaging in education is highest in the first year after leaving school, at around 36 percent. Over the next four years after leaving school, the rates of re-engagement decline sharply, so that by the fifth year out, only around 10 percent of early school leavers who are yet to re-engage do so in that year. Up until 10 years out from school (the set upper limit of our youth cohort) the chances of re-engaging continues to fall, but at a slower rate. Between 10 and 30 years out from school, the rates of re-engagement stabilise before dropping off-again as early school leavers approach the age of retirement.

INSERT FIGURE 1

An important point to keep in mind is that because we only have 7 waves of data in HILDA, the first-time re-engagement probabilities in Figure 1 are based on data from different age

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[8] As a robustness test, we omitted these individuals from the sample and re-estimated the models. Results were consistent with the results presented in this paper and are available from the authors upon request.

cohorts and estimated probabilities will be affected by different patterns of re-engagement between cohorts, or cohort effects. Cohort effects represent differences in the cultural norms among different age cohorts that explain why, at a given time out from school, different age cohorts re-engage at different rates. For example, given that failing to complete school is less of a cultural norm today than 20 years ago, early school leavers in their first year out from school may feel greater pressure to return to education today than 20 years ago. However, with the limited time span of the available data, it is not possible to identify the cohort effects.

When examining the patterns of all re-engagement, we use the sample of all early school leavers in HILDA and therefore we return those who re-engaged prior to HILDA to the sample ((i) plus (ii) in Table 1). Of the 8,196 early school leavers in the sample, 2,077 are observed to re-engage during HILDA — 854 for the first time and 1,223 for a subsequent time. Overall, we observe that around 65% of all early school leavers in HILDA have returned to education at some stage.

3.   Econometric approach

We use reduced-form equations to analyse the factors associated with the re-engagement in education of early school leavers. There are two distinct, but related, modelling approaches used to examine first and all re-engagements. Under both approaches we estimate separate models for the youth and adult cohorts and for the two cohorts combined.

First re-engagement

First re-engagement is a terminal event because it can occur only once; therefore, once they re-engage in education for the first time, individuals are removed from the sample. The probability of returning to education for the first time, given that an early school leaver is yet to do so, is represented by a hazard function:

$$h_{it} = \Pr(T_i = t | T_i \geq t; X_{it}) \,, \tag{1}$$

where h_{it} is the probability that the year individual i is observed to return to education for the first time since leaving school (T_i) is equal to year t, given that the individual has not re-engaged previously (or the year individual i is observed to re-engage (T_i) is not less than the year since left school t) and X_{it} is a vector of time varying explanatory variables.

We use the standard logistic form of the hazard function in this study, which is commonly used in many applications because it is easily estimable in statistical software and converges to a proportional hazard model where the hazard rate becomes increasingly small (Jenkins 1995), which is the case for the rate of re-engagement in the years following school (see Figure 1). In this case, the model likelihood function has exactly the same form as that for a standard binary logit regression model:

$$h_{it} = \log\left[h_{it}/(1-h_{it})\right] = \phi t + \beta' X_{it} + \varepsilon_i \text{,} \tag{2}$$

where ϕt is the baseline hazard function and ε_i is an unobserved individual-specific error term with zero mean and is uncorrelated with X.

All re-engagements

When modelling all engagements in education of all early school leavers (regardless of whether they have re-engaged in the past or not) we treat engagements as a repeatable event. In a given year, the dependent variable y_{it} is coded 1 if an individual commences a new course and is zero otherwise. It is assumed that each year individuals make decisions on whether to enrol in education or not, depending on the benefits and costs of doing so. Therefore, we adopt a latent variable approach, which assumes an unobserved index y_{it}^* for each individual that reflects their unobserved latent propensity to re-engage, which is a function of a vector of observed characteristics X_{it}, a time invariant unobserved heterogeneity term u_i and time varying unobserved factors e_{it}:

$$y_{it}^* = \beta' X_{it} + u_i + e_{it}. \tag{3}$$

If the index is greater than zero in a given period, individuals are observed to re-engage in education and if it is not, then they did not to re-engage. Assuming that u_i and e_{it} are random drawings and that they are from an independent, logistic distribution with mean zero and constant variance, we can estimate the model using a random effects panel logit model.

