Final Report

The Re-engagement in Education of Early School Leavers

David Black, Cain Polidano and Yi-Ping Tseng [#]

Melbourne Institute of Applied Economic and Social Research

Acknowledgements

This research was commissioned by the Australian Government Department of Education, Employment and Workplace Relations (DEEWR) under the Social Policy Research Services Agreement (2005–09) with the Melbourne Institute of Applied Economic and Social Research. The views expressed in this report are those of the authors alone and do not represent those of DEEWR.

[#] *Corresponding author is Cain Polidano (cainp@unimelb.edu.au).*

December 2009

THE UNIVERSITY OF MELBOURNE

MELBOURNE INSTITUTE of Applied Economic and Social Research

Table of Contents

Executive summary

Background

By developed country standards, a high proportion of the Australian working-age population do not hold a secondary school qualification or its equivalent. As part of the Australian Government's 'Education Revolution', it has made improving the number of working-age people with foundations skills a priority. The benefits of improving basic skills in the economy include greater labour market participation and social inclusion, enhanced productivity growth and a more solid base to adjust to structural shifts in the economy. The aim of this report is to fill the gaps in the understanding of the motivations and barriers of early school leavers in acquiring post-school qualifications, which will help inform policy makers on how to design well-targeted and cost-effective polices.

We examine separately, using data from the Household, Income and Labour Dynamics Australia (HILDA) survey and a multivariate approach, the factors associated with re-engagement in education and course completion of early school leavers who have not previously re-engaged in education.

Patterns of re-engaging

We find that patterns of re-engagement are consistent with the human capital investment model of education, with high rates of re-engagement among those who may encounter the highest labour market benefits — the low-paid, those with little wealth and those who have recently left school. While rates of re-engagement are highest among those who have just left school, the chances of re-engaging do not fall until after 5 years out, and then decline steadily. This finding does not support the hypothesis that there is only a narrow window of opportunity for re-engagement and that policies to improve basic skills of the workforce need to be targeted at re-engaging youth.

Results presented in this paper show that those who re-engage, especially those who finish their course, are more likely to engage again in the future. This underlines the importance of efforts to encourage re-engagement and to ensure that it is successful.

Completion

Unlike re-engagement, we find that once engaged, expected future returns from completion have little bearing on the chances of completion. Instead, we find that those who re-engage soon after leaving school, especially those who re-engage in their first year out, are less likely to complete their studies. There is insufficient information in HILDA to examine the reasons underlying the high failure rate among early re-engaging, but is an issue to be explored in a future study using the Longitudinal Study of Australian Youth (LSAY). Understanding the reasons for the high failure rate among early re-engagers is important in improving the effectiveness of measures, such as the Australian governments Earn or Learn scheme, which are aimed at encouraging early re-engagement.

1. Introduction

According to the OECD (2008), around 66 per cent of Australians aged 25 to 64 years have attained at least an upper Secondary School qualification, which places Australia 22nd out of 30 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 2008).

Increasing the number of people with at least an upper Secondary School education may help to address several long-term issues in the Australian economy. First, there is evidence to suggest that improving education rates may encourage labour force participation, which may help to address some of the expected long-term labour supply problems associated with the aging of the population (Commonwealth of Australia 2002). Increasing levels of education may also enhance productivity growth and international competitiveness, which are essential for sustaining Australia's high living standards (Productivity Commission 2006). Finally, improving basic education gives people the skills and confidence to undertake further education and training in the future, which may be necessitated by structural changes to the economy, such as the need to meet more stringent emission reduction targets.

There are also social reasons for improving the educational outcomes of early school leavers, the most important of which is to help address labour market inequality. Previous research has found that early school leavers have much greater difficulty in finding and retaining employment and are more likely to be in low-paid jobs (Heckman and Rubinstein 2001). What makes the situation worse for early school leavers is that they have fewer opportunities for employer funded on-the-job training than their work colleagues who did complete school, which through time, leads to a growing wage penalty (Baker and Wooden 1992, Arulampalam and Booth 1998). Vocational Education and Training (VET), as an accessible avenue for education and training, can help rectify such discrepancies in the training and income progression of early school leavers. For example, a recent study by Long and Shah

(2008) found that the returns to VET education are higher for early school leavers than for the school completers.

Increasing adult education and training through VET is a key part of the Australian Government's 'Education Revolution' (Gillard 2008). On November 29, 2008, the Council of Australian Governments (COAG) set a number of targets for 2020, including:

- more people to gain foundation skills to prepare them to fully participate in employment and society;
- a halving of the proportion of Australians aged 20 to 64 years without qualifications at Certificate III level or above; and
- a doubling of the number of completions of higher qualifications at Diploma and Advanced Diploma level.

In order for policy makers to design programs to achieve these objectives, more needs to be understood about the motivations for re-engaging in post-school education and possible barriers to participation and completion for early school leavers. Currently there are many studies on the links between personal characteristics and school non-completion (see, for example Maani and Kalb 2007 and Curtis and McMillan 2008), but only one to our knowledge (Hill and Jepsen 2007) to date on the factors that are related to the re-engagement into education of early school leavers. The study by Hill and Jepsen (2007), is an exception, but focuses purely on youth in the U.S. The aim of this project is to fill the gaps in our understanding of the motivations and barriers to re-engagement in education and training among early school leavers in Australia.

The report will proceed as follows. In the next section we discuss the data to be used throughout the investigation and outline key definitional issues. Section 3 describes our sample of early school leavers and briefly considers factors associated with school non-completion. Our modeling approach, in terms of the theoretical models and econometric methods used, is outlined in Section 4. In Section 5 we examine the decision of early school leavers to re-engage in education and we then consider whether these individuals were actually successful in completing the qualification in Section 6. Finally, conclusions and policy implications are presented in Section 7.

2. Data and definitional issues

2.1 The HILDA Survey

The primary data source for this report is the first seven waves (which correspond to the period 2001 to 2007) of the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Survey is a large household panel survey that is designed to collect information from a sample representative of the general Australian population. For each wave (year) of data there is extensive information on around 12,000 individuals aged 15 years and over.[1]

Given that HILDA contains a representative sample of individuals, we are able to examine how re-engagement in education varies over the working-life of individuals, thereby giving us a more complete picture of how policy changes may affect overall re-engagement and skill levels in the economy. In this sense we are interested in examining all the re-engagements in education undertaken by early school levers over the entire life cycle. An alternative standpoint would be to examine the re-engagements of early school leavers during their youth.[2] While such an approach is certainly a valid avenue for future research, we have chosen to take a more broad focus in this first investigation into the re-engagement of early school leavers in Australia. The panel or longitudinal nature of the HILDA Survey, whereby the same individuals are interviewed in each year, provides us with the further advantage of being able to examine how changes in an individual's circumstances over time affect their decision to re-engage in education.

2.2 Identification of early school leavers, re-engagements in education and course completions

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 reported to have left school and if their highest reported level of school attainment was Year 11 or below. Based on this definition we are able to identify 8,196 individuals who are early school leavers in HILDA, and then 7,571 individuals who have completed Year 12. It is worthwhile to note here that since a major

[1] See Wooden and Watson (2007) for greater elaboration on the design and progress of the HILDA Survey.
[2] The Longitudinal Survey of Australian Youth (LSAY) would likely provide the necessary data for such an investigation.

motivation for re-engaging in education is assumed to be work-related, we restrict our focus in this study to individuals of working-age (15 to 64 years). Thus, the preceding figures correspond to the numbers of early school leavers and Year 12 completers within the working-age population in HILDA.

Based on the numbers of individuals identified as early school leavers and Year 12 completers in HILDA, it is possible to obtain a school completion rate of around 48 per cent across the entire working-age population.[3] 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.

For the sample of early school leavers, we define re-engagement in education to occur if they, at any time, return to school or enroll in a course to obtain a post-school (Vocational Education and Training (VET) or Higher Education) qualification. In the HILDA data, therefore, re-engagements in education are identified using information on enrolments in courses for qualifications. The information available in HILDA regarding enrolments in courses comes from three main sources. First, each individual in their first interview as part of the HILDA Survey is asked whether they had ever been enrolled in a course to obtain a qualification since leaving school. Second, in subsequent interviews each individual is asked whether they had been enrolled in a course at any stage since the time of their previous interview. And, third, each individual is asked whether they are currently enrolled in a course during each interview of the HILDA Survey.

From the combination of these three sources of enrolment information in HILDA, we are able to identify both re-engagements which occur prior to an individual's commencement in the survey and re-engagements which occur during their participation in the survey. An individual is deemed to have had a re-engagement prior to the survey if during their first interview they reported having previously enrolled in a course. On the other hand, an individual is observed to re-engage in a given period of the survey if they reported being currently enrolled (part-

[3] School completion rate = (7,571 ÷ (8,196 + 7,571))*100 = 48.02%.

time or full-time) in a course, or if they reported that since their previous interview they had been enrolled in a course. 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.

In most cases, it is straightforward to identify when an individual has not re-engaged prior to their commencement in 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. From detailed analysis of these observations, we can conclude that since most of these cases are youth it is reasonable to assume that they had not re-engaged prior to commencing in the survey. Thus, their reported enrolment in their first wave of the survey is assumed to be their first re-engagement in education.

Despite being able to identify re-engagements both prior to and during the HILDA Survey, the former are of limited use to us because we have no information on when, or the circumstances under which, the re-engagement took place. For the re-engagements which occur during the survey, however, we can observe the circumstances of individuals before and during study, which then enables us to examine relationships between personal circumstances and re-engagement in education. Therefore, it is the re-engagements which occur during the HILDA Survey which will be the principle focus of this study.

While any re-engagement in education by early school leavers may be beneficial to both the individual and to the wider economy, we are particularly interested in examining first re-engagements because it is likely that there are barriers faced by individuals in returning to education for the first time which are not faced in subsequent re-engagements. In particular, these barriers may be related to uncertainty of their ability to complete the course and the benefits which may flow from it (e.g. employment or increased income). Many early school leavers may have dropped out of school due to poor previous learning experiences, which may then scar their views of their own ability and/or of learning institutions. In order to take this into account, we shall frequently make the distinction between first re-engagements (i.e., enrolments where the early school leaver has had no prior re-engagements in education) and

subsequent re-engagements (i.e., enrolments where the early school leaver has had a prior re-engagement in education) in our analyses. Additionally, when we consider the decision to re-engage in education we intend to focus mainly on first re-engagements.

An important point to note is that the sample of early school leavers with no prior re-engagement (i.e., first re-engagements) may not be representative of all early school leavers since we omit from the sample all those who had re-engaged prior to the survey. As a result, the sample may under-represent early school leavers who re-engaged soon after leaving school, which may distort any descriptive statistics. In our econometric analyses, many of the differences between those who re-engaged prior to the survey and those who did not can be controlled for. However, if there are differences that are not controlled for, such as differences in motivation which may affect the timing of re-engagement, the results will be biased (commonly referred to as sample selection bias). In this report we shall address the possibility of sample selection bias using standard econometric techniques (see discussion in Section 4).

To provide an indication of the number of re-engagements in education we identify for the early school leavers in HILDA, we present Table 1 on the number of enrolments in courses observed for early school leavers by whether the enrolment is their first or a subsequent re-engagement in education.

Table 1: Enrolments in courses by year commenced and whether first re-engagement in education – Early school leavers

Year commenced	First re-engagement in education	Subsequent re-engagement in education	All
2001	127	349	476
2002	146	400	546
2003	139	326	465
2004	127	324	451
2005	149	380	529
2006	123	291	414
2007	86	328	414
Total	897	2,398	3,295

The figures in Table 1 indicate that we observe in excess of 3,000 enrolments in courses among early school leavers, with a little less than one-third being the first re-engagement for an individual. However, given the structure of the data, whereby it is possible for an individual to report being enrolled in multiple courses in a given year and to report being

enrolled on more than one occasion across the seven years, these figures somewhat over-state the number of individuals who we observe re-engaging.

