Final Report

Impact of Education and Training on Income Support recipients

Lixin Cai, Daniel Kuehnle, and Yi-Ping Tseng

Melbourne Institute of Applied Economic and Social Research

June 2010

THE UNIVERSITY OF MELBOURNE

MELBOURNE INSTITUTE
of Applied Economic and Social Research

Table of Contents

2

Executive Summary

In this report, we use data from the Longitudinal Pathways Survey (LPS) and the Research and Evaluation Dataset (RED) to:

- Examine income support recipients' patterns of participation in training and study;
- Analyse the factors that affect income support recipients' participation in education and training;
- Estimate the effects of training participation on income support status and labour market outcomes.

This study is unique in the sense that it combines administrative data (RED) with survey data on income support recipients (LPS) and allows us to track income support recipients' experiences in terms of employment and training patterns over time, both when they are on and off income support. The LPS consists of three cohorts of income support recipients to represent the pre-reform, transitional, and post-reform periods of the Welfare-to-Work reforms. For reasons discussed in the report, this study uses only two LPS cohorts, these being the pre-reform and post-reforms samples, and supplements these with the RED to arrive at a rich dataset suitable for descriptive and regression-based analysis.

The LPS differentiates between short training and formal study, allowing us to analyse the patterns of participation for these separately. The modeling sample consists of around 45,450 observations (14,711 individuals) of which approximately 25 per cent undertook some form of short training or formal training during the six months prior to an interview. Of those individuals undertaking some form of training, about 56 per cent were involved only in formal study, about 35 per cent only in short training, and around 9 per cent in both. Once we analyse the participation patterns by income support payment types, the student type payments exhibit the largest rates as to be expected, and recipients of a Newstart Allowance (NSA) show the second highest participation rate. Those on a disability support pension and on any payment type other than student, NSA or parenting payments show the highest rates of non-participation.

Among those who participated in some form of short training, the largest group consisted of individuals involved in obtaining a licence (39 per cent) or on-the-job training (37 per cent). About 10 per cent of short trainings related to computing or new technologies, where as less

than 1 per cent was concerned with educational basics such as general numeracy or reading skills. Among those involved in formal study, over 50 per cent undertook TAFE or technical studies, about 19 per cent studies towards a degree, and around 12 per cent for an undergraduate certificate. For those not undertaking any form of training, 'ill health' and 'too busy/unsuitable hours' were the most frequently cited reasons for non-participation (22 per cent each), followed by a lack of interest and parenting responsibilities.

The results from our study indicate that the probability of engaging in some form of training is higher for women than men. Consistent with the prediction of human capital theory, younger people were more likely to participate in training or study. Individuals who already possessed a level of education higher than Year 10 were more likely to participate in training or study compared to people with Year 10 or less education. There is some evidence that individuals on NSA and PPS (parenting payment partnered) are significantly more likely to do some form of training when compared to people not on benefits. The most important factors that reduce the probability of engaging in study or training include an individual's poor health and the presence of children under the age of 3. However, the effect of child caring responsibility on training participation only applies to mothers and given that the barrier disappears as the child gets older (above age 3), we believe that it should not be of great policy concern.

In terms of the effects of training on income support, short training was found to have a significant effect in reducing income support receipt. Although our results showed the effects of formal study to be small and statistically insignificant, this is likely to be caused by the fact that most participants had not finished their studies at the time of the interview. In terms of labour market outcomes, both short and formal training were found to have a positive effect on the incidence of work (i.e. working at the time of the interview or having worked in the six months prior to the interview). For example, individuals who completed a short course were 11 percentage points more likely to have a full-time job than those who did not participate in any training twelve months after training commencement. For other labour market outcomes, such as working hours, hourly wages and weekly earnings, the impacts were generally insignificant for both forms of training.

The results need to be interpreted with care, especially the conclusion that formal study has no impact on labour market outcomes other than employment. This finding is likely to be caused

by the short length of our current data set. Further research is needed in this area and will require longer panel data that follows individuals until after they have finished their formal studies in order to evaluate the full effects of formal study.

1. Introduction

The two main objectives of the project are (1) to examine income support recipients' patterns of participation in education and training and (2) to estimate the effects of such participation on their labour market outcomes (e.g. employment and income support receipt patterns and earnings). It will also investigate whether and to what extent the effects vary across different types of education and training.

Specifically, the project seeks to answer the following questions:

- What are the patterns of skill acquisition among income support recipients, i.e. what types of education and training do they undertake?

- What factors affect income support recipients' participation in education and training, as well as the types of education and training they choose to undertake?

- What are the impacts of education and training on employment outcomes, earnings, exit from income support and re-entry into income support payments? Whether and to what extent do the effects differ across different types of education and training? Do the effects differ for recipients of different payment types?[1]

One of the main reasons for individuals to be on income support and/or unemployed is that they lack the skills relevant to employment, due either to low education or to skills having been outdated. The Federal Government recognises the importance of skill upgrading in the process of successful welfare-to-work transitions. However, currently there is little empirical evidence on the effectiveness of various training programs (or courses) in terms of their effects on labour market outcomes, especially in the Australian context. Most existing Australian studies on the impact of education and training focus on the average effects for the general population instead of the effects on income support recipients, or those who have just exited from income support (Ryan 2002; Long and Shah 2008; Booth and Katic 2008). Since it is well recognised in the literature that the impacts of education and training are heterogeneous across individuals (Blundell et al 2003), we argue that it is not appropriate to generalise the estimates from the general population to this target group. By comparing the effects of different types of education and training for income support recipients, this project will provide information for policy development on education and/or training linked to employment services.

---

[1] The question whether the effects of training differ for recipients of different payment types is in the original project description but cannot examined due to small sample size.

This project extends an earlier study undertaken by the Melbourne Institute (Cai et al. 2008) which examined the role of human capital in determining the patterns of employment and income support receipt. This study did not, however, investigate the impact of training undertaken by income support recipients.

The current study combines descriptive analysis with multivariate modelling to seek answers to the questions listed above. It is structured as follows: section two reviews both the Australian and international literature on the impact of various training programs. Section three describes the data and sample selection rules employed in this study. Section four presents descriptive statistics on the patterns of education and training participation by individuals' income support receipt status. Section five presents the results of multivariate analysis on individuals' participation in short training and formal study. In particular, the participation decision of the two types of training/education is jointly modelled using a bivariate probit model. In section six, the impacts of short training and formal study are estimated separately using matching methods. A brief conclusion is provided in section seven.

2. Literature review

Australian Studies

Using data that combine administrative data from the DEWR and DEST with those data collected from a specially designed survey, Rahmani, Crosier and Pollack (2002) evaluate the effects of the Literacy and Numeracy Training (LANT) Program on unemployed job seekers' employment status, earnings and income support status. They find no evidence that participating in the program improves job seekers' employment outcomes in terms of full-time employment and earnings. In fact, they report that those who participated in the program longer or completed the program had a lower probability of full-time employment than those eligible job seekers who did not participate in the program or who withdrew at a very early stage from the program. In terms of income support receipt status, it is found that program participants had a similar probability of leaving income support than non-participants, and that those who stayed longer on the program were less likely to leave income support.

Stromback and Dockery (2000) examine the effect of labour market programs on the transition between unemployment and employment states. It is found that participation in any of the programs examined in the study increases the hazard rate of exiting unemployment and reduces the hazard rate of exiting employment. When they further classify the programs into four groups (training; employment placement; job search assistance; and wage subsidy), they

find that a wage subsidy has the largest effect on both the transition rate, which is followed by employment placement; the effect of training occupies the third position. When the destinations of transition out of unemployment are further divided into employment and out of the labour force, their results show that participation in any of the programs has a positive effect on the hazard rate to both destinations.

Using aggregate data for the period 1989 to 1995, Leeves (2000) studies the effects of the number of labour market program commencements on the rate of outflows from unemployment. It is found that labour market program commencements have no effect on the outflow rate for the short-term unemployed (defined as unemployment of less than one year) for both males and females, but a significant effect exists for the long-term unemployed (i.e. unemployment of more than one year), and that the effect is larger for women than for men. Unlike Stromback and Dockery (2000), the effect of a particular program or a subgroup of programs is not separately examined in the study.

DEWR (2006) evaluates the effects of components of the Active Participation Model (APM), including Job Search Training, Customised Assistance, Work for the Dole and Mutual Obligation, on job seekers' employment outcomes one year after program commencement. The study uses a simple matching method to define a control group and estimates an employment model for the control group. The employment model is then applied to the treatment group to predict their employment outcomes. The difference between the observed and predicted outcomes of the treatment group is interpreted as "net impacts" of program participation. The results indicate that each of the four program component has a positive net impact on the employment probability. The effects range from eight to eleven percentage points among the components. It is also found that participation in the programs helps to maintain employment obtained after the participation.

Richardson (2002) examines the effects of mutual obligations activity requirements on the hazard rate of leaving unemployment benefits by young unemployed people. The set of activities, which include education and training, are evaluated as a whole, and it is found that the additional activity requirements have a moderate positive effect on the hazard rate of leaving unemployment benefits . However, this effect is largely a "threat effect", in the sense that it is the requirement of additional activity rather than undertaking the activity itself that has an effect on the hazard rate.

The studies reviewed above all examine the effect of labour market programs, including training, on the probability of subsequently leaving unemployment, which may or may not

lead to employment. There are also studies that examine the effect of training and/or education on labour market outcomes of the working age population, such as Booth and Katic (2008) and Cai et al. (2008).

Booth and Katic (2008) use waves 3 to 6 of the Household, Income and Labour Dynamics in Australia (HILDA) survey to examine the effects of on-the-job-training on wages of full-time male workers in the private sector. They find that general training undertaken with the previous employer has a significant effect on men's hourly wages, although the cost of the training was borne by the employer, while similar training undertaken with the current employer has no effects on workers' current wages.

International literature

There is a large body of international literature evaluating various aspects of active labour market programs in different countries. Heckman, LaLonde and Smith (1999) provide a comprehensive review of the U.S. studies. Martin and Grubb (2001) and the Organisation for Economic Cooperation and Development (OECD) review the studies from all OECD countries (OECD 2005). In addition, Kluve (2006) performs a meta-analysis to summarise the effectiveness of different type of European active labour market programs. Appendix C provides a list that includes papers which are included in Kluve's analyses with additions of Australian studies and more recent international publications [2]. To preserve space, here we only summarise the main results.

Since most training programs are targeted at unemployed job seekers, the exit rate from unemployment to employment is one of the frequently used outcome measures in the studies. In general it is found that training programs - although they may not refer to the same thing in different studies - have a positive effect on the exit rate (Hujer et al. 2006; Arellano 2005; Crepon, Dejemeppe and Gurgand 2005; Cockx 2003; Zhang 2003; Richardson and van de Berg 2002). However, a few studies reach a different conclusion (e.g.Lechner and Wunsch 2006; Hujer et al. 2004; Gerfin and Lechner 2002). Some studies examine the probability of employment at certain points in time after training commencement and find mixed evidence (e.g. Rinne, Schneider and Uhlendorff 2007; Hardoy 2005; Andren and Andren 2002).

There are a number of studies that compare employment effects of different training types. Short and medium term training programs are often found to outperform long term training

---

[2] The list is based on the training related studies list in Kluve (2006) with additions of Australian studies and more recent international publications.

programs in terms of producing positive employment outcomes (e.g. Huber et al. 2009; Biewen et al. 2007; Fitzenberger and Speckesser 2007; Fitzenberger and Völter 2007; Fitzenberger et al. 2006a; Lechner et al. 2005a,b). When comparing practically oriented training programs with other form of training, Lechner et al. (2005a), Fitzenberger et al. (2006a), and Fitzenberger and Völter (2007) do not find that practical training programs as implemented in the 1990s in Germany produce better employment outcomes than other forms of training. In contrast, Biewen et al. (2007) do conclude that practical training programs are more effective than classroom-based training programs.