3.1. Model specification

Because VET is highly accessible, we assume that most of the variation in re-engagement among early school leavers is due to differences in demand-side factors, in particular, by

differences in human capital motivations (Becker 1962).[9] Under the human capital model, an individual decides to undertake further education or training if their expected discounted future utility outweighs the cost of studying, where the expected future benefits may include finding a job, finding a more satisfying job, higher wages and the (dis)utility of study itself. The cost of re-engaging is likely to depend mainly on the opportunity cost of time, or the value of time foregone to undertake study, and tuition fees and non-tuition costs, such as equipment and transport. The opportunity cost of time is likely to vary according to individual circumstances, which affects what individuals have to give up.

First re-engagement

To capture the potential benefits and costs of further study, we include a number of lagged labour market variables. We lag the labour market variables to avoid simultaneity bias, which may arise if re-engaging in education affects employment outcomes in the same year. A consequence of using lagged employment variables is that we need to omit information from the first observation for each individual in the survey (in most cases Wave 1 in HILDA). The lagged labour market variables include labour market status, the log of real wage rate per hour,[10] job satisfaction, whether the job is permanent or casual, log of household income excluding own waged earnings, industry of current or last job (if out of work), whether self-employed and years of experience in the current occupation. All else being equal, we may expect that early school leavers who are out of work, low paid, low income, work in less satisfying or in less secure jobs may benefit more from further study and are more likely to re-engage. The self-employed variable and the log of real hourly wage variable also capture potential opportunity costs of time foregone in employment to study. All else being equal, we

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[9] Course availability is not fixed, but set according to projected course demand. Unlike Higher Education, VET courses cater for all educational backgrounds. As part of the Australian government's Compact with Youth initiative, a government-funded place in education or training is guaranteed for all 15-24 year olds.

[10] We include the log of hourly wage rates in the model in order to normalise the hourly wage rate distribution among individuals. Hourly wage rates are derived by dividing annual real wage income (2007$) by reported hours of work per annum. Those out of employment are given a predicted wage, which was derived from a Heckman wage equation (Heckman 1979). Variables which are typically included in wage equations were included in this model, including: highest education, place of residence, union membership, employment history, and English proficiency. We did not include variables on industry or occupation because they are missing. The selection (employment) equation included exclusion restrictions such as marital status, age and number of children. Results from these models are available upon request from the authors.

expect that the opportunity cost of study for self-employed would be high because they are less likely to have employer-sponsored time to study.

The opportunity cost of study is not only present in foregone income, but also potentially in foregone time outside of work. For parents, especially for the primary care giver, the opportunity cost may be high in the form of lost time spent caring for their children. To test for the varying effects of children between parents, we include interaction terms between gender and the presence of children.

Although VET course fees may be relatively low when compared to higher education fees, having to pay fees upfront may pose a barrier for low income earners.[11] To capture a possible income constraint, we include the log of household income variable less own earnings in the models. To capture possible living costs, we also include a dummy variable for whether they are living with their parents or not. All else being equal, we expect that those living away from home may have higher living costs and hence find it harder to pay upfront tuition fees.