For a more complete picture of the re-engagement in education occurring among the early school leavers in HILDA we present Table 2, which contains information on the number of early school leavers who first re-engaged prior to the survey, first re-engaged during the survey or who did not re-engage by the end of the survey. In particular, we categorise our defined group of early school leavers into four groups: (i) those who first re-engaged prior to the survey and had no subsequent enrolments during the survey; (ii) those who first re-engaged prior to the survey but had at least one subsequent enrolment during the survey; (iii) those who first re-engaged during the survey; and, (iv) those who had not (yet) re-engaged by the end of the survey.

Table 2: Re-engagements in education by whether first re-engagement is observed in HILDA – Early school leavers

Age in years	(i) First re-engaged prior to survey, no subsequent enrolments observed	(ii) First re-engaged prior to survey, subsequent enrolments observed	(iii) First re-engaged during survey (2001 to 2007)	(iv) No re-engagement to 2007	All
15 – 19	70	42	219	213	544
20 – 24	190	96	214	174	674
25 – 29	194	96	60	158	508
30 – 34	254	104	48	181	587
35 – 39	323	185	67	265	840
40 – 44	390	192	75	315	972
45 – 49	434	186	70	322	1,012
50 – 54	364	146	47	306	863
55 – 59	384	92	26	355	857
60 – 64	610	84	28	617	1,339
Total	3,213	1,223	854	2,906	8,196

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

From Table 2, we observe that the sample of early school leavers is relatively evenly distributed across the age categories, though there are somewhat fewer individuals aged below 35 years. This confirms that we are examining a broad sample of early school leavers from across the general Australian population, rather than merely youth, which was a primary reason for our use of the HILDA Survey data. Also, the majority of early school leavers report having re-engaged in education, whether successfully or not, at some stage since leaving school, though there is still a large group of 2,906 who had not re-engaged. Among those who

had re-engaged, however, the majority had re-engaged prior to the survey and did not enroll in a course at any stage during the survey. This group of individuals (group (i)), therefore, will be of little value in our examination of re-engagements. Instead, we shall focus on the information provided by the 2,077 early school leavers who were enrolled in a course at some stage during the survey, particularly the 854 whose first re-engagement in education we observe in HILDA.

From Table 2 we also observe that while first time re-engagement appears far more likely among youth, with over half the sample of 854 less than 25 years of age, this phenomenon is certainly not restricted to youth. There is, in fact, a fairly even spread of individuals re-engaging in education for the first time across the age distribution 25 years and above. Therefore, even though first-time re-engagement is more prevalent among youth, there are enough first-time re-engagements among older cohorts to examine the relationship between age and first time re-engagement.

To identify course completions we use information in HILDA from two main sources. First, for enrolments prior to the survey, each individual is asked in their first interview to indicate all of the courses (by qualification level) that they had previously completed. Second, for enrolments which occur during the survey, each individual is asked in subsequent interviews to indicate all of the courses (by qualification level) that they had completed since the time of their previous interview. Based on this information we then assume non-completion of courses if an individual reports being enrolled in a particular course in one wave, but then does not report being enrolled in that course the following wave and does not report recently completing a course of the same qualification level. Therefore, for early school leavers who re-engage in education and report the completion of a qualification at the same level, we treat that re-engagement as successful. For those who do not report the completion of a qualification at the same level, however, we assume the re-engagement was unsuccessful. One limitation of the data and our approach is that we do not know whether an unsuccessful re-engagement results because the individual dropped-out or because they had only intended to complete a module of the course.

In Table 3 we present information on the completion status for each enrolment in a course that we observe for early school leavers in HILDA. In particular, the figures on completion are presented by the year the individual was first observed to have enrolled in the course (year

commenced) and by the final year the individual was observed to be enrolled in the course (final year of enrolment).

Table 3: Completion of courses by year commenced and final year of enrolment – Early school leavers

Year commenced	Completion status	Final year of enrolment 2001	2002	2003	2004	2005	2006	2007	Total	Completion rate [c]
2001	Complete	0 [b]	35	24	13	6	7	4	89	
(476)	Dropout	275	38	15	3	4	0	1	336	
	Unknown [a]	45	3	1	1	0	0	1	51	
										20.9%
2002	Complete		157	36	19	10	6	2	230	
(546)	Dropout		215	34	18	4	3	1	275	
	Unknown [a]		30	3	2	1	0	5	41	
										45.5%
2003	Complete			129	43	22	7	7	208	
(465)	Dropout			182	30	7	3	0	222	
	Unknown [a]			25	5	0	1	4	35	
										48.4%
2004	Complete				136	43	20	6	205	
(451)	Dropout				166	30	5	1	202	
	Unknown [a]				26	1	5	12	44	
										50.4%
2005	Complete					162	40	18	220	
(529)	Dropout					222	22	1	245	
	Unknown [a]					32	8	24	64	
										47.3%
2006	Complete						111	48	159	
(414)	Dropout						158	4	162	
	Unknown [a]						39	54	93	
										49.5%
2007	Complete							122	122	
(414)	Dropout							48	48	
	Unknown [a]							244	244	
										71.8%

Notes: Total numbers of enrolments in courses for each year are presented in parentheses below the respective years in the 'Year commenced' column (these figures correspond to the 'All' column in Table 1).
(a) Completion status 'unknown' refers to individuals who were currently enrolled in the course at the time they were last observed in the HILDA Survey data. Thus, we do not observe whether or not they actually completed the course.
(b) Given the structure of the HILDA Survey data, whereby each individual in their first interview reports courses previously completed and current enrolments and thereafter in subsequent interviews reports course enrolments and completions which have occurred since their last interview, this cell by definition equals zero as it is not possible for an individual to report starting and completing a course in their first interview. That is, the first interview of each individual can only identify current enrolments in courses and completions which took place prior to HILDA.
(c) These represent overall completion rates for enrolments in courses for each given year (year commenced) and individuals with an 'unknown' completion status are not included in their calculation (i.e., individuals with 'unknown' completion status do not appear in the denominator of the calculation).

As indicated in Table 3, there are some instances where we are unable to determine whether an individual has completed the course or not, in which case we deem these enrolments to have an 'unknown' completion status. These 'unknown' completion cases arise when we have

individuals reporting that they are currently enrolled in the course in their final observation in HILDA, whereby final observations occur either in our final year of data examined (2007) or because of the attrition of individuals from the survey. Since we have no information following this final observation, we can not determine whether the individual eventually completed this course or not. Hence, we refer to them as having an 'unknown' completion status. Table 3 also presents completion rates for each year of commencement, where enrolments with an 'unknown' completion status are not considered.

In Table 3 we observe that course completion rates among early school leavers in HILDA are quite low, in the order of 45 to 50 per cent. The completion rates for 2001 and 2007 merit less consideration as they are acutely affected by the structure of the data, whereby completion is less likely for enrolments reported in 2001 due to the survey design (see note (b) on Table 3) and the number of 'unknown' cases is significantly higher in 2007 since it constitutes the final observation for most individuals. By comparing the final year of enrolment with the year commenced, the figures in Table 3 can also provide a preliminary indication of how long these early school leavers were enrolled in courses. While the majority appears to be enrolled for less than a year, there are some who remain enrolled in the same course across several years.

It is worth noting that the figures in Table 3 correspond to all enrolments in courses (or re-engagements in education) among early school leavers, rather than merely first re-engagements. Our intention is to examine the relationship between personal factors and whether the re-engagement was successful (course completion) using this full sample of enrolments in courses. The reason for this is that it allows us to test whether the rate of success for first re-engagements is different to that for subsequent re-engagements, while the larger sample size will enable the estimation of more robust results.

3. Early school leavers

In this section we begin our investigation by considering our sample of interest; namely, early school leavers in Australia. Our aim is to examine the characteristics of this group and to compare them with those of the group of individuals who report completing Secondary School (Year 12). In light of the well-established literature on school non-completion, we aim to highlight factors which are widely regarded as affecting the likelihood of individuals completing school.

A select set of (time-invariant) characteristics for our sample of early school leavers, along with the sample of Year 12 completers in HILDA, are presented in Table 4. The differences between these groups are largely consistent with the findings of previous studies, such as Maani and Kalb (2007), which show that parents' characteristics are a key point of difference between completers and non-completers. Parents of early school leavers are much more likely to work in low-skill occupations and are much less likely to work in skilled occupations. This suggests that parents of early school leavers may have had lower levels of educational attainment and income, which may have affected their children's learning experience.

An individual's ethnicity also appears to be linked with early exit from school. It is estimated that early school leavers are more likely to be Australian-born and less likely to come from non-English speaking backgrounds. However, whether the seemingly negative effect of being Australian-born is due to cultural differences between the two groups, because of migration policies that favour school graduates or due to a low historical rate of school completion in Australia can only be answered using multivariate statistics.

The descriptive statistics in Table 4 also point to an increasing rate of school completion in Australia. Comparing the age distribution of early school leavers to school completers, we can see that early school leavers are much more likely to be from older age cohorts. This trend of higher rates of school completion in Australia among younger cohorts is consistent with OECD (2008) statistics.

Table 4: Characteristics of early school leavers versus Year 12 completers

Time-invariant characteristics	Year 12 completers	Early school leavers
	%	%
Male	46.92	50.34
Female	53.08	49.66
Age cohort		
15-24	44.33	14.86
25-34	22.19	13.36
35-44	18.50	22.11
45-54	10.99	22.88
55-64	4.00	26.79
Ethnicity		
Australian-born	73.71	80.46
Migrant from English speaking country	9.76	9.48
Migrant from non-English speaking country	16.52	10.07
Father's employment status when individual was aged 14		
Employed	81.75	83.50
Not employed	2.73	3.86
Father deceased	2.11	3.47
Father not living with individual	2.15	3.59
Unable to be determined	11.25	5.59
Father's occupation (by skill level)		
Skilled occupation	42.53	26.40
Intermediate occupation	30.60	34.68
Unskilled occupation	12.18	27.70
Unable to be determined	14.69	11.22
Mother's employment status when individual was aged 14		
Employed	51.05	44.53
Not employed	36.39	47.55
Mother deceased	0.77	1.46
Mother not living with individual	0.40	0.93
Unable to be determined	11.40	5.53
Mother's occupation (by skill level)		
Skilled occupation	25.95	13.99
Intermediate occupation	37.45	32.98
Unskilled occupation	9.81	21.07
Unable to be determined	26.79	31.95
Total number of individuals	7,571	8,196

Notes: Occupations are categorized using ANZSCO (2006); 'Skilled' defined as occupations within Managers and Professionals categories; 'Intermediate' defined as occupations within Technicians and Trades Workers, Community and Personal Service Workers, Clerical and Administrative Workers, and Sales Workers categories; 'Unskilled' defined as occupations within Machinery Operators and Drivers and Labourers categories.

4. Modelling approach

4.1 Theoretical models

When modeling re-engagement in education, and whether or not it is successful (completed), we take into account various theoretical models that are often used to explain decisions to engage in education, including the human capital model, consumption model and youth transition models. Because these theories are based on individual decisions on whether to re-engage or not, they are education demand models and assume that the supply of places available in education is infinite.

4.1.1 Human capital model

Under the human capital model, an individual's decision to return and complete education is based on whether their expected discounted future benefits outweigh the costs of studying/completing. Expected future benefits can be financial (fewer spells without an income and higher wages) and non-financial (such as greater job satisfaction and security and expanded employment options) (Duncan 1976). Costs involved in studying are immediate and may include course costs, such as fees, transport and equipment costs and foregone income and time that could have been spent in leisure, socialising or with family. When weighing-up the expected future benefits and costs, because of time preference, people tend to discount the importance of expected future benefits, which means that they may still choose not to engage in education even though their expected future benefits outweigh the costs.