A few studies examine the effect of training programs on earnings of the former unemployed and produce ambiguous findings. Raaum, Torp and Zhang (2002) use Norwegian data and find that participation in training programs has a positive effect on earnings for those with recent labour market experience, but no effect for labour market entrants. Using Swedish data, Andren and Gustafsson (2002) find that participation in a training course increases earnings for the 1984-85 and 1987-88 unemployment cohorts, but find no effects on the 1990-91 cohort. When comparing the earnings effect of the Adult Education Initiative with the Labour Market Training programs on Swedish jobseekers, Stenberg (2007) finds that overall the latter program has a stronger positive effect than the former, although the difference is negligible for those aged 43-55.

3. Data

The main dataset for this project is the Longitudinal Pathways Survey (LPS). This is supplemented by the Research Evaluation Dataset (RED). The LPS tracks the experiences of income support (IS) recipients over time, including recipients who left income support. As a result, employment and income support receipt patterns can be derived from the data. This is the major advantage of the LPS data. In addition, the LPS contains information on education and training, the key variables for this project. The RED is used to obtain information on the income support history of individuals.

The LPS is designed to evaluate the effects of the "Welfare to Work" (WtW) reform policies introduced in early 2006. WtW is a package of initiatives aimed at increasing workforce participation of four groups of income support recipients: Parenting Payments (PP), Disability Support Pension (DSP), matured aged job seekers (MAJS), and very long-term unemployed

(VLTU).[3] The LPS consists of three cohorts of income support recipients to collect information for the pre-reform, post-reforms and transitional period of the reform. The population of the cohort 1 sample refers to all income support (IS) recipients of working age between 1 September 2005 and 28 February 2006, the period before WtW reform was implemented. The cohort 2 sample represents income support recipients who were granted an IS payment or who exited the IS system during the WtW reform transitional period (i.e. 1 March 2006 to 31 August 2006). The cohort 3 sample was drawn from the population of new entrants and exiters of IS payments in the period 1 September 2006 to 28 February 2007, which was after the reforms were implemented. Since the LPS was undertaken as part of an evaluation of the WtW initiative, the WtW target groups plus Income Support entry and exit status are used to stratify the samples. The cohort 1 sample was followed for five waves starting from May/June 2006 and ending in May/June 2008, with each wave interview being approximately six months apart. The interviews for cohort 2 and 3 started 18 months after cohort 1 and were followed for 4 and 3 waves, respectively. However, in this study we focus on the effects of training and education on various outcome measures for income support recipients, and do not attempt to evaluate the effect of WtW reforms.

For this study, only cohorts 1 and 3 were used. It was advised by the project sponsor that cohort 2 was unsuitable for the analysis. Since the cohort membership status is defined using income support status, some individuals may fit in the definition of multiple cohorts. For some reason, duplicates were created for individuals who fit in multiple cohorts. Since most of our analysis pools data from both cohort 1 and cohort 3, those duplicates were dropped. The numbers of observations that fit in the definition of each cohort by survey wave are presented in Table 1.

---

[3] For new PP recipients (i.e. receiving PP on and after 1 July 2006) the eligibility age of the youngest child was reduced from sixteen to six years for partnered parents, and to eight years for single parents. Partnered parents with a youngest child of six years or older and single parents with a youngest child eight years or older would typically be paid Newstart Allowances and subject to part-time participation requirements. Before WtW policy changes were introduced, one of the key criteria for DSP was that the person with a disability was unable to work for 30 hours or more per week. Under WtW (i.e. receiving DSP on and after 1 July 2006), this condition was reduced to 15 hours per week for new applicants. People who were able to work 15 hours or more would mostly be granted NSA (instead of DSP) and subject to part-time participation and mutual obligation requirements. Under WtW, mature job seekers (aged between 50 and 64 and in receipt of NSA) had to register with an employment service provider and were subject to the same job search requirements as younger job seekers. And those aged 50 to 54 were no longer able to meet their activity test requirements by doing voluntary work only. For very long-term unemployed, after a second period of intensive support customised assistance, the reforms required them to have a review with their job network member to determine their future service needs.

Table 1: Grouping of sample by cohort and wave

Group	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Total
(1) sampled in cohort 1 and fit in cohort 1 definition only	8,128	6,234	4,896	4,186	3,720	27,164
(2) fit in both cohorts 1 and 3 definition, sampled in both cohorts 1 and 3	59	59	59	46	43	266
(3) sampled in cohort 1 only and fit in definition of cohorts 1 and 3	695	695	695	582	498	3,165
(4) sampled in cohort 3 and fit in the definition of cohort 3 only	0	0	4,918	4,050	3,607	12,575
(5) sampled in cohort 2 and fit in definitions of cohorts 2 and 3	0	0	911	733	636	2,280
Total	8,882	6,988	12,233	10,225	9,045	47,373

Since the focus of this study is on training, we excluded individuals who reached the age pension age (63 for women and 65 for men) during the data observation period. Individuals who never received a non-student type IS payment up to June 2008 were also excluded.[4] We also excluded four individuals who had never been on income support before their first interview, as well as those under the age of 16 at the time of the first interview.

Our key variables of interest also posed certain problems and required us to exclude some individuals from the sample. The education variable forced us to drop 1,022 individuals (out of 15,955) whose highest level of education dropped during the observation period and for whom we were not able to impute a consistent value for education.[5] With regard to training, we had to exclude 217 individuals who either did not answer the training question (i.e. missing) or, in the case of formal education, if they subsequently denied undergoing formal training. The final sample consists of 14,711 individuals, having dropped 1,724 individuals from the total sample.

The data set only provides sampling weights for individuals who were sampled in cohort 1 or cohort 3 only. Therefore, we dropped those who were sampled in wave 2 from weighted statistics (Table 2 in the next section), but kept them for the rest of the analysis to maximize sample size. We decided not to use weights in most statistics for two reasons. First, the cohort 3 sample was drawn from the population of IS entrants and exiters only, while the population for cohort 1 included then current IS recipients (i.e. stock). The differences in the underlying

---

[4] An individual is considered to be on a student type income support payment if the person is in receipt of one of the following four benefit types: AUS, YAA, YAS, or ABY.

[5] See Appendix B for our imputation of education.

populations of the two cohorts make interpretation of weighted estimates difficult when the estimates are derived from combining the two cohorts. Secondly, the variables used to derive the weights will be included as explanatory variables in the multivariate analysis. As such, using weights will not benefit the estimates of the multivariate analysis, but will reduce the sample size significantly. Since the sample size is not very large, we would like to keep as many observations in the analysis as possible. The summary statistics of weighted and unweighted sample are provided in Appendix Table A2.

Two forms of training participation can be identified in the LPS: short training, referring to training that does not lead to a recognised certificate or qualification; and formal study or training, referring to study or training that leads to a formally recognised certificate or qualification. Formal study or training will be referred to as formal study from now on. In relation to short training, respondents were only asked whether they had completed a short training in the past six months (or since the last interview) and what type of short training it was, given they had completed one. It is impossible to identify incomplete short trainings from the data. Single and multiple short trainings within one period also cannot be distinguished.

In terms of formal study, similarly, very short incomplete study spells which commenced and ended at the same interview reference period were not recorded. However, for both short training and formal study, the exact timing of training occurred was unknown - we only know that it occurred in the previous six months. As a result, whether an individuals was on IS at the time of participating in training or study is only known for individuals who were on IS or who were off IS in the entire six month reference period. For those who were on IS only for part of the reference period, their IS status when they were doing training is unknown. Even though the training information is not perfect, it still provides useful information as long as the statistics are interpreted with care.

4. Patterns of training participation and barriers to participation

4.1. Patterns of training participation

Table 2 presents the participation rates in training, differentiated by the different training forms. For individuals in cohort 1, about a quarter of them undertook one of the two forms of training, although the rate varies across different waves. Individuals in Cohort 3 had a higher rate of training participation (varying from 31 per cent to 29 per cent across waves) than those

in cohort 1. This may be caused by differences in the underlying populations of the two cohorts, as mentioned earlier.

Table 2: Participation in training by sample cohort and wave (%)

	Short training only	Formal study only	Both short training and formal study	No training	Numbers of obs
Cohort 1					
Wave 1	11.3	12.8	1.8	74.1	8,882
Wave 2	7.8	12.0	2.3	77.9	6,988
Wave 3	7.7	13.8	1.9	76.7	5,650
Wave 4	7.7	13.4	2.7	76.2	4,814
Wave 5	7.3	16.8	2.6	73.3	4,261
All cohort 1	8.4	13.7	2.3	75.6	*30,595*
Cohort 3					
Wave 3	14.7	13.7	2.6	69.0	4,977
Wave 4	11.6	14.6	2.8	71.0	4,096
Wave 5	9.2	18.7	3.1	69.0	3,650
All cohort 3	11.8	15.7	2.8	69.7	*12,723*
All cohorts 1 and 3	8.8	14.0	2.3	74.9	43,318

Note: Weights are used in calculating the statistics in this table.

Overall, the majority of those who participated in training undertook formal study. For example, 12.0 to 18.7 per cent of the individuals in the sample undertook formal study only and another 1.8 to 3.1 per cent participated in both short training and formal study. On the other hand, only 7.7 to 14.7 per cent of the individuals in the sample participated in short trainings only. Comparing across waves, it appears that the participation rate in formal study exhibits a slightly increasing trend for both cohorts, with a significant jump in wave 5 (first half of 2008). The participation rate in short training of cohort 1 drops by 3.5 percentage points between the first two waves and remains fairly stable for the next three waves. As for cohort 3, the participation rate in short training declines by 5.5 percentage points over the three waves, whilst participation in formal training increases by 5 percentage points. Thus, the proportion of individuals who participated in training remains steady.

Table 3 further investigates training participation by current or previous payment type of income support. Since the extent to which individuals relied on income support for the six months reference periods was different, which may in turn have different implications for training participation, the sample was also differentiated by the extent of income support reliance as measured by the time on income support during the reference period. Note that, as

mentioned earlier, for those who were on income support only in part of the 6-month reference period, it is not clear whether training participation occurred at the same time when they were on or off income support. For NSA and YA recipients, trainings were more likely

Table 3: Participation in training by payment type (%)

	Short training only	Formal study only	Both short training and formal study	No training	Numbers of obs
A. Those who were on IS in the entire 6 months observation period					
All	**8.9**	**11.7**	**1.9**	**77.5**	**22,918**
main benefit type					
Student	4.0	68.6	7.0	20.4	544
YAO	16.3	19.4	2.3	61.9	386
NSA	14.0	10.8	2.5	72.7	7,187
DSP	4.7	8.2	1.0	86.1	7,678
PPS	9.0	14.5	2.5	74.0	4,102
PPP	7.6	10.1	1.2	81.1	1,845
Other	5.9	4.6	1.1	88.4	1,176
B. Those who were on IS in part of the 6 months observation period					
All	**13.1**	**12.8**	**2.4**	**71.6**	**10,587**
main benefit type					
Student	6.9	68.2	8.4	16.5	333
YAO	13.6	18.3	2.9	65.3	553
NSA	14.7	10.5	2.2	72.5	5,624
DSP	11.3	10.8	2.5	75.4	1,073
PPS	13.9	12.5	2.3	71.2	1,342
PPP	9.5	9.3	2.0	79.3	1,393
Other	7.1	10.0	1.1	81.8	269
C. Those who were off IS in the entire 6 months observation period					
All	**12.4**	**11.0**	**2.8**	**73.7**	**11,935**
last benefit type					
Student	12.7	30.8	7.6	48.9	237
YAO	11.1	21.7	3.6	63.5	521
NSA	13.1	9.2	2.3	75.4	5,564
DSP	12.9	11.2	3.3	72.6	1,044
PPS	14.2	10.1	3.4	72.2	1,869
PPP	10.0	11.8	2.8	75.5	2,508
Other	8.3	9.9	1.0	80.7	192

to occur when they were on income support, while for the recipients of Disability Support Pension (DSP), Parenting Payment Single (PPS), Parenting Payment Partnered (PPP) and other non-activity tested payments, training might be more likely to occur when they were off benefits. Irrespective of income support receipt status during the six months reference period, students on Youth Allowance (YA) have the largest proportion participating in any forms of training, which are followed by recipients on non-student Youth Allowance (YAO). For reasons that are not difficult to understand, most students on YA (either entirely or partially) during the 6 month observation period undertook a formal study. Among recipients of non-

student Youth Allowance, about 20 per cent undertook formal studies and a slightly smaller proportion participated in short training. For income support other than youth allowance, education and training participation rate varies by payment type when they are on income support. However, once these individuals are off income support, there are no significant differences in the participation rate among them.