Perceived benefits and costs of returning to study for youth are likely to be influenced, by parents' attitudes to education. We try to capture parental influence by incorporating ANU4 measures of both parents' occupation status (see Jones and McMillan 2000 for more on the derivation of these) when the respondent was 14 years old. We use occupation status as a proxy for parents' attitude to education rather than parents' own education because they are highly correlated and the latter is not available in all waves of HILDA. To control for the effect of parents' employment status at the time, we include dummy variables that indicate whether a score was recorded. All else being equal, we expect that parents with higher

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[11] For VET, 88 percent of all places are government supported (NCVER 2006). The cost born by the student for government funded places varies by state and course, for example, in New South Wales in 2005, the annual tuition fee for government supported places was $384 for a Certificate I or II course, $600 for a Certificate III course, $816 for a Certificate IV course, $1086 for a Diploma course and $1302 for an Advanced Diploma (NCVER 2006). Further, state governments also provide tuition fee discounts for low income families (Health Care Card holders) and indigenous Australians. As well as support for the costs of tuition, the Australian Government also supplements the income of youth aged 16 to 25 while they study (Youth Allowance). At the time the data was collected, there was no deferred payment HECS-style loan scheme available for VET students.

occupation status are more likely to stress the importance of further study, which may have a positive influence on their child's assessment of the benefits of re-engaging.[12]

Given that the benefits of re-engaging are likely to depend on the time an individual has left in the labour market to recoup the costs of study, we expect that the rates of re-engagement should be higher for those who have recently left school than for those who left school many years ago (as depicted in Figure 1). We capture time effects by including years since left school as an explanatory variable. To allow for non-linearity of the time effect, we enter years since left school as a series of dummy variables that represent various time intervals. Given that the data (Figure 1) shows a rapid decline in the rates of re-engagement in the early years out from school, for youth, we choose 1-year time intervals for the first 5 years, followed by intervals of 5 to 9.9 years and 10 to 19.9 years. For the adult cohort, time effects appear less important and hence time intervals are entered in 10-year blocks. To separate any time effect from other related effects, such as policy changes and economic cycles, we include year of survey dummies.

Also included are a range of control variables, such as gender, marital status, ethnicity, state of residence and industry of employment. There are no pre-existing expectations on the effects of these variables, but they are included to better capture the effects of the main variables of interest. To the extent that these variables are correlated with both the variables of interest and the dependent variable, excluding them would lead to biased results.

All re-engagement

For models of all re-engagement, the variables included in the models are the same as for first re-engagement except that we include a dummy variable for outcomes from the first re-engagement (complete or not) to capture what effect they have on the chances of subsequent re-engagements. Clearly, this effect is only identified through those who are observed to re-engage for the first time during the HILDA Survey. For those who re-engaged for the first time prior to HILDA, we create third dummy category (first re-engagement prior to HILDA) to control for differences in re-engagement patterns between those who did and did not re-engage prior to HILDA.

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[12] Mother's occupation was also included, but was insignificant and dropped from the model for the sake of parsimony.

4. Results

Results presented below are marginal effects, which represent the estimated percentage point change in the probability of re-engaging for a one unit change in each of the explanatory variables, independent of the effects of all other explanatory variables. They are calculated as the mean marginal effects over all individuals in the sample.[13] For categorical variables, the marginal effects represent the percentage point change in the probability of re-engaging for a given outcome, relative to the reference category that is omitted.[14] Standard errors for the marginal effects were generated using the delta method, taking into account the multiple individual observations in the pooled data (robust standard errors).

At this stage, we remind the reader that the results presented in Table 2, for first re-engagement are from a pooled logistic regression model, while the results presented in Table 3, for all re-engagements, are from a panel logistic regression model with random effects. Because the main focus of this paper is on first re-engagement and because the results for all re-engagement are generally consistent with those for first re-engagement, we only present key results for all re-engagement.[15]

4.1. First re-engagement

Results from Table 2 suggest that the rate of re-engagement of early school leavers is closely related to the time since left school. Compared to those in their first year out, those in their second and third years out are estimated to be 12 and 20 percentage points less likely to re-engage for the first time. For those more than three years out, the likelihood of re-engagement continues to fall, but at a more steady state. For those entering retirement age (40 years and more since left school), the likelihood of re-engagement is estimated to be 37 percentage points less than for those in their first year out.