Financial benefits from re-engaging

The expected financial benefits from VET are equal to the expected future income from re-engaging over and above the expected future income if they did not re-engage. The difference in expected future income progression with and without re-engaging in education depends on the extra skills they hope to develop, directly from the course and indirectly from increased employer sponsored training, and the future value of these skills. Individuals may count on extra employer sponsored training after re-engaging because research shows that employers' willingness to invest in on the job training increases with the skill level of workers (Booth 1991).

For middle-aged and older adults, because they have fewer years left in the workforce than youth, they may expect smaller financial benefits from re-engaging because they have fewer

years to recoup their costs. Not only is the expected financial benefits typically lower for older adults, but the uncertainty surrounding the expected financial benefits is greater. Expected benefits are more uncertain for older adults because if they have to change employers to utilise their new skills, it is uncertain whether their previous experience will be recognised. For older workers who have been out of education and training for some time, there is also uncertainty as to how well they will adapt to a learning environment.

Non-financial benefits

Expected non-financial benefits, such as added workplace flexibility, increased autonomy and enjoyment from tasks performed from re-engaging are likely to be related to whether an individual perceives the nature of their job, and or employer, changing as a result of the training. For early school leavers, non-financial benefits from re-engaging may depend on how much they enjoy their first job and/or their success in moving to more desirable jobs. In turn, the ability of an early school leaver to find a satisfying first job may depend on their reason for leaving school and whether they had a career plan in mind. For example, all else being equal, a youth who left school without any career plan because they did not enjoy school may be less likely to find a satisfying first job than someone who left school to pursue their chosen field of work. As for financial benefits, non-financial benefits are likely to be inversely related to age.

Costs of re-engaging

The two major costs from re-engaging are the opportunity cost of time, or the value of time foregone to undertake study, and the course costs, which include tuition fees and non-tuition costs, such as equipment and transport. The opportunity cost of time depends on what the individual has to give-up in order to re-engage and the value of the time foregone. The magnitude of these costs and the extent to which they are incurred by the individual may depend on individual circumstances and the willingness of a current employer to share the burden.

The magnitude of any opportunity cost or re-engaging is likely to depend heavily on individual circumstances. For example, an employed individual who can't access finance to supplement their income while studying, may have to move experience a decline in their standard of living from moving to part-time work in the same or an inferior job, a decline in time spent in activities outside of work, or a combination. For those who have children, the

cost of lost income and/or time may be high, for example, it may result in damaged relationships with a spouse or with children. In contrast, early school leavers who live at home may have few financial or time commitments and hence the cost of foregoing an income to study may be relatively low.

In terms of tuition fees, much of the cost is born by government. For VET, 88 percent of all places are government supported (NCVER 2006), which means that the costs for many are minimal. 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 provides tuition fee discounts for low income families (Health Care Card holders), indigenous Australians and youth aged 16 to 25 (Youth Allowance). 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).

Assuming that an employer and their employee are acting in their best interests, the extent to which they will meet the costs of training will depend on how they perceive the benefits are shared. At the extremes, if the benefits of re-engaging are born totally by the employer, they may be willing to pay up to a point where the extra benefits of training are equal to the extra costs. On the other hand, if all of the benefits are perceived to accrue to the employee, because for instance, the training is unrelated to their current job, then the costs may be born entirely by the employee.

Time preference

The willingness of individuals to make sacrifices now for longer-term gratification is well researched in the economics literature. Peoples' preference for the present means that they may refrain from making decisions that 'on paper' may be in their long-term best interests. Examples of seemingly sub-optimal behaviour are riddled throughout the economics literature. For example, it has long been shown that a strong preference for the present is responsible for the low rates of adoption of energy efficiency appliances that typically more than repay (in lower energy costs) their higher up-front costs (Hausman 1979).

While many of the factors that affect time preference are unobservable, such as personality traits, many are observable. In the literature, studies have shown that wealth is a correlate with

time preference. In particular, studies consistently show that low income earners are much more reluctant to incur costs for future possible gains (Lawrence 1991, Becker and Mulligan 1997). One explanation is that being poor makes people more concerned about meeting immediate needs (Fisher 1930). An alternative non-causal explanation is that people with a high time preference choose career paths that do not require the sacrifice of income to undergo education and training and as a result do not experience income progression (Becker and Mulligan 1997).

4.1.2 Consumption model

Under the human capital model of education is treated as an investment good, that is, the costs are born now and the returns (in higher income and or utility from the job) accrue in the future. Because people are motivated by higher income, it is assumed that low income earners are more likely to invest in their own human capital. A contrasting view is the consumption model of education, which emphasises that people do it because it gives them pleasure or status, and therefore the higher their income the greater their level of consumption. We do not specifically test for evidence of the consumption model in this paper, but based on estimated relationships between wealth and re-engagement, we can make judgements as to the extent to which one model dominates the other.

4.1.3 Youth transition model

A limitation of the human capital model is that it assumes that individuals are well placed to evaluate the benefits and costs of re-engaging and will make rational decisions based on whether or not the benefits outweigh the costs. While it can be argued that leaving school early may be consistent with the human capital model — if we assume that early school leavers are not fully informed about the future implications of leaving school or they heavily discount future employment outcomes — it does not tell us much about the underlying reasons why youth may not act in their best interests, that is, why early school leavers are poorly informed and/or have high discount rates.

Sociologists explain such behaviour as being a result of slow development from youth to adulthood, which (as found in the literature discussed above) is influenced heavily by the home environment. Those who drop out of school are typically from a poor socio-economic background (Maani and Kalb 2007 and Curtis and McMillan 2008), which is often linked to inferior learning environments because of lower parental involvement, lower parental emphasis on the importance of education and adverse peer and neighborhood effects. To the

extent that these factors affect school completion, they are also likely to affect the transition from youth to adulthood and re-engagement in education. While we recognise the potential importance of the personal development of youth and its impacts on re-engagement, the focus of this study is on re-engagement across all age groups, not just youth. The importance of personal development of youth in explaining the patterns of re-engagement is a topic for future research.

4.2 Econometric approach

The models or re-engagement and completion estimated in this paper are based upon the human capital model (demand model). We use a demand model to explain the acquisition of further qualifications of early school leavers because demand-side factors are likely to explain much of the observed outcomes. The VET sector, where most re-engagement occurs, is highly accessible — around 88% of places are government funded (NCVER 2006), courses cater for all educational backgrounds and can be delivered in a range of formats. All supply-side effects are assumed to be captured by estimated variation in re-engagement rates observed between states.

Under the human capital model, individuals are assumed to assess the discounted future benefits and costs of re-engaging and completion. It is assumed that at any time in the survey, if the benefits outweigh the costs, early school leavers are observed to re-engage. Similarly for completion, individuals are assumed to assess the discounted future benefits and costs of continuing with their studies as they progress. If the costs outweigh the benefits at some point along the way, then early school leavers are assumed to dropout of the course. Although we rely on the human capital model, we do take into account alternative theoretical models by including variables that may proxy the influence of other theories (see sections 5.2.1 and 6.2.1 for discussion of these variables).

To operationalise the human capital model, we adopt the latent variable approach, which assumes that there is a latent unobserved index that reflects the net discounted future benefits of re-engaging and completing, which is a function of the explanatory variables in the model. If the index is greater than zero, individuals are observed to re-engage or complete (the variable of re-engagement or completion is 1) if it is not, then they are observed not to re-engage or dropout (the variable of re-engagement or completion is 0). Thus, for both variables

of interest that we are modeling, the outcomes are binary. We use econometric models that are standard in the literature for estimating binary outcomes.

4.2.1 Model for re-engaging in education

For the first re-engagement equation, we adopt a logistic regression model, which is commonly used for modeling terminal or non-repeatable events, such as death or retirement (Jenkins 1995). First re-engagement (but not all re-engagement) is a terminal event because it can occur only once. Once an individual re-engages in education and training for the first time (regardless of whether they complete the course), all subsequent observations for the individual are omitted.

An issue with estimating a model on the first-time re-engagers sample is that there is a possibility that the results will not be generally applicable to all first-time re-engagers because all of the early school leavers who re-engaged prior to the commencement of HILDA are omitted. The results will be biased if there are differences between individuals who did and did not re-engage before the commencement of HILDA that are not controlled for in the model. This is commonly known as sample selection bias, and if present, results from the logistic regression model cannot be applied to all early school leavers.

We tested for sample selection bias by estimating a bivariate logistic sample selection model (Maddalja 1983), which jointly estimates two equations (an equation of selection into the sample and an equation of re-engagement) that allows controls for observed and unobserved differences between early school leavers who did and did not re-engage in education before the commencement of HILDA.[4] From results of this model, we found no evidence of sample selection bias, and hence, we can conclude that results for the re-engagement model presented in this paper are applicable to all early school leavers.[5]

4.2.2 Model for course completion

We estimate two binary probit models of completion, one using the sample of first-time and the other using the sample of all re-engagements. There are two reasons for estimating a model of all re-engagement. First, we want to examine whether the chances of completion are affected by the outcomes of previous re-engagements. Second, because the sample of first-

[4] To estimate this model, we used whether or not an individual had a child over 15 years old as an exclusion restriction.
[5] Results from this model are available from the authors on request.

time re-engagers in HILDA is small, the model results may not be robust. Having results for all completion may be a point of comparison to help validate the results from the completion model for first-time re-engagers.

An important consideration to keep in mind is that this model only examines the likelihood of completion of those who are observed to re-engage and cannot be extended to consider the likelihood of completion of those who did not re-engage in the sample. All else being equal, it is likely that the probability of completion of those who did not re-engage is lower than those who were observed to re-engage.

4.2.3 Limitations

Due to the nature of the events that we are modelling, we are unable to use standard econometric techniques to control for the influence of unobserved factors (such as ability) that may be related to the explanatory variables in the model (such as whether an individual failed at a previous re-engagement) and the variables of interest (such as completion). As a result, we cannot be certain that any measured correlation between explanatory variables and a variable of interest is due to the effect of the explanatory variable or is due to the influence of the unobserved factor that the explanatory variable is related to. For example, it is possible that any higher non-completion rate among those who had previously failed may be partly (or wholly) because those who fail have lower ability. Standard econometric approaches for controlling for these unobserved effects, such as fixed effects estimation, could not be carried out because such approaches require repeated individual observations of the event (repeat re-engagements by the same individuals). While there are some repeated re-engagements in HILDA, there are too few to allow for robust estimation using these approaches.[6] We aim to address these issues in more detail in a future study using LSAY, which has more information on the characteristics and circumstances of youth.

[6] There are also too few observations in other longitudinal datasets, such as LSAY.