Table 4 shows the distribution of the number of training undertaken by training form and completion status for an 18 months period (i.e. three waves). To produce these statistics we restricted the sample to those who were followed for three waves in each cohort, which produced a balanced panel of data. When short training is concerned, among the 9,893 individuals in the sample, 70 per cent did not undertaken any short training during the 18 months observation period; 21 per cent completed one short training, and about 9 per cent completed more than one trainings. When looking at formal study involved, regardless whether the study was completed or not, 76 per cent of the 9,893 individuals were not involved in any formal study for the observation period, 19 per cent involved in one formal study, and about 5 per cent involved in two or more formal studies. Perhaps because formal studies take a relatively long time to complete, the distribution of the number of formal studies completed skews towards the lower end, relative to the distribution of the number of formal studies involved. Close to 90 per cent of the 9,893 individuals had not completed any formal study during the 18 months period; 9 per cent completed one formal study; and just over one per cent completed more than one formal studies.

Table 4: Distribution of the number of trainings involved or completed over a one and a half year period (%)

	Short training completed	Formal training involved	Formal training completed
0	70.0	75.6	89.5
1	21.1	19.1	9.3
2	7.1	4.9	1.1
3	1.8	0.4	0.1
Total numbers of individuals		9,893	

Table 5 shows the training types people participated in, differentiated by training type and income support receipt status. Among those who undertook short training, close to 40 per cent were involved in obtaining a license or certificate, on-the-job-training constituted about 37 per cent, and another 11 per cent were related to computing or new technology. General

numeracy or reading seemed to be a trivial type of training among individuals undertaking short training.

The distribution of training types among participants of short trainings varies to some extent according to their income support receipt status. The proportion undertaking on-the-job-training is higher among those who were off income support in the entire 6 month reference period, which are followed by those who were on income support for part of the reference period. Those on income support for the entire reference period had the lowest rate of undertaking on-the-job-training. This difference might reflect the fact that differences in income support receipt reflect the extent to which individuals are attached to the labour market. That is, those who were not on income support were more likely to be working, and thus had a higher probability (and opportunity) of undertaking on the job training, while those on income support all the time had less attachment to the labour market and thus a lower probability of undertaking on-the-job-training.

Table 5: Type of training by income support receipt status (%)

Training type/ full/part time status	On IS in the entire reference period	On IS in part of the reference period	Off IS in the entire reference period	All
		IS receipt status		
A. Short training				
Computing or new technology	14.6	9.7	8.0	11.2
General numeracy or reading	1.3	0.5	0.4	0.8
English language course	5.1	1.5	0.9	2.8
Licenses or certificate	38.9	43.1	34.9	38.8
On the job training	29.4	33.5	49.2	36.6
Job search training	4.4	4.6	0.8	3.3
Other	6.3	7.1	5.7	6.4
B. Formal study				
Year 10 or equivalent	1.4	0.8	0.1	1.0
Year 12 or equivalent	4.0	2.0	0.7	2.7
Trade/apprenticeship	3.1	5.7	7.1	4.8
Other TAFE/technical	54.8	46.6	54.1	52.3
Undergraduate certificate	11.8	12.8	11.6	12.0
Bachelors/Masters/Doc	17.7	23.4	18.1	19.4
Other	7.2	8.6	8.3	7.9
C. Full-time/part-time status				
Part-time	54.5	54.3	73.2	58.7
Full-time	44.1	44.1	24.3	39.7
Unknown	1.4	1.5	2.5	1.7
Total number of observations	2,472	1,644	1,814	5,935

Those who were on income support for the entire reference period had a higher probability of participating in short training related to computing or new technology, as well as general

numeracy or reading, than the other two groups of short training participants, perhaps reflecting the fact that the former group lacks these relevant job skills to a larger extent than the latter two groups.

Among those who participated in formal study, more than 50 per cent undertook TAFE or technical studies; about 19 per cent studied towards a degree (i.e. bachelors, Masters or PhD); and 12 per cent were involved in studies that led to an undergraduate certificate. Those who were on income support for part of the reference period had a slightly lower rate (47 per cent) of participation in TAFE or technical training than the other two groups (55 and 54 per cent), but the former group had a higher proportion (23 per cent) engaged in studies that led to a degree than the other two groups (18 per cent). Those who were off income support payments for the entire reference period had a slightly higher proportion (7 per cent) who studied a trade or were on apprenticeship than the other two groups (3 and 6 per cent respectively).

Close to 60 per cent of those who participated in training, irrespective of whether they were on income support or not during the reference period, reported that they undertook part-time training; for those who were off income support, the proportion was even larger (73 per cent). About 44 per cent of those who participated in training and who were on income support undertook part-time training, while those off income support had a smaller proportion undertaking full-time training (24 per cent).

4.2. Barriers to training participation

Overall, the course completion rate is around 69% (excluding courses where it was not possible to determine whether they had been completed due to sample attrition or discontinuation of the survey). In terms of course completion by individuals, 66 per cent of the formal study participants in the sample completed all formal courses in which they had enrolled, while 31 per cent had never completed the formal courses involved; and another 3 per cent completed some formal courses involved, but not all of them[6]. For those individuals who neither completed their formal studies nor continued the studies, the survey asked about their reasons for non-completion. Table 6 presents the reasons reported by the respondents differentiated by income support receipt status during the 6 month reference period. Since an individual was allowed to report multiple reasons for non-completion, the numbers in each column do not add up to 100 per cent over the rows.

---

[6] The figures from this paragraph are based on the authors' calculations.

Irrespective of income support receipt status, 'other caring responsibilities' appears to be the most frequently cited reason for not completing their courses (23 per cent), which is followed by 'other unidentified' reasons (22 per cent). 'Own illness or injuries' were reported by 21 per cent of individuals as a reason of non-completion and 'contents were not suitable' were cited by 20 per cent of the group. There are 18 per cent of training participants dropped out of their course due to 'job or apprenticeship offers'.

The reasons for not completing formal studies vary to some extent with the income support receipt status during the 6 months reference period. For example, amongst those who were off income support for the entire reference period, the most frequently cited reason for non-completion is 'getting a job or apprenticeship' (29 per cent), while for those who were on income support for the entire reference period, the most frequently cited reason is 'own illness or injury' (30 per cent). Among those who were partly on income support for the reference period, a much larger proportion (17 per cent) cited 'financial constraint' than the other two groups (5 and 8 per cent respectively)

Table 6: Reasons for not completing formal studies involved (%)

Reasons	on IS in the entire reference period	on IS in part of the reference period	off IS in the entire reference period	All
Content not suitable	20.8	19.4	20.3	20.3
Financial constraint	5.0	16.7	7.8	9.1
Expelled	1.7	2.6	0.5	1.7
Got a job/apprenticeship	10.8	21.1	28.6	18.2
Own illness/injury	30.3	15.4	10.4	21.1
Pregnancy/childbirth	8.6	3.1	6.3	6.4
Parenting/childcare	8.3	8.4	10.9	9.0
Other caring responsibilities	21.9	22.5	26.6	23.2
Others	19.4	21.6	25.5	21.6
Total number of observations	360	227	192	779

Note: The statistics do not sum up to 100% each column as multiple responses are allowed for each individuals.

For those who did not participate in any short training or formal study, the reasons for non-participation were asked in the survey. The responses are summarised in Table 7. Amongst those who did not participate in any form of training or study, the two main reason cited were 'own illness or injury' or 'too busy/no time/unsuitable hours' (21 per cent each). Another 16 percent reported 'not interested' in any training or studies, 15 per cent cited 'childbirth or parenting related responsibility' as a reason, and around 10 per cent thought there was 'no need' for training or study.

Again, the reasons for non-participation in any form of training or study differ by income support receipt status. While more than a third cited 'too busy/no time/unsuitable hours' as a reason among those who were off income support for the entire 6 month reference period, only 13 per cent of those who were on income support for the entire reference period cited it as a reason. On the other hand, while a third of those on income support for the entire reference period cited 'own illness or injury' as a reason, less than 7 per cent of those who were off income support for the entire reference period cited it as a reason.

Table 7: Reasons for not participating in any training/study by IS status

Reasons	on IS in the entire reference period	on IS in part of the reference period	off IS in the entire reference period	All
Not interested	14.7	16.9	18.0	16.0
No need	7.7	13.2	13.5	10.4
Childbirth/parenting related	15.8	15.1	13.4	15.0
OWN ill health or injury	32.5	12.9	6.5	21.4
Caring responsibilities other than parenting	5.1	2.0	1.5	3.5
Too far to travel or other transport problems	3.4	2.1	1.4	2.6
Lacked required background education/skills	2.8	1.6	0.7	2.0
Cost/Could not afford the course	5.0	8.5	6.9	6.3
Course not available	3.6	3.2	2.0	3.1
Too busy/no time/unsuitable hours	12.8	24	36.7	21.4
Working/started work	3.0	7.6	9.2	5.6
Age/too old	6.1	3.9	3.2	4.8
Other	7.2	8.0	3.8	6.5
Total number of observations	17,223	7,404	8,507	33,134

Note: The statistics do not sum up to 100% each column as multiple responses are allowed for each individuals.

5. Factors influencing training/study participation

This section attempts to identify the factors that are associated with participation in training or study. Multivariate analysis is required to isolate the effects of various factors that affect the decision to participate in training or study and which are potentially correlated with each other.

5.1. Statistical model

Since the dependent variable 'participating in training/study' is a binary variable, the appropriate statistical model to be used originates from the probit models.[7] The probit model assumes that participation in training or study is a function of observed individual characteristics (i.e. covariates) and unobserved factors, where unobserved factors are

---

[7] An alternative model is the Logit model, but probit and logit models often produce very similar results.

summarised into a random variable that follows a standard normal distribution. Summary statistics on the observed covariates of training/study participation are listed in Appendix Table A3. Using the information available from both LPS and RED, we try to include in the model as many of the observed covariates as possible.