INSERT TABLE 2

Independent of the time since left school, we find that for all early school leavers, years of experience in an occupation has a negative association with the chances of re-engaging, especially beyond 10 years of experience. This suggests that returning to education is an

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[13] The estimated mean marginal effects were quite different to those estimated for an individual with average characteristics, especially when estimating the marginal effects of time since left school on re-engagement.

[14] Crucially, the statistical significance also depends on the choice of reference case.

[15] The entire set of results is available from the authors on request.

alternative to on-the-job experience in acquiring further skills. However, we note that there is evidence that occupation experience has the opposite effect for youth. For youth, time in the same occupation has a positive, albeit not quite significant, effect on the chances of re-engaging. This suggests that while adults may re-engage to facilitate a career change, early school leavers in their youth may be more likely to re-engage once they have found an occupation that they would like as a career.

The need for the youth cohort to find a career job is supported by the strong positive effect of job satisfaction on the likelihood of re-engagement. We estimate that for every 1 point increase on a 0 to 10 scale of job satisfaction (where 0 is totally dissatisfied and 10 is totally satisfied), the chances of youth re-engagement increases by 1.4 percentage points. Given that many early school leavers drop-out of school because they have not developed a strong career plan and hence cannot appreciate the benefits of finishing school, it makes sense that finding a career job (career path) would help early school leavers conceptualise the benefits of further study and motivate them to return to education. These results underline the importance of developing a post-school career path to promote their chances of re-engaging in education.

For the youth cohort, not only does it matter that they find a job that they like, but the industry they choose to work in affects their chances of re-engagement. For youth, we find that those employed in health and construction industries are 16 and 8 percentage points more likely to re-engage than in the manufacturing sector. A possible explanation for the high rates of re-engagement in these sectors may be because they are highly regulated, so that the complexity of tasks performed and remuneration in these sectors depends heavily on the level of worker accreditation, which usually depends on the attainment of qualifications. For example, under the Building and Construction General On-site Award 2010, a Concrete Finisher with a minimum certificate III (construction worker level three) is paid an extra $38 a week compared to a Concrete Finisher without the qualification (construction worker level two).

Consistent with the human capital model, finding work appears to be a prime motivation for returning to study, especially for youth. All else being equal, an unemployed youth is estimated to be 18 percentage points more likely to re-engage in education for the first time compared to a full-time employed youth. Alarmingly, we find no evidence that longer-term unemployed, in either of the age cohorts, are motivated to re-engage in education, which may be because they have personal traits, such as poor numeracy and literacy levels, which makes it difficult for them to re-engage. Contrary to the human capital model, we find no evidence

that the low-paid, those in more insecure employment (measured by whether the individual has ongoing employment or not) or those working part-time are more likely to re-engage.[16]

We find evidence that household income, excluding own earnings, has a significant positive effect on the chances of re-engaging. It is estimated that all else being equal, among all early school leavers, a 10 percent higher household income from sources other than their own labour is associated with a 0.1 percentage point increase in the chances of re-engaging. Returning to education is costly for many individuals, either because they have to give up work and or they have to meet some of the costs of undertaking further study, such as fees, materials and equipment. However, we point out that due to sample size issues, this result is not significant at the 10% level for either of the two cohorts.

A tentative finding is that there is possibly a minimum level of skills required of early school leavers to access the benefits of re-engaging. Regardless of the age cohort, compared to those who completed Year 9 or below, those who left school after completing Year 11 are estimated to be 1.4 percentage points more likely to re-engage. For youth, completing schooling to Year 11 is associated with a 5 percentage point higher probability of re-engaging than completing Year 9, although the effect is just outside the 10% significance level. To the extent that higher levels of secondary school education are related to higher numeracy and literacy levels in youth, this may suggest that there is a minimum skill level required to participate in further education. Alternatively, this estimated effect may be from unobserved differences between those who complete different levels of schooling, such as differences in ability, that also affect the chances of re-engagement.