5. Decision to re-engage in education

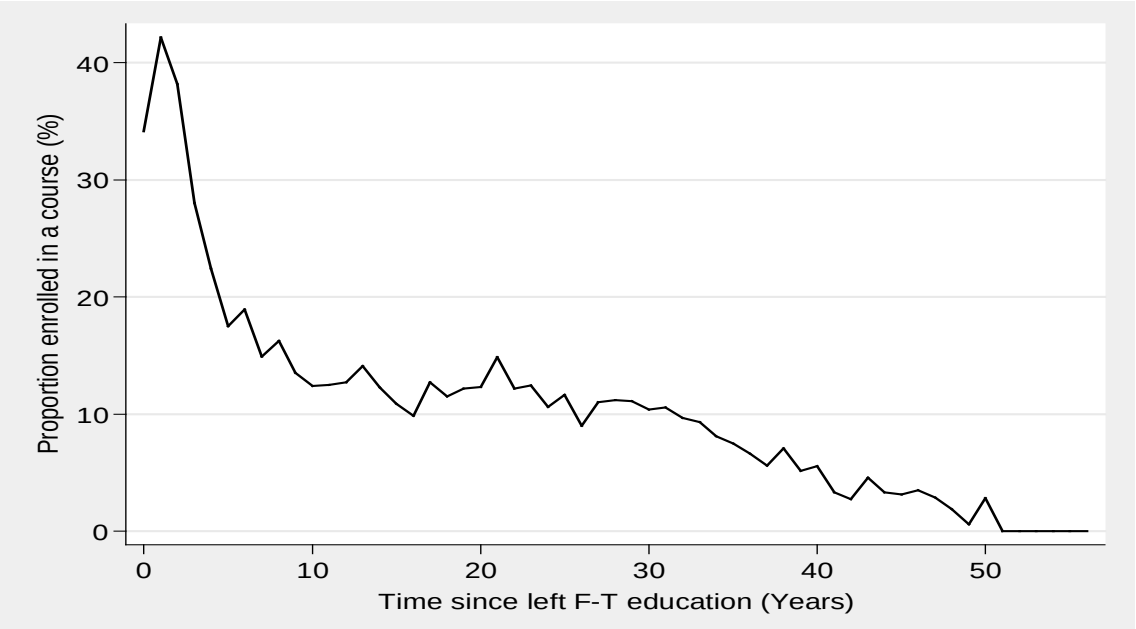
In this section we focus on the decision of early school leavers to re-engage in education. In particular, we first present descriptive information on the re-engagements in HILDA and discuss the patterns we observe, then we proceed to the results of our econometric model for the decision to re-engage and consider the factors that affect this decision. As previously mentioned, a critical issue concerning the re-engagements of early school leavers is whether the current re-engagement is their first or a subsequent re-engagement in education. On the grounds that we perceive first re-engagements to be the most important, or at least significantly different to subsequent re-engagements, we shall tend to focus on these in this section. That is, we are mostly concerned with when, how and why early school leavers re-engage in education for the first time since leaving school. Our descriptive analyses, therefore, continually focus on first re-engagements and our econometric model considers the factors that affect the decision to re-engage for the first time.

5.1 Descriptive patterns of re-engagement in education

The descriptive analyses we undertake in this sub-section intend to determine the stage at which early school leavers first re-engage in education, both in terms of their career (or age) and the amount of time between them leaving school and first re-engaging. The types of courses early school leavers enroll in when they re-engage, in terms of the qualification level, are also examined.

To examine the career stage at which early school leavers re-engage in education we present Figure 1 on the rates of enrolment in courses by age (in single years) for early school leavers. Specifically, Figure 1 reports the proportion of early school leavers at each particular age who are currently enrolled in a course. From this figure it is apparent that most early school leavers who choose to re-engage in education are in their youth (between the ages of 15 and 24 years), with peak rates seemingly occurring between 17 and 19 years of age. Thereafter rates of enrolment decline significantly, though there is still around 10 per cent of early school leavers between the ages 25 and 45 years who choose to re-engage in education. Despite the prevalence of early school leavers choosing to re-engage in their youth, we do still observe that this re-engagement in education is also occurring for early school leavers at later career stages. Thus, our focus on re-engagements in education for early school leavers of all ages is justified.

Figure 1: Rates of enrolment in courses by time since left full-time education – Early school leavers

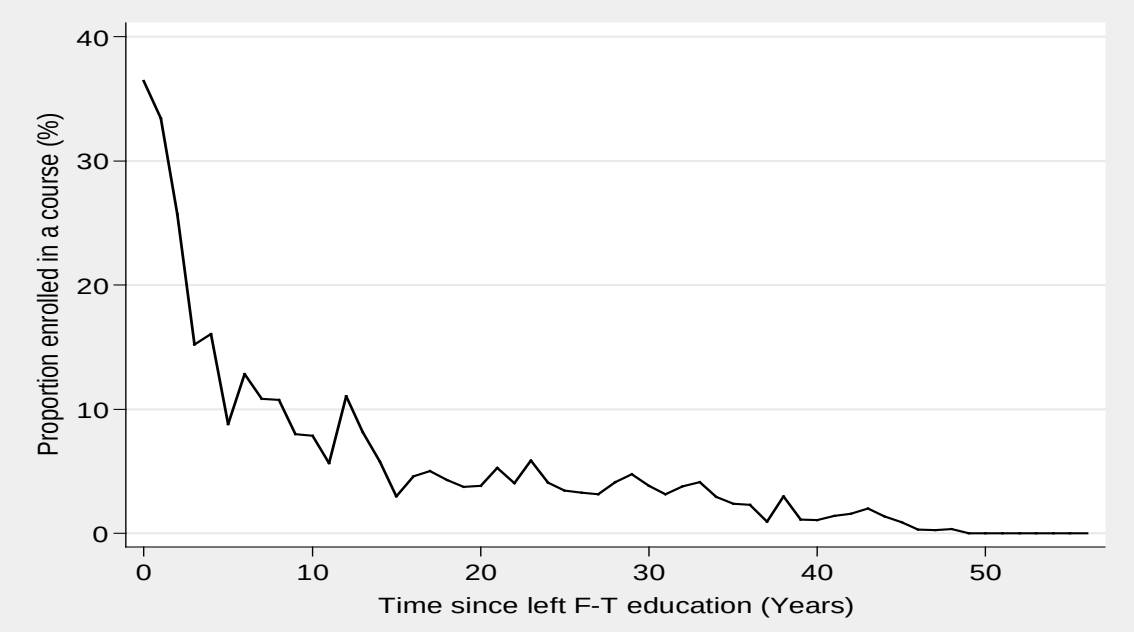


In Figure 2 we more specifically consider the age at which early school leavers first decide to re-engage in education. Thus, in this figure we are restricting our attention to early school leavers who have had no prior re-engagements (or enrolments in courses) since leaving school. The pattern observed in Figure 2 is quite similar to that in Figure 1. In this instance, however, we are observing that most early school leavers choose to re-engage in education for the first time in their youth, though this is seemingly more frequent between the ages of 15 and 19 years. Similar to Figure 1, we then observe a much lower, but somewhat steady rate of first re-engagement for early school leavers between the ages 25 and 45 years. Thereafter, however, the rate of first re-engagement declines.

The implications of these findings from Figures 1 and 2 appear to be that age is a major factor in the decision of early school leavers to re-engage in education, whereby younger individuals are far more likely to choose to re-engage. On the surface this finding is sensible, especially given that youth typically have a much weaker attachment to the labour force and that their many working years ahead of them provides a much longer amount of time to garner the returns to investments in education (in the form of higher earnings). However, age is also correlated with many other factors that may affect the decision to re-engage, such as income, financial constraints and family situation, which may make the effects of age appear more prominent than they actually are. It is important, therefore, that we do not draw any strong

causal conclusions from such descriptive analyses, and instead rely upon our multivariate analyses to identify the true effects of age and other personal factors on the decision to re-engage.

Figure 2: Rates of enrolment in courses by time since left full-time education – Early school leavers with no prior re-engagement in education



The total amount of time between leaving school and first re-engaging in education is an alternative perspective from which to consider when early school leavers decide to re-engage. In Table 5, therefore, we present information on the length of this break between school and first re-engagement for those who we observe first re-engaging in HILDA.[7] The information in Table 5 echoes the findings of Figures 1 and 2 in that there are large proportions of early school leavers who are first re-engaging in education within the first couple of years since leaving school.[8] However, Table 5 more explicitly highlights the fact that there are many early school leavers for whom the first re-engagement occurs many years after they left school. In fact, over 40 per cent of early school leavers who we observe re-engaging for the first time in HILDA do so over 10 years since they had left school. This finding further

[7] For early school leavers who first re-engage in education prior to the survey, we are unable to identify the timing of this first re-engagement and so can not determine the length of time between school and first re-engagement for these individuals using HILDA.

[8] For early school leavers with a gap of less than 6 months, and possibly even 6 – 12 months, between leaving school and first re-engaging, it could be argued that these cases are not really re-engagements, but rather a continuation of education from school since there is not a significant amount of time between them.

justifies our desire to examine re-engagements over the entire life cycle, rather than merely looking at youth re-engagement.

Table 5: Time between leaving full-time education and first re-engagement in education – Early school leavers who first re-engage during HILDA

Duration of time	Number (N)	Proportion (%)
Less than 1 year	176	21.0
1 – 2 years	121	14.4
2 – 5 years	109	13.0
5 – 10 years	66	7.9
10 – 20 years	105	12.5
20 – 30 years	139	16.6
30 or more years	122	14.6
Total	838	100.0

Note: There are individuals for whom we can not calculate the duration of time between leaving school and first re-engaging in education (because they did not provide valid responses to HILDA Survey question on the age at which they left school). Hence, the sample size in this table does not match that reported in Table 2 for the total number of early school leavers who we observe first re-engaging in HILDA.

In Table 6 we consider the types of courses, on the basis of qualification level, that early school leavers enroll in when they re-engage in education. The distinction is also made between whether the enrolment is the first or subsequent re-engagement in education for the individual since leaving school.[9] The figures indicate that early school leavers re-engaging for the first time are far more likely to do so through the VET system, with enrolments in Certificate level courses being most common. There are also some individuals whose first re-engagement occurs in the Higher Education system. However, those who report enrolling in graduate qualifications may represent measurement error in the data as it seems unlikely, for example, that individuals with no previous qualifications could enroll in a Postgraduate degree. For early school leavers who have already re-engaged in education at least once, there is a much higher proportion enrolling in courses in the Higher Education system, though the majority still pursues Certificate level qualifications in the VET system.

[9] See Appendix Table A1 for a more general consideration of the courses (by qualification level) which early school leavers enroll in, whereby the total enrolments are presented for each year and qualification level.

Table 6: Enrolments in courses by qualification level and whether first re-engagement in education – Early school leavers (%)

Qualification level	First re-engagement in education	Subsequent re-engagements in education	Total
Postgraduate degree	0.2	2.5	1.9
Graduate diploma or Graduate certificate	0.6	3.3	2.6
Bachelor degree	7.4	6.7	6.9
Advanced diploma, Associate degree or Diploma	6.8	12.7	11.1
Certificate IV	8.0	15.7	13.6
Certificate III	32.0	21.0	24.0
Certificate II	15.1	12.0	12.8
Certificate I	11.7	8.3	9.2
Certificate undefined	11.9	13.5	13.1
Year 12 equivalent	1.3	0.3	0.6
Lower High school equivalent	1.2	0.3	0.6
Unknown level	3.8	3.7	3.7
Total	100.0	100.0	100.0
Sample size (N)	897	2,398	3,295

Note: The figures in this table refer to enrolments in courses and not individuals. As a result, the sample size for first re-engagements in education does not match that reported in Table 2 for the total number of early school leavers observed to first re-engage in education in HILDA. The reason we observe a greater number of first re-engagement enrolments than individuals who first re-engage is due to the structure of the data, whereby for individuals who report completing more than one qualification between interviews we are unable to identify which was completed first and so we must assume that both (or all) these enrolments constitute a first re-engagement.

5.2 Multivariate analysis of re-engagement

While the descriptive statistics above point to a strong life-cycle pattern in re-engagement, it would be premature to conclude that we should emphasise policies to encourage early re-engagement to address labour market problems associated with early exit from school. Relying on descriptive statistics alone may be misleading as age is likely related to a number of factors that also affect re-engagement, such as employment status, wage, wealth and living arrangements. To disentangle the role that time away from study plays from other related factors, we need to adopt a multivariate approach. Results of the multivariate model are discussed in this sub-section.

As discussed in Section 2.2, there are likely to be differences between first and all re-engagements in education due to a range of issues, such as overcoming poor prior learning experiences, that are pertinent to first re-engagement, but not to subsequent re-engagements. To deal with this we estimate separate models for first re-engagement and for all re-engagements. For both models, re-engagement is treated as a binary outcome, which is coded 1 if the individual is observed to re-engage during HILDA and 0 if they are not. There is,

however, a slight difference in the econometric models used. For first re-engagement, we use a logistic regression model, which is typically used when modeling terminal events (Jenkins 1995), while we use a probit model for all re-engagements (refer to Section 4 for a more detailed discussion of the modeling approach).