Since individuals can participate in either formal study or short training, or both, and the factors that affect the decisions could be correlated, we model participation in formal study and participation in short training jointly. The joint model improves the efficiency of the estimates and this is indeed supported by the empirical results.[8]

A disadvantage of the probit model, compared to a linear model, is that the coefficient estimate on an observed variable does not measure the marginal effect of the variable, although the sign of the estimate does indicate the impact direction of the variable. For example, a positive sign of a variable means that an increase in the variable raises the probability of participating in training or study. For ease of interpretation, we report the marginal effect estimates in the main text (see table 8) which are calculated using the coefficient estimates and the underlying data. The joint model allows us to calculate the marginal effects on the probability of participating for three distinct outcomes: formal study only, short-training only, and both formal study and short training. Since the sum of the probabilities of participating in any form of training or study and the probability of not participating must equal one, the marginal effect on the probability of not participating can be inferred as zero minus the sum of the effects on the probabilities of participating in any training or study.

It is important to note that the explanatory variables used in the model are taken from the information one wave (6 months) prior to the current interview. Since the dependent variable (training participation) concerns the interviewees' experience in training and education for the past 6 months, their current characteristics may have been influenced by their participation in training or formal study. This endogenity problem of reverse causality may arise if variables from the current interview are applied to explain training participation. To overcome this problem, individuals' decision concerning training participation are best explained by their observable characteristics at the time of participation. Given the current data constraints, the lagged values of the explanatory variables are the best choice to solve this problem.

---

[8] As shown in the appendix Table 15, the estimate on the correlation of the unobserved determinants between participation in formal study and in short training is statistically significant, which implies an efficiency gain in jointly modelling the two participation equations.

5.2. Estimation results

We use the estimate on the first variable female in table 8 to illustrate how to interpret the marginal effect estimates.[9] Female is a dummy variable, equal to one if a person is female and zero otherwise. The estimates indicate that other things being equal, the probability of participating in short training only is 2.1 percentage points higher for females than for males; the probability of participating in both formal study and short training is half a percentage point higher; while the probability of not participating in training or study is 2.7 percentage points lower.[10] The probability of participating in formal study is also higher for females than for males, but the estimate is very small in magnitude and statistically insignificant.

Age is grouped into ten categories and the reference age group is 30-34 years old. That is, all estimates on the age variables are benchmarked to the 30-34 age group. The estimates indicate that compared to those aged 30-34 years, younger people are more likely to participate in short training only and the younger the age, the stronger is the association. For example, while the probability of participating in short training only is 2.4 percentage points higher for those aged 25-29 relative to those aged 30-34, the difference in the probability is 11.3 percentage points between those aged 16-19 and those aged 30-34. On the other hand, older people are less likely to participate in short training only when compared with those aged 30-34, and the likelihood decreases even further when age further increases. The probability of participating in short training only is 3.1 percentage points lower for those aged 40-44 relative to those aged 30-34, but for those aged 60-64 the probability is 7.1 percentage points lower. The impact pattern for participating in both short training and formal study is similar to that on participating in short training only but with much smaller magnitude, while the impact on participating in formal study only shows an opposite pattern of smaller magnitude.

Consequently, we see that the probability of not participating in any training or study is on average higher for older people and lower for younger people, a finding that is consistent with the prediction of human capital theory. The theory implies that older people tend to invest less in human capital than younger people since the former have a shorter expected life span ahead and thus lower expected returns to their investment. While this may be an optimal decision from an individual's point of view, the social returns to human capital investments for older

---

[9] Note that due to rounding errors the sum of the marginal effects across the column may not always be zero.
[10] Here all estimates when looked at alone should be interpreted as conditional on 'other things being equal', but to preserve space this phrase may not be repeated all the time.

people might still justify policies that encourage older people to invest more in their human capital, for instance by subsidising the cost of participating in a training or study.

In terms of education attainment, the reference group refers to those who have not progressed beyond Year 10. It is interesting to note that participating in short training, formal study, or both, is positively associated with the level of education that an individual already has obtained. That is, the higher the education level an individual has already achieved, the more likely it is that this person will participate in further education of the types mentioned. One explanation might be that for those with a higher level of education, the marginal cost of participating in further training or study is lower than for those with a lower level of education, particularly in terms of time required to obtain new skills. Another explanation might be that those with a higher level of education have some unobserved personal attribute, such as genetic ability or intrinsic motivation, that leads them to pursue further studies.

For the ethnicity variables, people who were born in Australia but not of an indigenous background constitute the reference group. These variables are generally insignificant except for the estimate on immigrants from an English speaking country, which is found to increase the probability of participating in short training only by 2 percentage points, compared to the non-indigenous Australian born. There is also weak evidence that immigrants from a non-English speaking country who do not speak English at home have a higher probability of participating in short training only and a lower probability of not participating in any training or study.

Table 8: Marginal effects of training/study participation equations

Parameter	No training or study Marg.eff.	t-stat	Short training only Marg.eff.	t-stat	Formal study only Marg.eff.	t-stat	Both training and study Marg.eff.	t-stat
Female	-0.027***	-4.08	0.021***	4.25	0.001	0.13	0.005***	3.80
Age groups (30-34)								
16-19	-0.141***	-6.84	0.113***	7.67	-0.009	-0.89	0.025***	5.79
20-24	-0.058***	-3.87	0.066***	5.65	-0.017**	-2.26	0.009***	2.65
25-29	-0.012	-0.89	0.024**	2.29	-0.013*	-1.71	0.001	0.37
35-39	-0.010	-0.78	0.002	0.17	0.006	0.79	0.002	0.84
40-44	0.020	1.54	-0.031***	-3.23	0.015*	1.82	-0.004	-1.34
45-49	0.030**	2.35	-0.043***	-4.56	0.019**	2.26	-0.006**	-2.18
50-54	0.024*	1.81	-0.040***	-4.17	0.021**	2.49	-0.005*	-1.71
55-59	0.042***	3.36	-0.048***	-4.98	0.013	1.60	-0.008***	-3.12
60-64	0.095***	8.03	-0.071***	-6.17	-0.011	-1.29	-0.018***	-6.53
Education (Year 10 or lower)								
Year 12	-0.052***	-6.47	0.040***	7.45	0.001	0.24	0.008***	6.09
Trade/Apprenticeship/TAFE	-0.077***	-10.13	0.037***	7.57	0.023***	5.23	0.014***	10.20
Degree	-0.106***	-10.93	0.053***	8.99	0.026***	4.96	0.018***	11.26
Ethnicity (Non-indigenous Australian-born)								
ESC	-0.014	-1.35	0.020***	2.56	-0.009	-1.42	0.002	1.03
NESC, speak Eng. at home	-0.007	-0.55	0.011	1.16	-0.006	-0.74	0.001	0.41
NESC, not speak Eng. at home	-0.021*	-1.69	0.015*	1.73	0.002	0.21	0.004	1.61
ATSI	-0.017	-1.05	0.017	1.43	-0.003	-0.32	0.003	0.92
Partner status (working)								
No partner	0.003	0.35	0.001	0.22	-0.004	-0.69	-0.001	-0.43
Unemployed	-0.001	-0.05	0.003	0.32	-0.003	-0.30	0.000	0.03
Temporarily not working	0.001	0.05	-0.012	-1.43	0.011	1.56	0.000	-0.07
On DSP or retired	0.02	1.35	-0.004	-0.38	-0.012	-1.30	-0.004	-1.36
Age of youngest child (No children)								
Age < 3	0.059***	5.53	-0.035***	-4.06	-0.014**	-2.06	-0.012***	-5.02
Age >= 3 & age < 6	-0.012	-0.94	0.002	0.25	0.007	0.86	0.003	1.00
Age >= 6 & age <= 13	-0.014	-1.45	0.009	1.24	0.002	0.37	0.003	1.41
Age 14 - 15	-0.017	-1.06	0.012	1.04	0.001	0.14	0.003	1.02
Age > 16	0.011	0.89	0.001	0.07	-0.009	-1.25	-0.002	-0.99
Payment history								
Proportion on IS in past 5 years	0.040***	4.11	-0.016**	-2.19	-0.016***	-2.62	-0.008***	-4.13
Nr.of spells in past 5 years	-0.001	-0.56	0.000	-0.18	0.001	0.92	0.000	0.64
Benefit type (not on benefits)								
Student	-0.384***	-15.49	0.263***	18.35	-0.070***	-4.53	0.048***	10.37
NSA	-0.088***	-9.29	0.038***	6.07	0.029***	4.88	0.019***	9.54
DSP	-0.006	-0.60	0.035***	4.60	-0.031***	-4.55	0.000	-0.08
PPS	-0.026*	-1.94	0.031***	3.22	-0.011	-1.30	0.005*	1.72
PPP	0.020	1.40	-0.004	-0.38	-0.012	-1.20	-0.004	-1.39
other	0.030	1.37	-0.006	-0.35	-0.019	-1.28	-0.007	-1.34
Health status (good health)								
Bad	0.026***	3.87	-0.017***	-3.28	-0.004	-0.92	-0.005***	-3.64
Very bad	0.050***	5.10	-0.023***	-2.82	-0.019***	-2.87	-0.011***	-4.83

	No training		Only short training		Only formal training		Both	
	Marg.eff.	t-stat	Marg.eff.	t-stat	Marg.eff.	t-stat	Marg.eff.	t-stat
Working	-0.025***	-3.86	0.004	0.84	0.016***	3.89	0.006***	4.07
Financial hardship	-0.012**	-2.06	0.008*	1.73	0.002	0.56	0.002**	1.97
Attitude to studying	0.066***	21.26	-0.043***	-17.35	-0.010***	-5.80	-0.013***	-18.11
Attitude to work	-0.017***	-6.59	0.000	0.23	0.013***	7.65	0.004***	7.00
Social support	0.007***	2.61	-0.002	-0.75	-0.004**	-2.37	-0.002***	-2.72
Cohort 3	0.003	0.41	-0.012**	-2.21	0.009*	1.92	0.000	-0.16
Post-reform[a]	-0.023***	-4.53	0.031***	8.48	-0.012***	-3.30	0.004***	3.72

Total number of observations: 29,317

Notes: ** indicate significant at 5% level, * significant at 10% level.

All time-varying variables are measured at t-1

[a] Welfare-to-work reforms began in July 2006.

Partner status and employment and income support status of the partner are also examined in the model, but none of them turns out to be significant, implying that these variables play a little role in individuals' decisions to participate in training or studies. .

When compared to those who have no dependent children, it is found that those who have a dependent child younger than three years old are more likely not to participate in any training or study, and consequentially less likely to participate in either short training , formal study, or both. This significant effect is largely driven by the women in the sample. From further investigation of separate estimation by gender, we found that the presence of young children does not affect the participation of training or formal study.[11] However, the incidence of having children older than three years of age appear to have no impact on the decision to participate in training when compared with those who have no children. These results suggest that dependent children of very young age seem still to be a barrier for people to participate in training or study despite government subsidies to child care costs through Child Care Benefits and Child Care Tax Rebate.

In terms of income support receipt history, it turns that the important factor relates to the proportion of time spent on income support over the previous five years rather than the number of spells on income support. The estimates indicate that an increase in the proportion of time on income support increases the probability of not participating in any training or study and decreases the probabilities of participating in each form of training and study. An increase in the proportion of time on payment by 0.1 (10 percentage points) only leads to a 0.004 percentage point reduction in the probability of participation in training or education. However, the magnitude of the effect is not as large as expected. This is because of the

---

[11] The separate estimation results by gender are listed in appendix tables A5 and A6.

estimates here are marginal effects keeping other characteristics the same and the duration of past income support receipt are correlated with other characteristics. For example, large proportion of long term unemployed individuals has relatively low education level.

The estimates on the benefit type variables show that certain types of benefit payments matter in individuals' decision to participate in training/study. Compared to people who are not on income support at the previous interview, persons receiving a student type payment (such as AusStudy and Youth Allowance (student)) are more likely to participate in short training only or both short training and formal study, but less likely to participate only in formal study. Overall people on student payments are less likely not to participate in any training or study. This may reflect that some of those who received student payments (participating in study by default) at the previous interview have already completed their training, and consequently no immediate needs to participate in further training.