The effect of having children on re-engaging early school leavers in education follows a life-cycle pattern. For the youth cohort, the presence of children is estimated to have a strong negative effect, with those having children estimated to be 9 percentage points less likely to re-engage than those without. As adults however, we find that having children is associated with a 1 percentage point higher probability of re-engaging compared to those without children. Across all early school leavers, we find that the presence of children has no significant effect on the chances of returning to education for the first time.

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[16] We also tried using satisfaction with job security as a measure of job security instead of whether or not the individual was employed on a casual or ongoing employment, but the effect was insignificant.

4.2. All re-engagement

The results in Table 3 show that the chances of re-engaging all early school leavers after their initial return to education depends on the outcome of their first re-engagement. In particular, those who fail to complete their first re-engagement are estimated to be 2 percentage points more likely to re-engage subsequently than those who are yet to re-engage. On the other hand, those who complete their first foray into post-school education are no more likely to re-engage again. Results for the adult cohort are much the same. For youth, we find that the outcome from the first re-engagement has no significant impacts on the chances of subsequent re-engagement, with an estimated negative effect for completion. These findings suggest that failure to find a suitable course at the first attempt does not deter early school leavers from trying again.

INSERT TABLE 3

5. Conclusions

Understanding the motivations and barriers for further education for those most vulnerable in the labour market is an important first step in being able to address the broader issue of labour market participation, skill shortages and social disadvantage. Internationally, there has been only one prior study by Hill and Jepsen (2007), which focused on re-engagement of youth in the U.S. in the years shortly after leaving school. To our knowledge, this is the first study to examine re-engagement in education of early school leavers in Australia.

Results presented in this study show that irrespective of the time since left school, early school leavers in their adulthood are much less likely to return to study for the first time than early school leavers in their youth. The lower rates of re-engagement are likely to be due to unobserved traits, such as learning difficulties, which may limit the ability of older early school leavers to return to study for the first time.[17] We find that for early school leavers in their adulthood, there is a negative relationship between experience in a career and the likelihood of re-engaging, which implies that for adults, further education is a substitute for

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[17] Given the growth in the demand for skills in Australia over the last 20 years, it is likely that early school leavers who are most likely to benefit from further training would have done so in the past (and hence self-select out of the sample of early school leavers who are yet to re-engage). The remaining group is therefore likely to have lower learning abilities.

on-the-job experience. Having children also increases the rates of re-engagement in adulthood, mainly because the decision to re-engage is pushed back from youth.

For youth, we find that the rates of re-engagement are linked strongly with the years since left school, with the highest rates being in the first year out, after which they fall dramatically up until year 4. These results point to the importance of measures to encourage early re-engagement of early school leavers. However, to ensure that such measures are effective, it is important to understand the reasons why there is a rapid drop-off in the rates of re-engagement. One explanation is that the pattern is linked to the timing of career choice, which happens at varying stages in youth. If this is the case, then an effective measure may be to better prepare those at risk of leaving school early by offering them extra career counselling, a range of work experiences and or wide choice of VET subjects while in school. An alternative explanation is that as years pass, early school leavers may suffer from 'lifestyle inertia' that makes their opportunity cost of returning to study increasingly high. If lifestyle inertia or rapidly increasing opportunity cost of time is solely responsible, then measures to coerce youth back to education may be more effective than measures to help youth make career choices. Information to help tease out the reasons for the rapid drop-off rate in rates of early school leaver re-engagement is not available in HILDA, these issues will be explored in a future study using the Longitudinal Survey of Australian Youth (LSAY).

Other results also highlight the potential importance of a career plan to motivate young early school leavers to return to study. We find that early school leavers who enter employment after leaving school are more likely to return to education if they enjoy their job, with the likelihood of re-engagement increasing by 1.3 percentage points for every 1 point increase in the 11 point scale of job satisfaction. A possible explanation is that many early school leavers rely on experiences in the labour market to help find a suitable career rather than rely on experiences in the education sector. Those that find a more satisfying job may be better able to visualise how the job may lead to a satisfying career with extra qualifications.