5.2.1 Factors included in the model

The variables included in the re-engagement models are consistent with demand theories of re-engagement discussed above, in particular, the human capital model (Section 4.1.1). All else being equal, we expect that the time since left school will represent the time in which a person can recoup their investment in their own human capital. Generally speaking, the longer the time since left school, the shorter the payback period, so we expect that time since left school will have a negative effect on re-engagement. However, consistent with the consumption and youth transition models, time since left school may also represent tastes for education. Despite the potentially higher returns, early school leavers may be reluctant to re-engage shortly after leaving school because their experiences at school may scar their own perceptions of their own ability and their attitudes to further study.

Evidence for the human capital model of re-engagement can also be measured by variables such as whether or not an individual is financially constrained (able to raise $2,000 in an emergency) in the previous period, which is a proxy for wealth, and the (log of) hourly wage rate in the previous period.[10] We use a proxy for wealth because information on household wealth is only collected every four years in the HILDA survey, which is deemed to be too infrequent for our purposes, especially for youth who may experience large changes due to instability in employment and fluctuations in living arrangements. The log of previous wages represents the opportunity cost of time spent in education, that is, it represents the wage foregone for every hour spent in education.[11] For both variables, an estimated negative effect in the re-engagement models would be proof in favour of the human capital model: those with the lowest wealth and wage would value the increase in future income from re-engaging the

[10] We include the log of hourly wage rates in the model in order to normalise the hourly wage rate distribution among individuals.

[11] Hourly wage rates are derived by dividing annual gross waged income 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.

highest. Employment variables such as employment status, satisfaction with job, skill requirements of job, employment history (measured as percentage of time since left school spent in employment) and industry of employment are also included in the model because they are likely to be related to the future employment benefits from re-engaging.

Since in many cases we observe re-engagement and completion in the same period, we include employment variables from the previous year in the model because without doing so we cannot be sure that the employment outcomes precede the time of re-engagement. A consequence of using lagged employment variables is that we do not have information for such variables when considering the first observation for each individual in the survey (in most cases Wave 1 in HILDA). Instead of omitting all of these observations, which would reduce the robustness of the model results, we replace the missing data with a zero. To differentiate the zero for missing observations from the omitted reference case category (which is also coded zero), we include a dummy variable 'First observation', which is coded 1 if the observation is the individual's first in the survey (and, hence, values for lagged variables are missing) and zero if it is not. Therefore, we can interpret the first observation indicator as a correction term to adjust for the fact that we have missing data for the first observation of the employment (and any other lagged) variables.

Although the econometric model estimated is based on the human capital investment model, we try and accommodate alternative models that stress social and personal development of youth as being key in explaining re-engagement. In particular, we take into consideration the role that parents may play in shaping attitudes to education, by incorporating a measure of father's occupation. All else being equal, we may expect that father's who are more skilled (and hence better educated) may be more likely to stress the importance of further study, which may have a positive influence on their child's chances of re-engaging.[12] We also include age left home as a proxy for the personal development of youth. All else being equal, we assume that those who left home at a later age may have delayed personal development and hence are less likely to re-engage. However, we note that including these variables in the model does not fully address the role of personal and social development in re-engaging youth. This is an issue for consideration in a possible future study of youth re-engagement.

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

5.2.2 Model results

The estimation results presented in this report are all marginal effects, which have been calculated for an individual with average characteristics, and each are accompanied by a t-statistic. Marginal effects 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 in the model. 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.[13] As an example, consider the interpretation of the marginal effect of time since left school for first-time re-engagement in Table 7 (model II). We can say that all else being equal, those who left school between 1 and 5 years ago are on average just as likely to re-engage as those (in the reference category) who are in their first year after leaving school. All else being equal, those who left school between 5 and 10 years are on average 1.7 percentage points less likely to re-engage in education than those (in the reference category) who are up to one year out from school. After 10 years out from school, we can see that the likelihood of re-engagement falls steadily compared to the reference category of being up to one year out from school. With the exception of those who left school between 1 and 5 years ago, all of the other categories of time since left school are statistically significant at the 1% level.[14]

First re-engagement

Results for first re-engagement (model II) clearly support the human capital theory of education. First, the chances of first re-engagement declines with years since left school, but the effect of time is not linear. Compared to those in their first year out, those between 1 and 5 years are just as likely to re-engage in education; up to 10 years and the chances of re-engaging falls on average by 1.7 percentage points. After 10 years, the chance of re-engagement falls steadily, but declines suddenly after 30 years out, at a time when early school leavers are beyond the half-way mark of their working life. In contrast to the picture

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

[14] The t-statistic represents the degree of confidence in which we can be sure that the marginal effect is different from zero and hence statistically significant: the higher the t-statistic, the more confident we can be that the marginal effect is significantly different from zero. In our results we indicate which effects are statistically significant at the 10%, 5% and 1% levels using asterisks (see note on Table 7). A t-statistic that is marked significant at the 10% level means that there is less than a 10% chance that the marginal effect is equal to zero (significant), while one marked significant at the 5% level means that there is less than a 5% chance that the marginal effect is zero (highly significant), and similarly for the 1% level of significance.

painted by Figures 1 and 2, these results suggest the chances of re-engaging diminish slowly with time after leaving school from about the 5 year mark to about 30 years after completion, after which the chances diminish sharply.

One of the likely reasons that raw life-cycle patterns of re-engagement, as depicted in Figures 1 and 2, are likely to over-play the role of time since left school, is that time is related to wage, which is estimated to play an important role in explaining the chances of re-engagement. All else being equal, it is estimated that a 10 percent increase in the log of hourly wage rate is associated with a 7 percentage point reduction in the probability of re-engaging in the following year. Another way of explaining this result is that being at the median hourly wage rate for an early school leaver is estimated to be associated with a 7 percentage point lower chance of re-engaging compared to being at the 25^{th} hourly wage rate percentile. Similarly, those who report being able to raise $2,000 in an emergency are estimated to be on average 0.6 percentage points less likely to re-engage than those who claim they cannot. Also in line with the human capital model of education, those out of work and in part-time employment are more likely than those in full-time employment to re-engage in education, though the effect for those unemployed for more than 12 months is insignificant. The insignificant result for those out of work for more than 12 months may be partly due to the small number of observations for this group. These results highlight the importance of pecuniary benefits in the decision to re-engage in education for early school leavers.

Table 7: Multivariate model results for re-engagement in education – Early school leavers

Explanatory variables	(I) All re-engagements in education		(II) First re-engagements in education	
	marginal effect	t-stat	marginal effect	t-stat
Gender (Reference: Male)				
Female	0.014***	2.63	0.002	0.531
Time since left school(Reference: 1 year or less)				
1 – 5 years	-0.061***	-14.57	0.001	0.325
5 – 10 years	-0.079***	-28.99	-0.017***	-4.777
10 – 20 years	-0.100***	-24.38	-0.028***	-9.360
20 – 30 years	-0.121***	-19.68	-0.035***	-9.226
More than 30 years	-0.183***	-16.79	-0.067***	-7.295
Ethnicity (Reference: Australian-born)				
Migrant: ESB	0.012**	2.21	-0.004	-0.895
Migrant: NESB	-0.005	-0.83	0.007	1.141
Marital status (Reference: Single)				
Married or De facto	-0.018***	-4.56	-0.006	-1.616
Disability status (Reference: No disability)				
Has a disability	-0.008**	-2.35	-0.006*	-1.939
Highest year of school completed (Reference: Primary school or less)				
Year 11	0.056***	3.12	0.066**	2.450
Year 10	0.036**	2.55	0.030**	2.169
Year 7 – Year 9	0.023	1.40	0.014	0.983
Area of residence (Reference: Major city / Urban)				
Rural	0.010***	3.12	0.001	0.307
Remote	0.018*	1.71	-0.004	-0.566
State of residence (Reference: New South Wales)				
Victoria	-0.006	-1.40	-0.005	-1.639
Queensland	-0.007*	-1.91	-0.011***	-3.589
South Australia	-0.003	-0.57	-0.008**	-2.368
Western Australia	-0.013***	-2.81	-0.004	-0.925
Tasmania	-0.007	-0.91	-0.016***	-4.425
A.C.T or N.T	-0.005	-0.43	-0.012*	-1.780
Presence of children (Reference: No children)				
Youngest child aged 0 – 4 years	-0.006	-1.04	0.001	0.077
Youngest child aged 5 – 11 years	-0.018***	-3.15	-0.008	-1.248
Youngest child aged 12 – 18 years	-0.012*	-1.69	-0.012	-1.621
Youngest child aged 19 years or older	-0.050***	-7.63	-0.014	-1.640
Female x Youngest child aged 0 – 4 years	-0.029***	-4.18	-0.009	-1.518
Female x Youngest child aged 5 – 11 years	0.024**	2.34	0.018	1.518
Female x Youngest child aged 12 – 18 years	0.021*	1.94	0.042*	1.893
Female x Youngest child aged 19 years or older	0.025**	2.44	0.012	1.074
Father's occupation (when individual aged 14) (Reference: Unskilled labourer)				
Professional	0.015***	2.83	0.011**	1.991
Associate professional, Technician	-0.001	-0.38	0.001	0.405
Tradesperson	0.001	0.14	-0.006	-1.054
Clerk	0.006	1.07	0.004	0.798
Production worker	-0.011***	-2.60	0.004	0.902
No occupation	-0.016	-0.62	0.004	0.220
Missing occupation information	0.006	0.61	0.008	1.033

Continued over the page

Table 7 Continued

	All re-engagements in education		First re-engagements in education	
	marginal effect	t-stat	marginal effect	t-stat
Age individual left home (Reference: 18 years or younger)				
Still currently living at home	0.002	0.31	-0.010***	-3.017
Aged 19 – 21 years	-0.012***	-3.48	-0.011***	-3.442
Aged 22 – 24 years	-0.019***	-4.29	-0.011**	-2.674
Aged 25 years or older	-0.024***	-4.94	-0.018***	-4.530
Prior re-engagements in education (Reference: No previous re-engagements in education)				
Completed first re-engagement during HILDA	0.303***	13.86	-	-
Failed first re-engagement during HILDA	0.241***	15.85	-	-
Re-engaged prior to HILDA	0.071***	22.02	-	-
(Log) hourly wage rate (lagged)	0.000	0.15	-0.007**	-2.259
Not financially constrained – Able to raise $2000 (lagged)	-0.015***	-3.79	-0.006**	-2.092
Lagged labour market outcomes				
First observation (i.e. no lagged values available)	0.010	0.89	0.021*	1.747
Did not complete HILDA SCQ (i.e. no response for financial constraint question)	0.010	1.30	0.001	0.003
Proportion of time since leaving F-T education spent working	-0.001	-0.09	0.015**	2.661
Permanently employed	0.013***	2.98	-0.002	-0.577
Job satisfaction level (0-10)	-0.001	-1.43	0.000	0.631
Job requires me to learn new skills (1-7)	0.009***	10.33	0.004***	5.210
Partner work hours per week/10	-0.001	-0.70	-0.001*	-1.712
Employment status (Reference: Full-time employed)				
Part-time employed	0.021***	3.95	0.010*	1.888
Unemployed for 12 months or more	0.082***	4.34	0.016	1.207
Unemployed for less than 12 months	0.117***	6.01	0.050**	2.744
Not in labour force	0.033***	3.35	0.014*	1.738
Industry (Reference: Manufacturing)				
Agriculture, Forestry and Fishing	-0.003	-0.36	0.012	1.326
Mining	-0.002	-0.18	-0.001	-0.102
Construction	-0.002	-0.30	0.001	0.289
Retail and hospitality	0.009	0.75	0.001	0.116
Transport	0.017	1.34	0.000	0.002
Finance and business services	0.016**	2.11	0.003	0.414
Education	0.014	1.29	0.036*	1.808
Health	0.041***	5.10	0.020*	1.940
Other	-0.011	-1.09	0.029	1.467
Log likelihood	-10,606.43		-2,561	
Pseudo R-squared	0.1387		0.177	
Sample size (N)	35,996		14,205	

Notes: *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.
Results from 'All re-engagements' model based on the estimation of a probit model; results from 'First re-engagements' model based on the estimation of a logit model.