Persons on Newstart Allowance (NSA) are more likely to participate in short training or formal study, or both, and are less likely not to participate in any training when compared with those not on income support. This is expected given that NSA recipients are subject to activity test requirements, which include training or study as an eligible activity. However, it is a surprise to note that recipients of Disability Support Pension (DSP) are more likely to participate in short training while less likely to participate in formal study, when compared to those who are not on income support. Recipients on Parenting Payment Single (PPS) are also more likely to participate in short training although they are not subject to activity tests, perhaps because they want to prepare themselves for entering into labour market by means of training before their children grow old enough , rendering them ineligible for the payment. On the other hand, people on Parenting Payment Partnered (PPP) and other payments do not appear to show differences when compared to those not on income support.

While a person's health itself is often considered a form of human capital, it may affect the decisions on investing in other forms of human capital (e.g. education and training) as well. This indeed appears to be the case here. Compared to people in good health, people with bad health are less likely to participate in short training and in both short training and formal study. The estimated marginal effect on the probability of formal study is negative as well, although not significant. As expected, the effect of very bad health on training/study participation is even larger than the effect of bad health, and very bad health reduces the probability of participating in all forms of training or study. These results are consistent with

the findings from the descriptive analysis in section four, where 'own illness or injury' was cited by a large proportion as a reason for non-participation.

Working status at the previous interview is also found to be associated with training/study participation. In particular, compared to those who are not working, those who are working have a higher probability of participating in formal study (1.6 percentage points higher) and also a higher probability of participating in both formal study and short training (0.6 percentage point higher).

Surprisingly, financial hardship does not appear to be a barrier to training/study participation. Indeed, it is found that those who thought their households were facing financial hardship have a lower probability of not participating in any training/study, compared to those who did not think so.

The variable concerning attitude towards studying is defined in a way that a higher value reflects a more negative attitude towards study. And the results show, not surprisingly, that people with a more negative attitude towards study are less likely to participate in any forms of training or study.

The definition of attitude to work is opposite to that of attitude to study: a higher value of attitude to work means the person possesses a more positive towards work. The estimate on this variable is as expected as those who are more positive towards work are also more likely to participate in training/study, particularly formal study.

A higher value of the social support variable means that the person feels she has more social support. The estimates indicate that those who have higher social support tend to have a lower probability of participating in training/study than those with lower social support, perhaps because a higher degree of social support offsets individuals' motivation for self-reliance.

To see whether the WtW policy reforms have had an impact on individuals' decision to participate in training/study, we included an indicator variable that assumes the values of one for the post-WtW period, and zero otherwise. The estimates on this variable show that the probability of participating in short training is higher (3.1 percentage points) in the post-reform period than in the pre-reform period, but the probability of participating in formal study is lower, implying that the reform may encourage people into short training in expense of formal study. However, in the post-reform period those in cohort 3 have a lower probability of participating in short training than those in cohort 1. The explanation for this result is not clear and requires further investigation.

6. Impacts of training/study on income support receipt, employment and earnings

6.1. Methodology

The ultimate goal of training or studies is to improve the skills and human capital of participants and consequently their labour market outcomes. Therefore, in this section we examine whether and to what extent participation in training or studies impacts on individuals' income support receipt status, employment and earnings. For this purpose we cannot simply compare the outcomes of interest between those who participated in training or studies with those who did not for the reason that, as shown in the previous section, the decision to participate in training or studies is influenced by individual characteristics that also affect their labour market outcomes. The effects of training or studies would be confounded by those factors in a simple comparison.

In principle one could compare the outcome variables between two individuals who have the same characteristics but with different training/study participation status to infer the effect of training/study. However, the dimension of individual characteristics is so large (e.g. there are over 40 variables in the training/study participation model) that it is virtually impossible to find two persons who have the same characteristics but different training/study participation status. One approach that facilitates comparing like with like and overcomes the 'curse of dimensionality' problem is the propensity score matching method, a method widely used in the literature of labour market program evaluation.

The essence of the propensity score matching method is that for each person in the treatment group (i.e. training/study participants in our case), we find someone among the non-participants who has the closest probability (or propensity score) to participate in the treatment (i.e. matched non-participants). The matched non-participants therefore form a proper comparison group. In other words, the idea of propensity score matching is to create a comparison group with a distribution of characteristics that is similar to those of the treatment group. Their average outcomes can then be used as proxies for the average outcomes of the treatment group had they not participated in the training/education. The differences in the outcomes between the treatment group and the (matched) comparison group can therefore be interpreted as the effect of treatment for those who participated in training, that is, the effect of treatment on the treated (ATET). It is important to note that the treatment effect will in general vary across individuals, so that the average treatment effect on the treated will not be

the same as the average treatment effect of all income support recipient (ATE). See Blundell et al. (2008) for a further discussion about the differences between ATET and ATE.

Before getting on to the practical issue of propensity score matching, it is important to define both the treatment group and the control group (potential comparison group before matching). Following our previous classification of training/studies, we examine the effects of two treatments: short training and formal study. As discussed earlier, some individuals participated in multiple trainings and formal studies. To ensure that the estimated effects are not caused by a mix of different types of training, we define two treatment groups as follows:

- Formal study treatment group: individuals who only commenced one formal study in our observation period, and they did not participate in any short trainings.
- Short training treatment group: individuals who completed a short training during our observation window, and who did not participate in any form of formal study.

For both these treatment groups, individuals who have never participated in training or study within our observation window are used as the potential control group. The matching is carried out separately for each wave. However, since we want to base the propensity scores on individuals' characteristics before training/study commencement, all the independent variables in the probit model for matching are one-wave lagged. Consequently, observations in wave 1 are not used to examine the effects of training/study on labour market outcomes, and only observations in wave 2 and onwards are used. The characteristics of treatment and control groups before matching are presented in appendix tables A7 and A8. It is clear that the characteristics differ between participants and non-participants. Formal training participants are in general younger and with more females compared with non-participant and also compared with population (weighted figure) in cohort 1 and cohort 3 in Appendix table A2. In addition, among the two treatment groups, the distributions of characteristics of the training/education participants are also different across waves.

The matching procedure we adopt in this study is kernel matching with variable calliper, which involves executing the following steps:

(a) Estimating the probability of participating in training/education using a probit model and obtaining the latent index of training/education participation.
(b) Applying kernel matching algorithm based on the latent index to obtain weights for control observations. For details of the matching algorithms, see Borland and Tseng (2007).

(c) Computing the differences in outcomes between treatment and the weighted control observations (comparison group).

We also apply the bootstrap method with 999 replications to obtain the standard errors of the impact estimates.

One advantage of the matching method is that impacts can be easily presented for various outcome measures. The impacts of training/education on proportion of time on payments as well as labour market outcomes, such as employment, working hours and earnings are estimated. We also examine the evolution of these impacts over time by examining various time periods following training/study commencement. Table 9 indicates that trainings/study vary quite significantly in terms of how long they last, let alone the content and how they are delivered. As such, caution should be exercised when interpreting the results, especially because at one particular time point examined, different individuals may be at different stages of training/study. One important point to keep in mind is that formal study commonly takes more than one year to complete, with some courses lasting more than two years. The current data only allows us to estimate the impacts of up to two years after the course commencement. For this reason, we are not able to see the full effects of formal study given the data and should consequently interpret the results for formal study as indicative only.

Table 9: Wave when first training was stopped/deferred/completed

	Wave when training was begun			
	1	2	3	4
Unknow due to attrition	26 (27.1%)	22 (21.8%)	20 (11.2%)	
Wave 2	34 (35.4%)			
Wave 3	18 (18.8%)	27 (26.7%)		
Wave 4	9 (9.4%)	17 (16.8%)	51 (28.7%)	
Wave 5	3 (3.1%)	15 (14.9%)	50 (28.1%)	45 (23.4%)
Still doing at wave 5	6 (6.2%)	20 (19.8%)	57 (32.0%)	147 (76.6%)
Total	96	101	178	192

6.2. Results

Table 10 presents the estimated effects on income support receipt in terms of whether a person is on income support and the proportion of time on income support. To facilitate inferences, standard errors, which are calculated using the bootstrapping method, are also presented in parentheses.

Table 10: Differences in income support receipt between individuals with and without training/study by wave commenced/completed training/study

	Wave									Average	
	2		3		4		5				
A. Formal study only (compared with no training)											
Difference in % of individuals on benefit after:											
6 months	-6.4	(4.9)	0.1	(4.1)	2.1	(3.2)	3.6	(2.7)		0.8	(1.8)
12 months	-6.3	(4.8)	-0.1	(4.5)	-2.7	(3.3)	0.3	(3.2)		-1.8	(1.9)
18 months	-2.6	(5.1)	1.2	(4.4)	-1.6	(3.8)				-1.1	(2.5)
24 months	-2.0	(4.9)	-3.1	(4.6)						-2.5	(3.4)
Differences in average proportion of time (%) on benefit:											
0-6 months	-3.5	(3.7)	1.6	(3.7)	4.2	(2.7)	3.4	(2.4)		2.2	(1.5)
7-12 months	-5.3	(4.6)	0.9	(4.1)	-0.9	(2.8)	0.3	(2.8)		-0.9	(1.7)
13-18 months	-5.1	(4.6)	-0.4	(4.2)	-0.8	(3.3)				-1.8	(2.3)
19-24 months	-0.4	(4.8)	0.3	(4.6)						-0.1	(3.4)
Observations	**96**		**101**		**178**		**192**			**567**	
B. Short training only (compared with no training)											
Difference in % of individuals on benefit after:											
6 months	-6.2	(3.2)	-9.7	(3.4)	-4.7	(2.8)	-2.8	(2.4)		-5.4	(1.5)
12 months	-12.0	(3)	-4.9	(3.7)	-3.7	(2.9)	-7.9	(2.6)		-7.1	(1.5)
18 months	-10.6	(3.3)	-5.3	(3.7)	-3.1	(2.9)				-6.2	(1.9)
24 months	-9.8	(3.3)	-2.6	(4.2)						-6.8	(2.6)
Differences in average proportion of time (%) on benefit:											
0-6 months	-5.0	(2.9)	-6.9	(3.0)	-0.5	(2.3)	-3.7	(2.1)		-3.6	(1.3)
7-12 months	-8.8	(2.9)	-8.3	(3.4)	-4.9	(2.6)	-6.5	(2.4)		-6.9	(1.4)
13-18 months	-9.2	(2.9)	-5.3	(3.5)	-3.5	(2.7)				-5.9	(1.8)
19-24 months	-10.2	(3.1)	-3.0	(4.1)						-7.2	(2.5)
Observations	**201**		**146**		**244**		**250**			**841**	

Note: bootstrapped standard errors are presented in brackets

From panel A in table 10, formal study seems to have only a small impact on either the probability of receiving income support or the proportion of time spent on income support at all the time periods examined. The estimates for wave 2 appear to be consistent with the expectation that participants of formal study have a lower probability of receiving income support and also a lower proportion of time on income support measured at 6 to 24 months after study commencement. However, none of these estimates is statistically significant due to the large standard errors associated. Some estimates on waves 3 to 4 are not as expected, and again we cannot say much about them since they are not statistically different from zero. As mentioned earlier, some individuals would have yet to complete their study, therefore a small

increase (and statistically insignificant) in time on payments should not post any worry to the policy makers.