Not only is finding an enjoyable job an important motivator, but even just finding a job is important. We estimate that unemployed early school leavers in their youth are 17 percentage points more likely to re-engage than youth in full-time employment. A worrying result is that long-term unemployed (around 5 per cent of early school leavers under 25 who are yet to re-engage) are no more likely to return to education than those who are in full-time employment.

The lower participation rates among long-term unemployed than among short-term unemployed suggest that the former may be more affected by the Australian Government's 'earn or lean' income support conditions. Under the earn or learn conditions, early school leavers under 21 on income support are required to participate in education and training. However, an important question is whether coercing unemployed early school leavers, especially those out of work long-term, into education and training addresses the cause of why they are unemployed and not studying in the first place, for example, poor numeracy and literacy levels. This issue will be examined in more detail in a future study based on LSAY.

Another important result is that we find no evidence that failing to complete the first re-engagement, in the youth or adult cohort, in any way discourages early school leavers from re-engaging again. In fact, we find evidence that failing to complete the first foray into post-school study increases the chances of re-engaging again.

Table 1: Re-engagements in education of early school leavers

Age in years	Re-engaged prior to HILDA		Did no re-engage prior to HILDA			All
	(i) No subsequent enrolments in HILDA	(ii) Subsequent enrolments in HILDA	(iii) Re-engaged once in HILDA	(iv) Re-engaged multiple time in HILDA	(v) No re-engagement in HILDA	
15 – 19	70	42	145	234	213	704
20 – 24	190	96	63	26	174	549
25 – 29	194	96	46	14	158	508
30 – 34	254	104	33	24	181	596
35 – 39	323	185	48	20	265	841
40 – 44	390	192	48	22	315	967
45 – 49	434	186	44	16	322	1002
50 – 54	364	146	23	7	306	846
55 – 59	384	92	25	9	355	865
60 – 64	610	84	7	0	617	1318
Total	3,213	1,223	482	372	2,906	8,196

Note: The age of each individual is taken from their last observed interview in the HILDA Survey.

Figure 1: Hazard function of first-time re-engagement for all early school leavers in HILDA
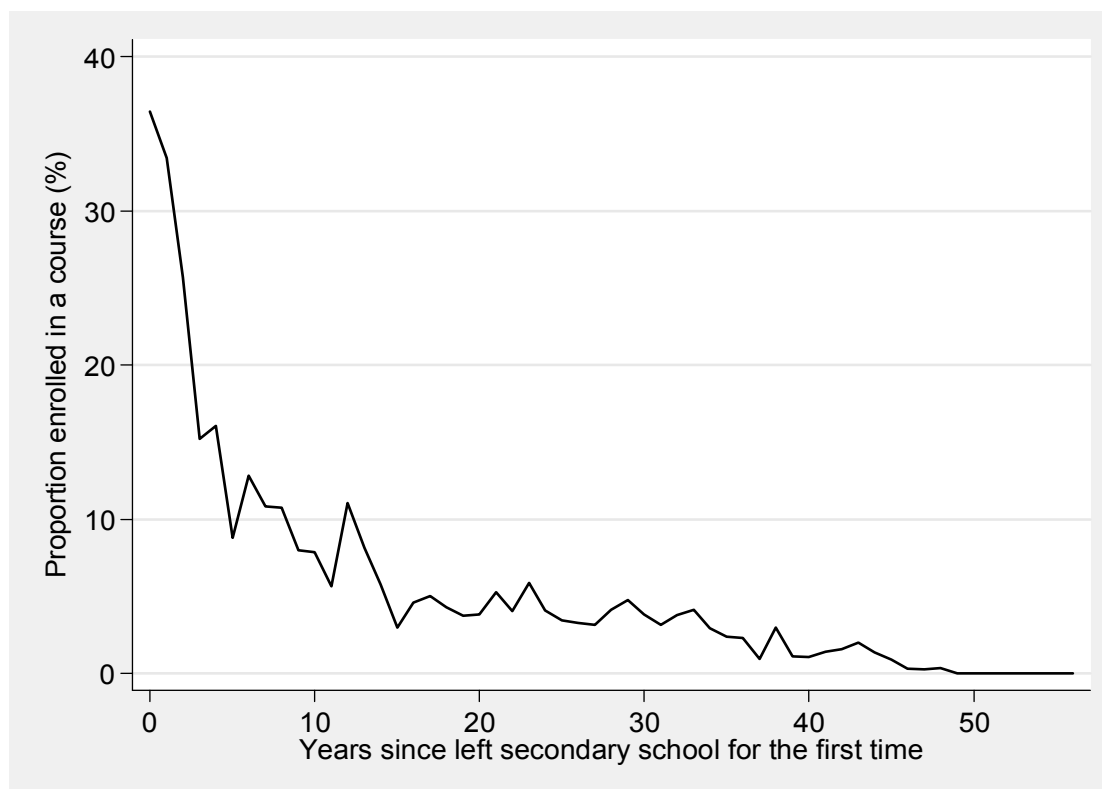
Table 2: Marginal effects of first time re-engaging in education for early school leavers