Given the apparent importance of future pecuniary benefits, it is unsurprising that the skill requirements of jobs in which early school leavers are employed makes a difference to the chances of re-engaging. Early school leavers who work in the health and education sectors,

are estimated to be 2 and 3.6 percentage points more likely to re-engage in education respectively than those employed in the manufacturing sector. It is possible that people from these sectors re-engage at a higher rate because job progression is linked to the attainment of post-school qualifications. For example, in the education sector, early school leavers may find employment as babysitters in family childcare, but typically have limited opportunities for advancement in the sector without engaging in further study to gain certification as a childcare professional. We also find evidence that early school leavers who work in jobs where learning new skills is a requirement are, on average, more likely to re-engage in education. At the extremes, those who strongly agree that they need to learn new skills (report 7) are 2.4 percentage points more likely to re-engage than those who strongly disagree (report 1). An implication of these findings is that the choice of job affects the chances of early school leaver re-engagement.

While evidence presented above points to the importance of expected pecuniary benefits as a motivating factor for re-engagement, we find no evidence that early school leavers re-engage to improve the non-pecuniary conditions of work. In particular, the extent to which an individual is satisfied with their job is estimated to make no difference to their chances of re-engaging for the first time in the following year. We tested non-pecuniary motivations further by replacing the overall job satisfaction with 'satisfaction with the work that you do' and the effect was also insignificant. Not only does job satisfaction seem to be irrelevant in the first-time re-engagement decision, but so too is security of tenure (or lack of it), as measured by whether or not an individual is employed on a permanent or casual basis. Job security as a motivating factor was also tested by including a measure of 'satisfaction with job security', but was found to also be insignificant. The apparent dominance of pecuniary motivations over non-pecuniary motivations for first-time re-engagement is not surprising for early school leavers given that that they are likely to be among the lowest paid workers.

While we find that the human capital model dominates our results, especially re-engaging for pecuniary benefits, 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. Our results suggest that youth who completed higher levels of school were more likely to re-engage. All else being equal, compared to those who only completed primary school, those who left school after completing Year 10 and those who left after Year 11 are estimated to be 3.3 percentage points and 6 percentage points more likely to re-engage respectively. A tentative explanation is that

extra years in Secondary School help prepare youth for post-school education. Those who have achieved higher levels of schooling may have better numeracy and literacy skills, which may give them more confidence that they can complete the study. Alternatively, this estimated effect may be a result of unobserved differences between those who complete different levels of schooling, such as differences in ability or differences in education systems. The extent to which school performance affects chances of post-school re-engagement would be a key issue to be explored in a future study focussing on youth.

We find weak evidence that having children affects the chances of re-engagement. For both men and women, we find no significant difference in the probability of re-engagement between those with and without children, irrespective of the age of the children.[15] Although the presence of children may not affect the likelihood of re-engaging directly, we find that those who have spent time outside of employment are significantly less likely to re-engage than those who have not. While significant, the magnitude of the effect is small; for example, someone who has spent half of their time since school out of employment, is only estimated to be 0.75 percentage points less likely to re-engage than someone who has spent no time out of employment. The lower chance of re-engagement may be because employers may be reluctant to support training for employees with considerable time out of work because they fear that they will drop out again in the future. An alternative explanation is that those who have spent considerable time out of work possess unobservable traits, such as poor ability or motivation, which makes them less likely to participate in education. It is also important to keep in mind that we do not differentiate between time out of work due to caring and time out of work because of unemployment, so caution needs to be exercised when evaluating possible implications for stay-at-home parents.

Although we only pay cursory attention to youth transition models of re-engagement, we find some significant and noteworthy results. We find that early school leavers who have a father who is a professional are 1.1 percentage points more likely to re-engage than those who have a father who is an unskilled labourer. The higher probability of re-engagement among those with a professional father may be because they are more conscious of the importance of

[15] For males and females, the marginal effects were using the results in Table 7. They were estimated, for males and females separately, as the change in the predicted probability of re-engaging given the presence of a child of a certain age, less the predicted probability of re-engaging given no children. We estimated standard errors and t-statistics for these marginal effects using the delta method in LIMDEP.

further education in improving their future employment outcomes after they leave school. We also find that those who still live with their parents are around 1 percentage point less likely to re-engage than those who have left home, and that the later they leave home, the less likely early school leavers are to re-engage. To the extent that those who stay at home make a delayed transit to adulthood, this result is consistent with the hypothesis that a lack of personal development may explain why some youth do not re-engage.

Possibly reflecting differences in education systems, we find differences in re-engagement rates across states. Compared to New South Wales, early school leavers in Tasmania (1.6 percentage points lower), Queensland (1.1 percentage points lower) and South Australia (0.8 percentage points lower) are less likely to re-engage in education.

All re-engagement

To examine the effect of first re-engagement on subsequent re-engagement we estimate a probit model on the sample on all early school leavers, regardless of whether they re-engaged prior to HILDA. From the results in Table 7 (first two columns), we can see that re-engaging for the first time increases the probability of re-engaging again in the future — those who complete are 30 percentage points more likely to re-engage in the future and those who dropout are still 24 percentage points more likely to re-engage in the future. The 6 percentage point higher probability of re-engaging for those who complete their first re-engagement is estimated to be significant at 5 percent (p-value is 0.017). These results underline the importance of the first re-engagement, especially a successful first re-engagement, as a stepping stone to further qualification acquisition.

6. Completion of qualifications among early school leavers

Having previously considered the re-engagement in education of early school leavers, we now proceed to examine whether or not these re-engagements were ultimately successful. In particular, we consider whether these early school leavers went on to complete the courses in which they enrolled.[16] To analyse completions we consider the completion rates by qualification level and estimate multivariate models to identify the factors which affect the likelihood that an early school leaver who re-engages in education will actually complete the course. Given the available data, however, we are unable to explicitly examine the arrangements under which individuals undertake these courses (i.e., study full-time or part-time, work concurrently or not, etc) and whether these arrangements affect the likelihood of course completion. We can not identify these factors as it is often difficult to determine in HILDA exactly when each individual was enrolled in the course, since many enrolments are identified as having occurred 'since the time of the last interview'. For such enrolments, we do not have detailed information on the individual's situation at the time corresponding to their enrolment. In our multivariate analyses, however, we do attempt to overcome these data limitations by using lagged explanatory variables to proxy the effects of the individual's situation (e.g. employment and financial) on the likelihood of them completing.

6.1 Course completion rates

Recall from Table 6 in Section 5.1, the majority of early school leavers who re-engage in education do so through the VET system in courses which produce a Certificate I to Certificate IV level qualification. This pattern of re-engaging through the VET system is further pronounced when we consider early school leavers re-engaging for the first time. Bearing in mind the sample sizes in Table 6, we present the completion rates by qualification level in Table 8. In this analysis we once again distinguish between enrolments which are the first re-engagement in education for the individual and those which are subsequent re-

[16] As previously mentioned, a limitation of this study is our implicit assumption that a re-engagement in education was only "successful" if the course was completed. In actuality this need not be the case, as individuals may have intended from the outset to only complete a specific module of the course rather than complete the entire course. Thus, such an individual would deem their re-engagement in education as "successful" if they achieved this, whereas we would not. We are forced to make this implicit assumption due to the constraints of the data, whereby individuals' intentions upon enrolment in a course are not captured.

engagements. It should be noted, however, that enrolments with an 'unknown' completion status are excluded from the analysis in Table 8.[17]

Table 8: Completion rates of courses by time since left full-time education and whether first re-engagement in education – Early school leavers who first re-engage during HILDA

Duration of time	First re-engagement in education	Subsequent re-engagements in education	*Proportion with subsequent re-engagements*
Less than 1 year	32.3	50.0	*6.5*
1 – 2 years	33.7	53.5	*42.6*
2 – 5 years	32.9	48.5	*87.2*
5 – 10 years	44.4	44.4	*83.3*
10 – 20 years	41.6	61.9	*41.6*
20 – 30 years	46.7	61.7	*39.2*
30 or more years	51.4	65.7	*33.3*
Overall	40.7	54.9	*43.8*
Sample size (N)	653	286	*653*

Note: These completion rates do not include individuals with an 'unknown' completion status (i.e., individuals with 'unknown' completion status do not appear in the denominator of the calculation). Further individuals are omitted because we can not calculate the duration of time since they left full-time education (due to missing information regarding the age they left school).

In Table 8 we observe that completion rates among early school leavers are generally rather low, with an overall completion rate of around only 45 per cent. The completion rates are highest among enrolments in courses in the VET system, particularly for Certificate I to Certificate III level qualifications. As mentioned above, these are also the courses in which early school leavers are most likely to enroll. Thus, it appears that enrolment in the VET system seems the most appropriate, and ultimately successful, route to re-engaging early school leavers in education.

Another interesting result in Table 8, which somewhat confirms our previous expectation that first re-engagements are likely to be associated with additional barriers for individuals, is that the completion rates are lower for first re-engagements compared to subsequent re-engagements. Overall the completion rate for a first re-engagement is around 40 per cent, compared to a rate of 47 per cent for subsequent re-engagements. This pattern of lower completion rates for first re-engagements exists across almost all qualification levels, with the

[17] Refer to Section 2.2 for discussion regarding enrolments with an 'unknown' completion status. Also, see Appendix Table A2 for an analysis where individuals with 'unknown' completion status are included in the calculation of the completion rates as non-completers. As expected, this analysis shows that including such cases merely serves to lower the completion rates across all qualification levels.

anomalous case of a higher completion rate for first re-engagements in Postgraduate degrees the result of small sample size and possibly measurement error.

From the results in Table 8, along with sample sizes on enrolment in Table 6, we can conclude that the early school leavers who re-engage in education are most likely to complete VET qualifications (Certificate level qualifications). There are, however, still significant numbers of early school leavers completing higher level qualifications (e.g. Diplomas, Degrees and higher), though this is more common amongst the early school leavers who had previously re-engaged in education.

6.2 Multivariate analysis

Descriptive statistics presented above show that early school leavers have a low rate of completion once they re-engage, which suggests that it is important to focus on factors that affect completion as well as re-engagement. Similar to examining re-engagements, it is important to adopt a multivariate framework to gauge a more accurate picture of the isolated effects of various factors.

We examine completion of first re-engagement separately from all re-engagements in order to examine whether there are issues related to first re-engagement that may not be related to all re-engagements and vice versa. For example, it is pertinent to examine what effect a successful first re-engagement has on the success of subsequent re-engagements of early school leavers.

6.2.1 Factors included in the model

As for the re-engagement model, we deploy the human capital investment model to explain completion, which assumes that individuals assess the discounted future benefits and costs of continuing with their studies as they progress. If the costs outweigh the benefits at some point along the way, then early school leavers are assumed to dropout of the course. Since we do not have information on the time of dropout we cannot examine at which point during the course the costs outweigh the benefits. Given we once again use the human capital model to assess completion, many of the variables that we include in the re-engagement equation are also included in the completion models (refer to Section 5.2.1 for a discussion of these variables).