On the other hand, short training (panel B in table 10) appears to be effective in reducing income support receipt. Compared with those who did not participate in any training, those who participated in short training appear to have a lower probability of receiving income support and shorter time on income support at various periods of training commencement. For example, after six months of short training commencement, the proportion on income support of the participants in wave 2 is six percentage points lower than those non-participants; after 24 months the gap is about ten percentage points. Regarding the proportion of time on income support, short training participants are five percentage points lower than non-participants within 6 months of training commencement in wave 2, and about ten percentage points lower during the period 19-24 months after training commencement. The estimates vary across waves, perhaps reflecting heterogeneity of the effects between individuals and over time. Overall the effects of short training do not appear show any clear patterns over time (i.e. either increase or decrease). In particular, the effect does not appear to be larger for the post-WtW periods.

Tables 11 and 12 present the effects on employment outcomes, as measured by work incidence (whether working or not at the time of survey and whether the respondent ever worked during the six months prior to the survey), hours worked (a measure of work intensity), hourly wages and weekly earnings. We also examine the skill levels of the main job. Table 11 shows the effects after 6 months of training/study commencement, while table 12 is for the effects after 12 months.

From table 11, formal study appears to increase work incidence after six months of training commencement. For example, after six months of training commencement people who participated in formal study in wave 2 have a probability of working that is 12 percentage points higher than those who did not participate in any training. The effect on work incidence in the six months prior to interview (i.e., ever worked in past 6 months) is similar. These estimates are significant for wave 4 as well, although with smaller magnitude, but insignificant for wave 3. However, formal study does not appear to have an effect on the incidence of full-time employment – the estimates are small and insignificant.

The estimates on the effects of working hours, hourly wages and earnings are mixed in terms of the direction of the effects. Most estimates are positive and in line with expectations, but in some cases they are negative. However, except for the effect on hours worked in all jobs,

which is positive and significant in wave 2 (and on average), the effects on other measures of working hours and the effects on hourly wages and weekly earnings are all insignificant, suggesting that formal study may not have an effect on these measures of labour market outcomes, at least not for this group of people examined.

In terms of skill levels of main jobs, overall formal study does not appear to increase the proportion of participants with medium or high skill jobs. Only in wave 2 is the estimate found to be statistically significant, which leads the average effect to be weakly significant (at 10 per cent significance level). However, due to the fact that some individuals in the treatment group may still be studying and therefore take a casual job, it is not surprising that the effects are not significant and that some are of a negative sign.

The effects of short training exhibit a similar pattern to the effect of formal study. That is, there is evidence that short training has significant effects on work incidence and hours worked in all jobs, but it has no effects on other outcome variables, and the effects vary across waves.

Table 12 presents the effects on labour market outcomes twelve months after training commencement. Note that for these effects, only waves 2 and 3 can be used due to the fact that the data constraint do not permit observing training participants from wave 4 twelve months after training commencement.

Overall, the effect patterns twelve months after training commencement are similar to those six months after commencement. That is, only the effects on work incidence are found significant for both short training and formal study and the effects on other labour market outcomes are mostly insignificant. Hours worked in all jobs are an exception, for which it is found that short training has a significant effect, particularly in wave 3. Another difference is that when the effects are significant, the magnitude of the effects appears to be larger after twelve months than after 6 months, perhaps reflecting that the effect of training needs time to realise.

Table 11: Difference in outcomes for treated (after 6 months)

	Wave						Average	
	2		3		4			
A. Formal study only								
Difference in								
Working (%)	11.8*	(6.3)	2.0	(5.2)	7.3**	(3.7)	7.0***	(2.7)
Ever worked in past 6 months (%)	12.0**	(6.1)	4.4	(5.1)	6.7*	(3.6)	7.4***	(2.6)
Have full-time job (%)	7.7	(5.5)	-1.7	(4.8)	1.1	(3.5)	2.0	(2.5)
Hours of main job | working	2.8	(2.4)	-1.4	(2.6)	-2.4	(1.5)	-0.8	(1.2)
Hours worked in all jobs | working	3.9	(2.4)	-1.4	(2.5)	-1.7	(1.6)	-0.2	(1.2)
Hours worked in all jobs	5.7**	(2.5)	0.0	(2.0)	1.4	(1.3)	2.1**	(1.0)
Wage from main job	3.7	(3.1)	-2.1	(1.5)	-0.2	(2.0)	0.3	(1.3)
Total weekly earnings | working	83.4	(65.1)	-142.1***	(48.0)	-74.8*	(43.7)	-52.4*	(30.4)
Total weekly earning	115.0**	(52.7)	-71.3**	(36.2)	0.9	(30.5)	10.7	(22.1)
Main job - high skill (%)	4.9	(7.4)	3.7	(7.3)	-1.4	(4.1)	1.6	(3.4)
Main job – medium/high skill (%)	1.5	(7.1)	12.4**	(5.8)	5.3	(4.8)	6.2*	(3.4)
Treatment observations	96		101		178		375	
B. Short training only								
Difference in								
Working (%)	2.0	(4.4)	6.2	(4.3)	3.9	(2.9)	3.8*	(2.2)
Ever worked in past 6 months (%)	7.2*	(4.3)	12.1***	(3.9)	7.4***	(2.7)	8.5***	(2.1)
Have full-time job (%)	-3.5	(3.6)	11.1***	(4.3)	5.9**	(3.0)	4.0	(2.1)
Hours of main job | working	-0.5	(2.2)	2.8	(2.0)	1.6	(1.3)	1.2	(1.1)
Hours worked in all jobs | working	-0.7	(2.1)	3.0	(2.0)	1.6	(1.3)	1.2	(1.1)
Hours worked in all jobs	0.4	(1.6)	4.0**	(1.7)	2.2*	(1.2)	2.0**	(0.8)
Wage from main job	-1.0	(1.1)	0.4	(1.2)	1.6	(1.7)	0.4	(0.8)
Total weekly earnings | working	-45.1	(43.0)	48.4	(53.2)	60.8	(40.6)	21.7	(27.0)
Total weekly earning	-20.4	(30.6)	80.8**	(40.4)	67.1**	(30.0)	40.7**	(19.6)
Main job - high skill (%)	2.4	(5.4)	3.9	(5.2)	2.9	(3.7)	3.0	(2.7)
Main job – medium/high skill (%)	3.4	(5.4)	4.9	(5.4)	0.2	(4.4)	2.4	(3.0)
Treatment observations	201		146		244		591	

Note: bootstrapped standard errors are in parentheses;
*** indicate statistical significance at 1% level, ** significant at 5% level, * significant at 10% level.

Table 12: Difference in outcomes for treated, after 12 months

	Wave				Average	
	2		3			
A. Formal training only						
Difference in						
Working (%)	21.5***	(6.4)	6.6	(5.6)	13.8***	(4.2)
Ever worked in past 6 months (%)	17.2***	(5.9)	6.0	(5.4)	11.5***	(4.0)
Have full-time job (%)	2.0	(5.7)	-2.8	(5.0)	-0.5	(3.9)
Hours of main job | working	-3.9*	(2.2)	-1.9	(2.6)	-2.8	(1.8)
Hours worked in all jobs | working	-3.6	(2.7)	-2.0	(2.6)	-2.8	(1.9)
Hours worked in all jobs	3.8	(2.5)	0.6	(2.1)	2.2	(1.6)
Wage from main job	-0.5	(1.7)	-1.5	(1.1)	-1.0	(1.0)
Total weekly earnings | working	-84.7	(55.7)	-39.7	(52.6)	-61.6	(38.7)
Total weekly earning	80.9*	(47.2)	4.0	(43.3)	41.5	(31.6)
Main job - high skill (%)	6.3	(7.5)	5.1	(7.7)	5.7	(5.4)
Main job – medium/high skill (%)	1.4	(7.1)	10.6*	(6.4)	6.1	(4.9)
Treatment observations	96		101		197	
B. Short training only						
Difference in						
Working (%)	7.9*	(4.8)	13.8***	(4.7)	10.4***	(3.4)
Ever worked in past 6 months (%)	6.7	(4.8)	17.9***	(4.1)	11.4***	(3.3)
Have full-time job (%)	-2.9	(4.0)	10.5**	(4.9)	2.7	(3.2)
Hours of main job | working	0.1	(2.1)	1.1	(1.8)	0.6	(1.5)
Hours worked in all jobs | working	0.8	(2.2)	1.2	(1.9)	1.0	(1.5)
Hours worked in all jobs	2.8	(1.8)	4.9***	(1.9)	3.7***	(1.3)
Wage from main job	-2.7***	(0.9)	1.1	(1.7)	-1.1	(0.9)
Total weekly earnings | working	-80.9*	(44.3)	21.8	(48.2)	-37.7	(33.7)
Total weekly earning	-6.1	(36.1)	108.2***	(42.0)	42.0	(28.2)
Main job - high skill (%)	-5.4	(4.6)	3.9	(5.6)	-1.5	(3.6)
Main job – medium/high skill (%)	1.4	(6.0)	3.1	(5.8)	2.1	(4.3)
Treatment observations	201		146		347	

Note: bootstrapped standard errors are in parentheses;
*** indicate statistical significance at 1% level, ** significant at 5% level, * significant at 10% level.

7. Conclusion

Using the Longitudinal Pathway Survey (LPS) and the Research Evaluation Data (RED), this project examined income support recipients' patterns of participation in training and study and estimated the effects of training participation on income support receipt status and labour market outcomes.

On the patterns of training participation, about 25 to 30 per cent of the persons in the sample participated in either short training or formal study over the six months prior to the interview. Overall the majority of those who participated in training undertook formal study, a form of training that leads to a formal qualification. It also appears that participation in formal study increased over time for the two cohorts surveyed. Income support recipients on a student type payment had the largest proportion participating in training, as to be expected, which was followed by recipients on NSA. Among those who participated in short training, obtaining a licence or certificate consisted of the largest group (40 per cent), followed by on-the-job-training (37 per cent), where as general numeracy or reading seemed to be a trivial type of short training.

Among those who participated in formal study, over a half undertook TAFE or technical studies, about 19 per cent studied towards a degree and 12 per cent towards an undergraduate certificate. For those who did not compete their training or studies enrolled, caring responsibilities and own illness or injury were the most frequently cited reasons for non-completion. On the other hand, own illness or injury was the most frequently cited reason for not participating in training or study at all.

The model estimation results on training/study participation showed that compared to males, females were more likely to participate in training, particularly short training. Younger people were more likely to participate in training or study, consistent with the prediction of human capital theory. While this may be an optimal decision from an individual's point of view, the social returns to human capital investments for older people might still justify policies that encourage older people to invest more in their human capital, for instance by subsidising the cost of participating in a training or study. Individuals who already possessed a level of education higher than Year 10 were more likely to participate in training or study compared to people with Year 10 or below. From a policy perspective, these results seem to indicate that the incentives for participation in further education should be targeted towards those groups with lower levels of education (Year 10 or below).

The presence of children under the age of 3 substantially reduced the probability of participation in any training or study, suggesting that dependent children of a very young age are still a barrier for participation in training, despite government subsidies for child care costs such as Child Care Benefits and the Child Care Tax Rebate. However, the finding only applies to mothers and given that the barrier disappears as the child gets older, we believe that it should not be of policy concern.

Conditional on other characteristics, more time spent on income support over the previous five years appears to reduce the probability of participation in training or study. Compared with those who were not on income support, recipients of NSA were more likely to participate in training or study, probably due to their activity requirements. As to be expected, people with poor health were found to be less likely to participate in any training or study than people with good health. In addition, attitudes towards study and work play a very important role in individuals' training/study participation. Change individuals perception of training may be important in promoting training participation.