	All		Youth (15-24 in first wave)		Adult (25-64 in first wave)	
	m.e.	s.e.	m.e.	s.e.	m.e.	s.e.
Time since left full-time education for the first time						
1-1.9 years	-0.122***	0.041	-0.080**	0.041	-	-
2-2.9 years	-0.203***	0.048	-0.151***	0.051	-	-
3-4.9 years	-0.286***	0.046	-0.249***	0.046		
5-9.9 years	-0.295***	0.048	-0.251***	0.048		
10-19.9 years	-0.331***	0.049	-0.246***[1]	0.060		
20-29.9 years	-0.337***	0.049			-0.005	0.007
30-39.9 years	-0.351***	0.049			-0.018**	0.007
40 years and over	-0.368***	0.049			-0.033***	0.007
Time trend (ref: 2002)						
2003	-0.002	0.007	-0.002	0.038	-0.001	0.006
2004	0.001	0.007	0.010	0.039	0.001	0.006
2005	0.013*	0.008	0.048	0.039	0.008	0.006
2006	0.001	0.007	0.012	0.038	-0.002	0.006
2007	-0.010	0.007	-0.035	0.038	-0.005	0.006
Log of real household income excluding own earnings (2007$)	0.001**	0.001	0.002	0.003	0.001	0.001
Married or defacto	-0.021***	0.006	-0.101***	0.034	-0.011*	0.006
Status of father's occupation (ANU4 scale/10)	0.002	0.001	0.012**	0.006	0.000	0.001
Father's occupation scale missing	-0.004	0.008	0.025	0.034	-0.010	0.008
Has a disability	-0.006	0.005	-0.041	0.027	0.000	0.004
Country of birth (ref: born in Australia)						
Migrant from an English speaking country	-0.005	0.009	-0.017	0.066	-0.006	0.006
Migrant from a non-English speaking country	-0.001	0.009	-0.008	0.054	-0.003	0.006
Region (ref: urban)						
Rural	0.000	0.005	0.005	0.025	0.000	0.004
Remote	0.000	0.013	-0.020	0.068	0.000	0.010
State of residence (ref: NSW)						
Victoria	-0.008	0.007	0.017	0.038	-0.009	0.005
Queensland	-0.017***	0.006	-0.097***	0.030	-0.004	0.006
South Australia	-0.010	0.008	0.015	0.039	-0.010	0.007
Western Australia	-0.012	0.009	-0.034	0.045	-0.005	0.007
Tasmania	-0.029***	0.009	-0.124***	0.045	-0.011	0.009
ACT/NT	-0.010	0.013	-0.032	0.048	-0.008	0.018
Highest levels of school completed (ref: Year 9 or less)						
Year 10	0.001	0.005	0.014	0.031	0.001	0.004
Year 11	0.014**	0.007	0.050	0.031	0.010	0.006
Lagged labour market outcomes						
Employment status (ref: employed full-time)						
Employed part-time	0.006	0.006	-0.043	0.033	0.009	0.006
Unemployed less than 12 months	0.055**	0.026	0.180**	0.087	0.016	0.024
Unemployed more than 12 months	0.001	0.018	-0.046	0.070	0.026	0.027
Not in the labour force	0.008	0.015	0.072	0.073	-0.008	0.011