6.2.2 Model results

The results presented in Table 9 are marginal effects calculated for an early school leaver with average characteristics and are accompanied by t-statistics (see section 5.2.2 for an explanation). From a brief consideration of the marginal effects of the completion models in Table 9, we can see that compared to those estimated for re-engagement, their magnitude (for some variables in particular) are much larger. This does not suggest that the completion model is in any way superior, only that there is much more variability in the rates of completion than the rates of re-engagement. A point of note is that because there are fewer first-time re-engagements observed (805 compared to 3059 all re-engagements), the marginal effects from this model (II) will not be as robust as the results from the all re-engagement model (I) (i.e., will be associated with lower t-statistics).

First re-engagement

While the results for first re-engagement strongly support the human capital model, the results for completion do not (model II) – hourly wage rate, wealth and employment status are all insignificant (although being unemployed for less than 12 months is on the cusp of significance) and the effect of time since left school is strongly positive.[18] Compared to an early school leaver who re-engaged for the first time in the year after leaving school, those who re-engaged for the first time 1 to 5 years later are 22 percentage points more likely to complete their studies. Similarly, those who re-engaged for the first time 5 to 10 years after leaving school are estimated to be around 26 percentage points more likely to complete their studies than those who re-engaged in their first year after leaving. This result suggests that while they may be motivated to re-engage soon after leaving school, they are less likely to succeed compared to those who delay their re-engagement.

There are several explanations as to why those who re-engage early are less successful. First, factors that lead youth to exit school, such as slow personal development, may still be present soon after leaving school. Second, youth who dropout of school may not have a clear career direction, so that they may have trouble finding a course that will lead to a fulfilling career. On the other hand, those who re-engage later may have tried a range of different jobs and decided upon a worthwhile career path with an appropriate training course. Third, those who re-engage straight after leaving school may be entering apprenticeships (there is no

[18] The (log of) hourly wage rate from previous year was included in an alternative specification of the model, but was found to be insignificant. As a result, it was removed from the model for the sake of parsimony.

information on this in HILDA) which experienced high demand from the mining boom. Hence, many youth may have opted out of their apprenticeship in favour of the lure of higher wages. The question of why *early* first-time re-engagers are less likely to complete is an issue to be examined in more depth in the future study of youth.

Table 9: Probit model results for the probability of course completion – Early school leavers who re-engaged in education (enrolled in a course)

Explanatory variables	(I) All re-engagements in education		(II) First re-engagements in education	
	marginal effect	t-stat	marginal effect	t-stat
Gender (Reference: Male)				
Female	0.074**	2.12	0.080	1.28
Time since left school (Reference: 1 year or less)				
1 – 5 years	0.182***	3.06	0.217***	2.80
5 – 10 years	0.198***	3.07	0.256**	2.34
10 – 20 years	0.231***	3.81	0.224**	2.16
20 – 30 years	0.249***	3.99	0.197*	1.75
More than 30 years	0.277***	4.23	0.266*	1.95
Ethnicity (Reference: Australian-born)				
Migrant: ESB	0.001	0.02	0.118	1.10
Migrant: NESB	-0.023	-0.53	0.095	0.88
Marital status (Reference: Single)				
Married or De facto	0.032	1.28	0.030	0.52
Disability status (Reference: No disability)				
Has a disability	-0.056**	-2.18	-0.087	-1.57
Highest year of school completed (Reference: Primary school or less)				
Year 11	0.153	1.01	0.091	0.31
Year 10	0.185	1.26	0.063	0.21
Year 7 – Year 9	0.183	1.22	0.091	0.30
State of residence (Reference: New South Wales)				
Victoria	-0.009	-0.28	-0.061	-0.98
Queensland	0.004	0.15	-0.032	-0.51
South Australia	-0.009	-0.25	-0.028	-0.37
Western Australia	-0.019	-0.49	-0.015	-0.19
Tasmania	-0.124**	-2.25	-0.078	-0.69
A.C.T or N.T	-0.003	-0.04	0.027	0.15
Presence of children (Reference: No children)				
Youngest child aged 0 – 4 years	0.039	0.83	0.050	0.41
Youngest child aged 5 – 11 years	0.050	0.99	0.108	0.84
Youngest child aged 12 – 18 years	0.061	0.99	-0.022	-0.10
Youngest child aged 19 years or older	0.062	0.89	0.267	1.51
Female x Youngest child aged 0 – 4 years	-0.030	-0.47	-0.006	-0.05
Female x Youngest child aged 5 – 11 years	0.049	0.78	0.168	1.14
Female x Youngest child aged 12 – 18 years	-0.025	-0.36	0.068	0.31
Female x Youngest child aged 19 years or older	-0.054	-0.77	-0.166	-1.21
Prior re-engagements in education (Reference: Current course is first re-engagement in education)				
Completed first re-engagement during HILDA	0.058	0.85	-	-
Failed first re-engagement during HILDA	0.072	1.58	-	-
Re-engaged prior to HILDA	-0.002	-0.08	-	-

Continued over page

Table 9 Continued

	(I) All re-engagements in education		(II) First re-engagements in education	
	marginal effect	t-stat	marginal effect	t-stat
Qualification level of current course (Reference: Certificate I)				
Postgraduate degree	-0.237***	-3.67	0.062	0.18
Graduate diploma or Graduate certificate	-0.157**	-2.47	-0.048	-0.19
Bachelor degree	-0.062	-1.13	0.076	0.59
Advanced diploma, Associate degree or Diploma	-0.234***	-6.20	-0.217***	-2.77
Certificate IV	-0.140***	-3.51	-0.133	-1.57
Certificate III	-0.032	-0.82	0.075	1.10
Certificate II	-0.022	-0.51	0.055	0.70
Certificate unknown level	-0.115***	-2.89	-0.060	-0.78
Lower level or unknown	-0.348***	-9.46	-0.343***	-6.03
Proportion of time since leaving F-T education spent working (lagged)	0.152***	2.96	0.274***	2.88
Not financially constrained – Able to raise $2000 (lagged)	0.030	1.10	0.027	0.50
Did not complete HILDA SCQ (i.e. no response for financial constraint question)	0.000	0.01	-0.198***	-2.58
First observation (i.e. no lagged values available)	-0.174**	-2.35	-0.070	-0.51
Lagged employment status (Reference: Full-time employed)				
Part-time employed	-0.033	-1.08	-0.091	-1.52
Unemployed for 12 months or more	0.002	0.03	0.050	0.36
Unemployed for less than 12 months	0.103*	1.95	0.154	1.49
Not in labour force	0.001	0.03	0.024	0.33
Quintiles for SEIFA index of relative socio-economic disadvantage (Reference: 5th quintile (Highest))				
1st quintile (Lowest)	-0.052	-1.35	-0.077	-0.92
2nd quintile	-0.111***	-3.01	-0.066	-0.80
3rd quintile	-0.104***	-2.82	-0.130*	-1.66
4th quintile	-0.008	-0.22	-0.064	-0.76
Time period (Reference: Wave 2 (2002))				
Wave 1 (2001)	0.084	1.14	0.024	0.19
Wave 3 (2003)	0.043	1.24	0.002	0.03
Wave 4 (2004)	0.073**	2.05	0.069	0.90
Wave 5 (2005)	0.010	0.29	-0.048	-0.68
Wave 6 (2006)	0.060	1.50	0.127	1.54
Wave 7 (2007)	0.312***	6.84	0.549***	6.47
Log likelihood	-1,557.01		-348.79	
Pseudo R-squared	0.1148		0.1771	
Sample size (N)	2,555		629	

Notes: *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels respectively. Enrolments with an 'unknown' completion status have been removed from the estimation (see Appendix Table A3 for results which include these 'unknown' cases).

An interesting result is that the level of the first re-engagement makes a significant difference to the likelihood of completion. Compared to those who attempt a Certificate I qualification, those who re-engage for the first time in Advanced Diploma/Associated Degree/Diploma are estimated to be 21 percentage points less likely to complete their course. One explanation is

that these courses are typically longer in duration than Certificate I and hence the opportunity cost of completing the course is much higher. Another explanation is that early school leavers may be sorted into courses that they are not properly equipped to undertake. Around half of all early school leavers re-engage in courses level III or above, which may be too high given that Certificate II is commonly regarded as Year 12 equivalent (for example, the COAG Compact with Youth treat the two as equivalent).

All re-engagement

Results for all re-engagements (model I) do not support the hypothesis that the first re-engagement is any more difficult to complete than subsequent re-engagements. Those who have enrolled in the past are estimated to be no more likely to complete than those who re-engage for the first time. We also find that the outcome of the first re-engagement is estimated to have no significant effect on the chances of completing subsequent re-engagements (p-value of 0.84).

7. Conclusions and policy implications

The objective of this research was to examine the factors that lead early school leavers to acquire further education qualifications. We examined both the factors that lead to initial re-engagement and factors that affect completion. Understanding the motivations and barriers for further education for those most vulnerable in the labour market is important first step in being able to address the broader issue of labour market participation, skill shortages and social disadvantage. We use longitudinal data from the Household Income and Labour Dynamics Australia (HILDA) (2001–07) survey to examine this issue, together with a multivariate modelling framework. The main analysis on re-engagement of early school leavers involved taking those in the sample who had not previously re-engaged and observe their patterns of re-engagement and completion over the 7 years. From tests conducted on this sample, we can conclude that it is representative of all early school leavers who have previously no re-engaged in any post-school study.

Given that early school leavers are some of the most disadvantaged in the labour market, it is unsurprising that the re-engagement results in this paper support the investment model of education — that they return to improve their future labour market outcomes. All else being equal, among early school leavers, those who are soon out of school (and have a long payback period on their investment), are out of work, are low paid or have accumulated little wealth are the most likely to re-engage in education. While the chances of returning to study are greater for those who have recently left school, we note that the chances of re-engaging do not diminish until after 5 years out from school and after which the chances fall steadily not dramatically. We find no evidence that non-pecuniary motivations, such as improving job satisfaction or security of tenure is important.

In contrast to re-engagement, we find that completion of first re-engagement cannot be explained by the investment model of education — wage rate, wealth and employment status are insignificant, while those who first re-engage shortly after leaving school are less likely to complete than those who re-engage later. There are several possible explanations for the estimated advantage of those who re-engage at a later stage. Those who delay re-engagement may have more time in the workforce to develop personal or ‘soft’ skills such as time management, problem solving and inter-personal skills that may help them complete a course in the future. Also, those who return to education later may have found post-school

employment and had opportunities to try various jobs and find a suitable career path, so that finding a course that matches their career preferences may help sustain them to the end. It is possible that many youth who re-engage soon after school, especially those who re-engage in their first year out, may have difficulty finding work and simply enrol in education to fill in their time while continuing to look for work.

Another important factor in completion of first re-engagement is the level of qualification that early school leavers enrol in. We find that those who enrol in certificate level IV, advanced diploma/associate diploma/diploma or a bachelor degree (around 22 per cent of all first time re-engagements) are less likely to complete than those who enrol in certificate level I. Given that certificate level II is commonly referred to as being equivalent to Year 12 completion, it appears that some early school leavers are not properly sorted into courses that meet their existing skill development needs. Although finding the right level appears to matter, we find no evidence that those who complete higher levels of schooling are more likely to complete.

Results presented in this paper show that first re-engagement, especially successful first re-engagement, is a stepping stone to further qualification acquisition.

These results should be considered in the context under which they were generated. While HILDA is a rich dataset and we were able to control for the influences of many factors, with the data available we cannot eliminate the possibility that some of these results may be influenced by the failure to control for unobserved personal factors (such as preferences and academic ability) or unobserved circumstances (such as whether or not the training was part of an apprenticeship). For example, it is possible that the higher rates of engagement among those who had previously re-engaged may be because those who have never previously re-engaged have inferior ability and are less likely to engage. Standard econometric approaches for controlling for these unobserved effects, such as fixed effects estimation, could not be carried out because such approaches require repeated re-engagements. While there are some repeated re-engagements in HILDA, there are too few to allow for robust estimation using these approaches.[19] We aim to address these issues in more detail in a future study using LSAY, which has more information on the characteristics and circumstances of youth.