When the effects of short training and formal study on income support receipt were examined, it was found that only short training had a significant effect on income support receipt, while the effects of formal study were largely insignificant. Individuals who participated in short training were found to be less likely to receive income support and spent less time on income support. However, the results from the matching method on income support receipt and labour market outcomes should be interpreted and treated with caution as the sample size of the treatment groups is relatively small.

When the effects on labour market outcomes were examined, it was found that the effects on work incidence (i.e. whether working or not at the time of interview and whether respondent ever worked during the previous six months of the interview) were significant as expected for both short training and formal study, but the effects on other labour market outcomes, such as working hours, hourly wages and weekly earnings, were generally insignificant. However, it is not appropriate to conclude from the insignificant effects on wages that training does not affect individuals' wages, for the reason that a significant proportion of individuals move from not employed to being employed. Thus, the composition of the group earning a wage has changed. In addition, it is not surprising that the impacts of formal study are insignificant because some participants had not yet finished their study. The results do not permit the conclusion that formal study has no impact on labour market outcomes. Further research in this area is needed and requires panel data that follows individuals for longer periods of time to evaluate the full effects of formal study.

8. References

Aakvik, A. (2003). 'Estimating the employment effects of education for disabled workers in Norway.' in *Empirical Economics* 28(3): 515-533.

Albrecht, J., G. J. van den Berg, et al. (2005) 'The Knowledge Lift: The Swedish Adult Education Program That Aimed to Eliminate Low Worker Skill Levels', in *IZA Discussion Paper* No 1503

Andrén, D. and T. Andrén (2002) 'Assessing the Employment Effects of Labor Market Training Programs in Sweden', in *Working Papers in Economics* No 70

Andrén, T. and B. Gustafsson (2002) 'Income Effects from Labor Market Training Programs in Sweden During the 80's and 90's', in *IZA Discussion Paper* No 603

Arellano, F. A. (2005) 'Do training programmes get the unemployed back to work? A look at the Spanish experience', in *Working Paper* No 05-25

Arulampalam, W., A. Booth, et al. (2006) 'Are there Asymmetries in the Effects of Training on the Conditional Male Wage Distribution?', in *Discussion Paper* No 523

Borland, J. and Y. Tseng (2007) "Does a minimum job search requirement for the unemployed reduce their time on welfare payments? Evidence from the Job Seeker Diary in Australia", *Industrial and labor relations review,* Vol. 60, No. 3, pp. 357-378.

Blundell, R. & L. Dearden & B. Sianesi, 2003. "Evaluating the impact of education on earnings in the UK: Models, methods and results from the NCDS," *IFS Working Papers* W03/20, Institute for Fiscal Studies.

Blundell, R. & Costa Dias, M. (2008) "Alternative Approaches to Evaluation in Empirical Microeconomics," *IZA Discussion Papers 380*0, Institute for the Study of Labor (IZA).

Cai L. (2008), "Human Capital and the Patterns of Employment and Welfare Receipt" SPRC Project 8-07 Final Report.

Cockx, B. (2003) 'Vocational Training of Unemployed Workers in Belgium', in *IZA Discussion Paper* No 682

Crepon, B., M. Dejemeppe, et al. (2005) 'Counseling the unemployed : does it lower unemployment duration and recurrence ?', in *Discussion Papers* No 2005-34

DEWR (2006) "Customised Assistance, Job Search Training, Work for the Dole and Mutual Obligation - A Net Impact Study".

Filges, T. and B. Larsen (2005). 'Stick, Carrot and Skill Acquisition.' in *Scandinavian Journal of Economics* 107(3): 495-519.

Geerdsen, L. P. (2006). 'Is there a Threat Effect of Labour Market Programmes? A Study of ALMP in the Danish UI System.' in *Economic Journal* 116(513): 738-750.

Geerdsen, L. P. (2006). 'Is There a Threat Effect of Labour Market Programmes? A Study of ALMP in the Danish UI System.' in *Economic Journal* 116(513): 738-750.

Gerfin, M. and M. Lechner (2002) "Microeconometric Evaluation of the Active Labor Market Policy in Switzerland." *Economic Journal*, 112(482), 854-893.

Graversen, B. K. and J. C. v. Ours (2008). 'How to help unemployed find jobs quickly: Experimental evidence from a mandatory activation program.' in *Journal of Public Economics* 92(10-11): 2020-2035.

Hamalainen, K., R. Uusitalo, et al. (2008). 'Varying Biases in Matching Estimates: Evidence from Two Randomised Job Search Training Experiments.' in *Labour Economics* 15(4): 604-618.

Hardoy, I. (2005). 'Impact of Multiple Labour Market Programmes on Multiple Outcomes: The Case of Norwegian Youth Programmes.' in *LABOUR* 19(3): 425-467.

Hebbar, L. (2006). 'Vocational Training for the Unemployed: Its Impact on Uncommonly Served Groups.' in *International Journal of Manpower* 27(4): 377-395.

Heckman, J. R.J. LaLonde, and J.A. Smith (1999). "The Economics and Econometrics of Active Labor Market Programs." In: O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, Vol. 3 A, Amsterdam: Elsevier Science, 1865-2097.

Huber, M., M. Lechner, et al. (2009) 'Do German Welfare-to-Work Programmes Reduce Welfare and Increase Work?', in *IZA Discussion Papers* No 4090

Hujer, R., S. L. Thomsen, et al. (2006). 'The Effects of Vocational Training Programmes on the Duration of Unemployment in Eastern Germany.' in *Allgemeines Statistisches Archiv/Journal of the German Statistical Society* 90(2): 299-321.

Hujer, R., S.L. Thomsen, C. Zeiss (2004). "The Effects of Vocational Training Programmes on the Duration of Unemployment in Germany". IZA Discussion Paper No. 1117.

Jekaterina, D. and H. Mihails (2007). 'A Stock-Flow Matching Approach to Evaluation of Public Training Programme in a High Unemployment Environment.' in *LABOUR* 21(3): 503-540.

Jochen, K. (2006) 'The Effectiveness of European Active Labor Market Policy', in *IZA Discussion Papers* No 2018

Lalive, R., J. C. van Ours, et al. (2005). 'The Effect of Benefit Sanctions on the Duration of Unemployment.' in *Journal of the European Economic Association* 3(6): 1386-1417.

Lalive, R., J. C. van Ours, et al. (2008). 'The Impact of Active Labour Market Programmes on the Duration of Unemployment in Switzerland.' in *Economic Journal* 118(525): 235-257.

Lechner, M. and B. Melly (2007) 'Earnings Effects of Training Programs', in *CEPR Discussion Paper* No no. 6400

Lechner, M., R. Miquel, et al. (2005) 'The Curse and Blessing of Training the Unemployed in a Changing Economy: the Case of East Germany after Unification', in *CEPR Discussion Papers* No 5171

Lechner, M. and C. Wunsch (2006) 'Are Training Programs More Effective When Unemployment Is High?', in *CEPR Discussion Paper* No 5920

Leeves, G. (2000) "Duration-Specific Unemployment Outflow Rates and Labour Market Programs", Vol 33, p221-34.

Long M & Shah C, 2008. Private returns to vocational education and training qualifications. NCVER, Adelaide. www.ncver.edu.au/publications/2011.html

Martin, J. P. and D. Grubb (2001) 'What works and for whom: a review of OECD countries' experiences with active labour market policies', in *Working Papers* No 2001-14

OECD (2005). "Labour Market Programmes and Activation Strategies: Evaluating the Impacts", *OECD Employment Outlook*, Ch. 4.

Raaum, O., H. Torp, et al. (2003) 'Do individual programme effects exceed the costs? Norwegian evidence on long run effects of labour market training', in *Memorandum* No 15-2002

Rahmani, Z., T. Crosier, et al. (2002) 'Evaluating the impact of the Literacy and Numeracy Training Programme for job seekers', in *Research, Analysis and Evaluation Group* No

Richardson, K. and G. J. v. d. Berg (2002) 'The effect of vocational employment training on the individual transition rate from unemployment to work', in *Working Papers* No 2002-08

Richardson, L. L. (2002). 'Impact of the Mutual Obligation Initiative on the Exit Behaviour of Unemployment Benefit Recipients: The Threat of Additional Activities.' in *The Economic Record* 78(243): 406-21.

Rinne, U., M. Schneider, et al. (2001) 'Too Bad to Benefit? Effect Heterogeneity of Public Training Programs', in *IZA Discussion Paper* No 3240.

Rosholm, M. and M. Svarer (2004) 'Estimating the Threat Effect of Active Labour Market Programmes', in *IZA Discussion Papers* No 1300.

Ryan, C. (2002), Individual Returns to Vocational Education and Training Qualifications: Their Implications for Lifelong Learning, NCVER, Adelaide. http://www.ncver.edu.au/students/publications/766.html

Sianesi, B. (2004). 'An Evaluation of the Swedish System of Active Labor Market Programs in the 1990s.' in *Review of Economics and Statistics* 86(1): 133-155.

Stenberg, A. (2003) 'The Adult Education Initiative in Sweden. Second Year Effects on Wage Earnings and the Influence on Branch Mobility', in *Swedish Working Papers in Economics* No 608.

Stenberg, A. (2005). 'Comprehensive Education for the Unemployed--Evaluating the Effects on Unemployment of the Adult Education Initiative in Sweden.' in *LABOUR* 19(1): 123-146.

Stenberg, A. (2007). 'Comprehensive Education or Vocational Training for the Unemployed?', in *International Journal of Manpower* 28(1): 42-61.

Stenberg, A. and O. Westerlund (2008). 'Does Comprehensive Education Work for the Long-Term Unemployed?', in *Labour Economics* 15(1): 54-67.

Stromback and Dockery (2000) "Labour market programs, unemployment and employment hazards: an application using the 1994-1997 Survey of Employment and Unemployment Patterns", Australian Bureau of Statistics Occasional Paper ABS Cat. No. 6293.0.00.002.

van den Berg, G. J. and B. van der Klaauw (2006). 'Counseling and Monitoring of Unemployed Workers: Theory and Evidence from a Controlled Social Experiment.' in *International Economic Review* 47(3): 895-936.

Zhang, T. (2003) 'Identifying treatment effects of active labour market programmes for Norwegian adults', in *Memorandum* No 26/2003

Zweimueller, J. and R. Winter-Ebmer (1996). 'Manpower Training Programmes and Employment Stability.' in *Economica* 63(249): 113-130.

9. Appendices

Appendix A:

Table A1: Definition of all independent variables used in the estimation

Variable	Variable definition	Notes
Sex	Dummy = 1 if female	
Age	Dummy variables for age in 5-year bands (base category: 30-34)	
Education	Dummy variables for following categories:	
	Year 10 or lower (base category)	Includes those with year 10, primary school and no formal schooling.
	Year 12	
	Trade/Apprenticeship/TAFE	Includes all trade and apprenticeship qualifications, as well as all other TAFE/technical certificates or diploma.
	Degree	Includes Bachelor, Masters and Doctorate degrees.
Ethnicity	Dummy variables for following categories:	
	Non-indigenous Australian-born (base category)	
	Born in English speaking country (ESC)	
	Not born in English speaking country (NESC), speak English at home	
	Not born in English speaking country (NESC), do not speak English at home	
	Aboriginal or Torres Strait Islander (ATSI)	
Partner status	Dummy variables for following categories:	
	Working (base category)	
	Unemployed	
	Temporarily not working	
	On DSP or retired	
	Status unknown	
Age of youngest	Dummy variables for following categories:	

child

    No children (base category)

    Don't know

    Age < 3

    Age >= 3 & age < 6

    Age >= 6 & age <= 13

    Age 14 - 15

    Age > 16

Payment history	Proportion of time on income support in past 5 years (the variable ranges from 0 to 1)	This denominator of this variable has been adjusted for younger recipients as the proportion is calculated as the number of days in receipt of benefits divided by the number of days the respondent *was eligible* for income support in the past 5 years (thus may be less than 5 years for respondents aged between 16 and 20).
	Number of income support spells in past 5 years	Covers the period where respondent *was eligible* for income support in the past 5 years (i.e. may be less than 5 years for respondents aged between 16 and 20).