	m.e.	s.e.	m.e.	s.e.	m.e.	s.e.
Years of experience in occupation (ref: less than 2 years)						
2-4.9 years	-0.005	0.007	-0.003	0.030	-0.008	0.007
5-9.9 years	-0.007	0.009	0.004	0.091	-0.010	0.007
10 or more years	-0.017**	0.007	0.298	0.185	-0.014**	0.006
Employed on a casual basis	-0.004	0.006	0.030	0.035	-0.006	0.005
Job satisfaction (0 totally unsatisfied -10 totally satisfied)	0.002	0.001	0.014**	0.006	0.000	0.001
Self-employed	-0.003	0.010	-0.136	0.104	0.001	0.007
Log of hourly real wage rate (2007$)	-0.001	0.010	-0.021	0.042	-0.001	0.011
Industry of current or last job (ref: Manufacturing)						
Agriculture	0.028**	0.013	0.064	0.072	0.015	0.011
Mining	0.000	0.012	-0.028	0.058	0.004	0.011
Construction	0.009	0.008	0.078**	0.038	-0.001	0.007
Retail	0.011	0.017	0.132	0.128	-0.004	0.011
Transport	0.015	0.021	-0.014	0.138	0.007	0.016
Financial	0.017	0.011	0.068	0.060	0.005	0.009
Education	0.060***	0.023	-	-	0.030*	0.017
Health	0.035**	0.014	0.163**	0.078	0.017	0.012
Other	0.034	0.022	0.250**	0.122	0.011	0.018
None	0.004	0.008	0.045	0.040	-0.004	0.007
Presence of children	0.002	0.006	-0.089*	0.046	0.011**	0.005
Female	0.007	0.005	0.010	0.025	0.009**	0.005
Child effects by gender						
Males	0.000	0.008	-0.089	0.074	0.009*	0.005
Females	0.003	0.007	-0.090**	0.038	0.013*	0.007
Did not return self completed questionnaire	0.009	0.007	-0.018	0.030	0.014**	0.006
Number of observations	10463		1374		9054	
Number of individuals	2840		610		2217	
Log likelihood function	-1753		-585		-1117	

*Significant at 10%, **significant at 5% and ***significant at 1%. Standard errors are robust standard errors, taking into account multiple observations from the same individual within a pooled framework.[1]Most observations in this category left full-time education for the first time less than 15 years ago (average is 12 years). This explains why the marginal effect is comparable to that for the 5-9.9 year category. If we expand the youth cohort to those 15-30 years of age in their first observation, the marginal effect for this cell changes to -29 percentage points.

Table 3: Key marginal effects of all re-engagements in education for early school leavers

	All		Youth (15-24 in first wave)		Adult (25-64 in first wave)	
	m.e.	s.e.	m.e.	s.e.	m.e.	s.e.
Outcomes from first re-engagement (ref: no prior re-engagement)						
Completion	0.001	0.006	-0.028	0.025	0.012	0.007
Non-completion	0.023***	0.006	0.024	0.020	0.032***	0.009
Re-engaged prior to HILDA	0.031***	0.003	0.031*	0.019	0.028***	0.003
σ_u	1.004	0.049	0.504	0.132	1.075	0.057
ρ	0.235	0.018	0.072	0.035	0.260	0.020
Number of groups	6681		1082		5576	
Number of observations	29060		3655		25305	
Log likelihood function	-7098		-1607		-5378	

*Significant at 10%, **significant at 5% and ***significant at 1%.

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