[19] There are also too few observations in other longitudinal datasets, such as LSAY.

7.1 Policy implications

In light of government priorities to encourage engagement in education, there are some important implications for policy design from results presented in this paper. First, given that the chances of re-engagement do not deteriorate rapidly with time after exit from school and the chances of completion improve, government measures to improve re-engagement should not focus purely on early re-engagement.

Second, to increase the effectiveness of measures aimed at re-engaging youth, such as the Australian governments Earn or Learn scheme, more research is needed into the reasons underlying the high failure rate of early re-engagers. If for example, the high failure rate is because early school leavers have entered study before establishing a post-study career plan, suitable responses may include extending career counseling services, encouraging vocational education while at school and/or directing students to ‘mixed field’ courses of study where they may be exposed to a range of possible career options.

8. References

ARULAMPALAM, W., and BOOTH, A. (1998): "Training and Labour Market Flexibility: Is There a Trade-Off?," *British Journal of Industrial Relations*, 36, 521-36.

BAKER, M., and WOODEN, M. (1992): "Training in the Australian Labour Market: Evidence from the How Workers Get Their Training Survey," *Australian Bulletin of Labour*, 18, 25-45.

BECKER, G. (1962): "Investment in Human Capital: A Theoretical Analysis," *Journal of Political Economy*, 70, 9-49.

BECKER, G., and MULLIGAN, C. (1997): "The Endogenous Determination of Time Preference," *The Quarterly Journal of Economics*, 112, 729-758.

BOOTH, A. (1991): "Formal Training: Who Receives It and What Is It Worth?," *Oxford Bulletin of Economics and Statistics*, 53, 281-93.

COMMONWEALTH OF AUSTRALIA (2002): *Intergenerational Report 2002-03*, Budget Paper 5, Canberra: Commonwealth of Australia.

CURTIS, D., and MCMILLAN, J. (2008): *School Non-completers: Profiles and Initial Destinations*, LSAY Research Report 54, Melbourne: Australian Council for Educational Research (ACER).

DUNCAN, G. (1976): "Earnings Functions and Nonpecuniary Benefits," *Journal of Human Resources*, 11, 462-83.

FISHER, I. (1930): *The Theory of Interest*. New York: Macmillan.

GILLARD, J. (2008): Vet and the Education Revolution, http://www.alp.org.au/media/0808/speedewr290.php, accessed June 21, 2009.

GUILKEY, D., and MURPHY, J. (1993): "Estimation and Testing in the Random Effects Probit Model," *Journal of Econometrics*, 59, 301-317.

HAUSMAN, J. (1979): "Individual Discount Rates and the Purchase and Utilization of Energy-Using Durables" The *Bell Journal of Economics*, 10, 33-54.

HECKMAN, J. (1979): "Sample Selection Bias as a Specification Error", Econometrica, 47(1), 153-61.

HECKMAN, J., and RUBINSTEIN, Y. (2001): "The Importance of Noncognitive Skills: Lessons from the Ged Testing Program," *American Economic Review*, 91, 145-49.

HILL, L. and JEPSEN, C. (2007): "Positive outcomes from poor starts: Predictors of dropping back in", *Economics of Education Review*, 26, 588-603.

JENKINS, S. (1995): "Easy Estimation Methods for Discrete-Time Duration Models," *Oxford Bulletin of Economics and Statistics*, 57, 129-38.

LAWRENCE, E. (1991): "Poverty and the Rate of Time Preference: Evidence from Panel Data," *The Journal of Political Economy*, 99, 54-77.

LONG, M., and SHAH, C. (2008): *Private Returns to Vocational Education and Training Qualifications*, Adelaide: NCVER.

MAANI, S., and KALB, G. (2007): "Academic Performance, Childhood Economic Resources, and the Choice to Leave School at Age 16," *Economics of Education Review*, 26, 361-74.

NATIONAL COUNCIL OF VOCATIONAL EDUCATION AND TRAINING (NCVER), (2006): *Australian Vocational Education and Training Statistics; Students and Courses, 2005*, Adelaide: NCVER.

OECD (2008): *OECD Economic Survey of Australia*, Paris: OECD.

PRODUCTIVITY COMMISSION (2006): *Potential Benefits of the National Reform Agenda*, Canberra: Productivity Commission.

WOODEN, M., and N. WATSON (2007) "The HILDA Survey and its Contributions to Economic and Social Research (So Far)", *The Economic Record*, 83, 208-231.

9. Appendix

Appendix Table A1: Enrolments in courses by qualification level and year commenced – Early school leavers

Qualification level	Year commenced							Total
	2001	2002	2003	2004	2005	2006	2007	
Postgraduate degree	22	8	6	6	5	7	8	62
Graduate diploma or Graduate certificate	19	14	10	8	13	6	15	85
Bachelor degree	54	50	22	15	30	31	25	227
Advanced diploma, Associate degree or Diploma	82	45	41	49	46	54	49	366
Certificate IV	48	72	65	57	79	53	74	448
Certificate III	98	109	120	108	145	114	97	791
Certificate II	33	63	77	76	68	46	60	423
Certificate I	18	65	51	50	52	46	21	303
Certificate unknown level	28	107	62	60	82	47	45	431
Year 12 equivalent	12	1	2	1	1	1	0	18
Lower High school equivalent	10	1	0	2	1	4	0	18
Unknown level	52	11	9	19	7	5	20	123
Total	476	546	465	451	529	414	414	3,295

Appendix Table A2: Completion rates of courses by qualification level and whether first re-engagement in education – Early school leavers (%)

Qualification level	First re-engagement in education	Subsequent re-engagements in education	All
Postgraduate degree	50.0	20.0	21.0
Graduate diploma or Graduate certificate	20.0	35.0	34.1
Bachelor degree	16.7	28.6	25.1
Advanced diploma, Associate degree or Diploma	19.7	27.9	26.5
Certificate IV	25.0	40.4	38.0
Certificate III	34.8	45.0	41.3
Certificate II	38.5	49.0	45.6
Certificate I	41.0	56.1	50.8
Certificate unknown level	34.6	42.6	40.6
Year 12 equivalent	0.0	0.0	0.0
Lower High school equivalent	0.0	14.3	5.6
Unknown level	8.8	15.7	13.8
Overall	31.0	39.8	37.4
Sample size (N)	897	2,398	3,295

Note: These completion rates assume individuals with 'unknown' completion status are non-completers (i.e., individuals with 'unknown' completion status appear in the denominator of calculation).

Appendix Table A3: Probit model results for the probability of course completion – Early school leavers who re-engaged in education (enrolled in a course)

Explanatory variables	(I) All re-engagements in education		(II) First re-engagements in education	
	marginal effect	t-stat	marginal effect	t-stat
Gender (Reference: Male)				
Female	0.043	1.43	0.053	1.08
Time since left school (Reference: 1 year or less)				
1 – 5 years	0.164***	3.02	0.189***	2.92
5 – 10 years	0.211***	3.48	0.263***	2.62
10 – 20 years	0.252***	4.47	0.276***	2.89
20 – 30 years	0.276***	4.88	0.199**	1.99
More than 30 years	0.328***	5.47	0.262**	2.14
Ethnicity (Reference: Australian-born)				
Migrant: ESB	-0.013	-0.39	0.069	0.81
Migrant: NESB	-0.012	-0.32	0.092	1.05
Marital status (Reference: Single)				
Married or De facto	0.022	1.03	0.010	0.21
Disability status (Reference: No disability)				
Has a disability	-0.046**	-2.04	-0.035	-0.79
Highest year of school completed (Reference: Primary school or less)				
Year 11	0.173	1.26	0.156	0.65
Year 10	0.193	1.50	0.115	0.49
Year 7 – Year 9	0.193	1.35	0.160	0.60
State of residence (Reference: New South Wales)				
Victoria	-0.008	-0.30	-0.030	-0.60
Queensland	0.009	0.34	-0.011	-0.23
South Australia	0.012	0.36	-0.002	-0.04
Western Australia	0.019	0.54	0.015	0.25
Tasmania	-0.116***	-2.57	-0.038	-0.42
A.C.T or N.T	-0.016	-0.24	0.115	0.75
Presence of children (Reference: No children)				
Youngest child aged 0 – 4 years	0.059	1.39	0.043	0.42
Youngest child aged 5 – 11 years	0.014	0.32	0.139	1.18
Youngest child aged 12 – 18 years	0.020	0.37	0.016	0.10
Youngest child aged 19 years or older	0.011	0.19	0.141	0.91
Female x Youngest child aged 0 – 4 years	-0.036	-0.65	-0.017	-0.16
Female x Youngest child aged 5 – 11 years	0.063	1.11	0.042	0.35
Female x Youngest child aged 12 – 18 years	0.025	0.41	0.057	0.34
Female x Youngest child aged 19 years or older	-0.028	-0.46	-0.062	-0.53
Prior re-engagements in education (Reference: Current course is first re-engagement in education)				
Completed first re-engagement during HILDA	0.121**	2.02	-	-
Failed first re-engagement during HILDA	0.075*	1.87	-	-
Re-engaged prior to HILDA	0.023	0.93	-	-

Continued over page

Table A.3 continued

	(I) All re-engagements in education		(II) First re-engagements in education	
	marginal effect	t-stat	marginal effect	t-stat
Qualification level of current course (Reference: Certificate I)				
Postgraduate degree	-0.252***	-6.51	0.168	0.47
Graduate diploma or Graduate certificate	-0.180***	-4.00	-0.067	-0.33
Bachelor degree	-0.168***	-4.59	-0.140**	-2.32
Advanced diploma, Associate degree or Diploma	-0.223***	-7.69	-0.186***	-3.68
Certificate IV	-0.133***	-4.03	-0.119**	-2.02
Certificate III	-0.053	-1.58	0.030	0.53
Certificate II	-0.021	-0.57	0.032	0.49
Certificate unknown level	-0.109***	-3.25	-0.032	-0.51
Lower level or unknown	-0.297***	-11.04	-0.263***	-7.27
Proportion of time since leaving F-T education spent working (lagged)	0.128***	2.86	0.205***	2.70
Not financially constrained – Able to raise $2000 (lagged)	0.034	1.44	0.031	0.71
Did not complete HILDA SCQ (i.e. no response for financial constraint question)	-0.003	-0.08	-0.115*	-1.85
First observation (i.e. no lagged values available)	-0.230***	-4.36	-0.136	-1.49
Lagged employment status (Reference: Full-time employed)				
Part-time employed	-0.030	-1.16	-0.048	-1.02
Unemployed for 12 months or more	-0.001	-0.02	0.056	0.46
Unemployed for less than 12 months	0.089*	1.86	0.148	1.64
Not in labour force	0.010	0.32	0.025	0.42
Quintiles for SEIFA index of relative socio-economic disadvantage (Reference: 5th quintile (Highest))				
1st quintile (Lowest)	-0.039	-1.19	-0.034	-0.52
2nd quintile	-0.074**	-2.33	-0.019	-0.29
3rd quintile	-0.079**	-2.51	-0.063	-1.02
4th quintile	0.007	0.21	-0.003	-0.04
Time period (Reference: Wave 2 (2002))				
Wave 1 (2001)	0.167***	2.56	0.111	1.02
Wave 3 (2003)	0.035	1.08	-0.022	-0.38
Wave 4 (2004)	0.044	1.32	0.014	0.23
Wave 5 (2005)	-0.013	-0.40	-0.062	-1.13
Wave 6 (2006)	-0.024	-0.70	0.013	0.21
Wave 7 (2007)	-0.122***	-3.93	-0.157***	-3.07
Log likelihood	-1,795.68		-419.18	
Pseudo R-squared	0.1140		0.1635	
Sample size (N)	3,059		805	

Notes: *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels respectively. Enrolments with an 'unknown' completion status are included in these models (assumed to be non-completions).