Benefit type   Dummy variables for following categories:

    Not on benefits (base category)

	Student	Includes Austudy, Youth Allowance Apprentice, Youth Allowance Student, and Abstudy.
	NSA	
	DSP	
	PPS	
	PPP	
	Other	All other types of income support.

Health status   Dummy variables for following categories:

	Very good health (base category)	Combines respondents with 'excellent', 'very good', or 'good' health conditions.
	Bad	
	Very bad	

Working   Dummy = 1 if working at the time of the

interview

Financial hardship	Dummy = 1 if respondent feels that the household is facing financial hardship	Derived from question "Thinking about your household's total income, would you say your household is able to get by..". If respondent answered 'with great difficulty' or 'with some difficulty', we coded the variable as 1, and as 0 otherwise.
Support	Indicator for social support.	Calculated as the mean value of responses to the following social support statements ('I often need help from other people but can't get it'; 'I have no one to lean on in times of trouble'; 'I can always rely on my family and friends for support'). We reversed the scale for the last question to make it consistent with the rest. Responses thus range from 1 ('strongly agree') to 5 ('strongly disagree'). If the value is missing, we fill in the individual mean. If the value is still missing for the individual, we fill in the sample mean.
Cohort 3	Dummy = 1 if respondent belongs to cohort 3	
Post-reform	Dummy = 1 if interview took place post-reform (i.e. after July 2006)	
Attitude to studying	Attitude toward studying.	Based on question 'for me, studying and training is a good way of getting ahead'. Responses range from 1 ('strongly agree') to 5 ('strongly disagree'). For missing values, we fill in the individual mean. If the value is still missing for the individual, we fill in the sample mean.
Attitude to work	Attitude toward work.	Calculated as the mean value of responses to the following statements towards work ('given my current situation, work just isn't worth my while'; and 'I don't think people in my situation should have to work or look for work'). Responses range from 1 ('strongly agree') to 5 ('strongly disagree'). If the value if missing, we fill in the individual mean. If the value is still missing for the individual, we fill in the sample mean.

Table A2: Summary statistics, by cohort

	Cohort 1		Cohort 3	
	Unweighted	Weighted	Unweighted	Weighted
Socio-demographic characteristics				
Age	41.3	40.1	40.2	34.4
Female (%)	57.8	57.8	55.3	46.8
Australian born -non ATSI (%)	74.4	76.0	72.5	73.8
born in ESC (%)	12.8	12.9	14.9	13.6
born in NESC (%)	9.3	7.9	8.5	7.2
ATSI (%)	3.5	3.3	4.1	5.4
English main language in household (%)	92.4	91.3	90.3	90.0
Highest level of formal education (%)				
Year 10/4th form or below	46.3	47.1	44.0	37.7
Year 12/6th form or equivalent	17.6	18.6	17.2	22.2
Trade/apprenticeship/TAFE/Technical certificate or diploma	21.7	19.9	24.9	24.3
Degree/Masters Degree/Doctorate	14.4	14.3	14.0	15.8
Family characteristics				
% of respondents living with partner	43.3	35.7	41.8	33.3
Partner working (as % of people with partner)	55.3	44.6	61.6	60.3
Age of youngest child (if child aged<16)	6.5	6.7	6.8	5.1
Number of kids	1.1	0.9	1.0	0.7
Health				
% of respondents with a healthcondition	44.2	45.2	39.2	26.9
Care-related				
% of respondents providing care to someone	12.0	14.8	9.0	6.5
% of respondents used / needed childcare	13.4	10.7	12.1	9.6
% unable to get childcare (as % of individuals used/needed childcare)	26.6	25.3	30.4	30.8
% Prefered arrangement unavailable (as % of unable to get child care)	70.0	68.7	66.8	66.0
% cost related reasons (as % of unable to get childcare)	10.4	9.6	13.9	13.7
other characteristics				
% of respondents in financial hardship	69.1	68.9	66.9	59.1
Number of obs.	**30,595**	**30,595**	**14,855**	**14,855**

Table A3: Summary statistics of the modelling sample

	Short training only	Formal study only	Both	No training
Socio-demographic characteristics				
Age	40.7	34.6	37.0	42.1
Female	56.1	63.0	64.5	56.0
Australian born -non ATSI (%)	73.0	73.7	74.4	73.9
Born in NESC (%)	14.0	13.4	13.3	13.4
Born in ESC (%)	9.4	8.8	8.1	9.1
ATSI (%)	3.6	4.1	4.3	3.6
English main language in household (%)	91.3	91.2	92.7	91.9
Highest level of formal education (%)				
Year 10/4th form or below	39.4	28.5	26.7	49.7
Year 12/6th form or equivalent	15.7	23.2	17.7	16.8
Trade/apprenticeship/TAFE/ Technical certificate or diploma	26.6	27.1	33.0	21.2
Degree/Masters Degree/Doctorate	18.4	21.3	22.6	12.3
Family characteristics				
% of respondents living with partner	41.3	33.5	35.4	44.7
Partner working (as % of people with partner)	59.4	65.5	68.5	55.8
Age of youngest child (if child aged<16)	7.5	6.6	7.3	6.4
Number of kids	1.1	1.0	1.1	1.1
Health				
% of respondents with a healthcondition	36.7	33.9	36.6	45.0
Care-related				
% of respondents providing care to someone	10.9	8.4	11.8	11.4
% of respondents used / needed childcare	14.2	17.0	17.7	12.1
% unable to get childcare (as % of individuals used/needed childcare)	34.7	30.7	33.7	25.7
% Prefered arrangement unavailable (as % of unable to get child care)	68.8	68.8	67.2	69.1
% cost related reasons (as % of unable to get childcare)	10.4	10.0	8.2	12.4
other characteristics				
% of respondents in financial hardship	67.3	64.3	66.2	69.2
Number of obs.	**4,905**	**5,367**	**1,030**	**34,148**

Table A4: Coefficient estimates from bivariate probit model

	Short-term only		Formal only	
	Coefficient	S.E.	Coefficient	S.E.
Female	0.030	0.026	0.132***	0.029
Age groups (30-34)				
16-19	0.079	0.065	0.539***	0.067
20-24	-0.042	0.051	0.288***	0.053
25-29	-0.063	0.051	0.106**	0.052
35-39	0.041	0.046	0.017	0.050
40-44	0.054	0.048	-0.162***	0.054
45-49	0.065	0.05	-0.243***	0.056
50-54	0.082	0.051	-0.228***	0.059
55-59	0.029	0.053	-0.310***	0.064
60-64	-0.177***	0.063	-0.524***	0.08
Education (Year 10 or lower)				
Year 12	0.054	0.033	0.272***	0.035
Trade/Apprenticeship/TAFE	0.202***	0.029	0.284***	0.033
Degree	0.247***	0.035	0.404***	0.040
Ethnicity (Non-indigenous Australian-born)				
ESC	-0.035	0.040	0.111**	0.046
NESC, speak Eng. at home	-0.023	0.049	0.062	0.058
NESC, not speak Eng. at home	0.029	0.048	0.094*	0.051
ATSI	-0.002	0.066	0.097	0.067
Partner status (working)				
No partner	-0.023	0.034	0.003	0.037
Unemployed	-0.014	0.058	0.018	0.063
Temporarily not working	0.056	0.043	-0.064	0.052
On DSP or retired	-0.090	0.063	-0.045	0.073
Status unknown	-0.054	0.084	0.070	0.083
Age of youngest child (No children)				
Don't know	-0.138	0.198	0.365**	0.177
Age < 3	-0.146***	0.048	-0.237***	0.051
Age >= 3 & age < 6	0.049	0.050	0.025	0.055
Age >= 6 & age <= 13	0.027	0.039	0.060	0.043
Age 14 - 15	0.024	0.062	0.078	0.07
Age > 16	-0.062	0.048	-0.01	0.056
Payment history				
Proportion on IS in past 5 years	-0.128***	0.039	-0.122***	0.043
Nr. of spells in past 5 years	0.007	0.008	0.000	0.008
Benefit type (not on benefits)				
Student	-0.102	0.087	1.438***	0.079
NSA	0.216***	0.032	0.270***	0.036
DSP	-0.172***	0.045	0.182***	0.047
PPS	-0.028	0.048	0.162***	0.052
PPP	-0.080	0.059	-0.041	0.061
other	-0.121	0.084	-0.062	0.100
Health status (Very good health)				
Bad	-0.049*	0.029	-0.112***	0.031
Very bad	-0.156***	0.042	-0.166***	0.047
Working	0.112***	0.026	0.048*	0.029

Financial hardship	0.024	0.024	0.050*	0.026
Attitude to studying	-0.124***	0.012	-0.277***	0.014
Attitude to work	0.088***	0.011	0.021*	0.011
Support	-0.031***	0.011	-0.016	0.012
Cohort 3	0.044	0.029	-0.058*	0.030
Post-reform[a]	-0.042*	0.023	0.176***	0.021
Constant	-1.328***	0.082	-1.038***	0.090
Athrho	0.089***	0.016		
Observations			29317	

Notes: cluster-robust standard errors reported

*** indicate significance at the 1% level, ** significant at 5%, * significant at 10%.

[a] Welfare-to-work reforms began in July 2006.

Financial hardship

Attitude to studying

Attitude to work

Table A5: Marginal effects after bivariate probit, males

Parameter	No training Marg.eff.	SE	Only short training Marg.eff.	SE	Only formal training Marg.eff.	SE	Both Marg.eff.	SE
Age groups (30-34)								
16-19	-0.152***	0.032	0.123***	0.023	-0.014	0.016	0.027***	0.007
20-24	-0.093***	0.025	0.099***	0.02	-0.023*	0.013	0.016***	0.006
25-29	-0.015	0.023	0.022	0.018	-0.009	0.014	0.002	0.005
35-39	-0.021	0.022	0.009	0.017	0.007	0.013	0.005	0.005
40-44	0.024	0.023	-0.032**	0.016	0.013	0.014	-0.005	0.005
45-49	0.053***	0.020	-0.041***	0.016	-0.002	0.013	-0.010**	0.004
50-54	0.044**	0.020	-0.051***	0.015	0.016	0.013	-0.009**	0.004
55-59	0.055***	0.019	-0.053***	0.014	0.008	0.012	-0.010***	0.004
60-64	0.103***	0.018	-0.084***	0.017	-0.007	0.013	-0.021***	0.004
Education (Year 10 or lower)								
Year 12	-0.061***	0.012	0.054***	0.009	-0.003	0.007	0.010***	0.002
Trade/Apprenticeship/TAFE	-0.069***	0.011	0.037***	0.008	0.020***	0.007	0.013***	0.002
Degree	-0.106***	0.014	0.079***	0.011	0.008	0.008	0.019***	0.003
Ethnicity (Non-indigenous Australian-born)								
ESC	-0.019	0.017	0.032***	0.012	-0.018*	0.010	0.002	0.003
NESC, speak Eng. at home	0.006	0.020	0.000	0.016	-0.005	0.011	-0.001	0.004
NESC, not speak Eng. at home	-0.007	0.019	-0.001	0.014	0.006	0.012	0.001	0.004
ATSI	-0.055**	0.025	0.034*	0.018	0.008	0.016	0.010**	0.005
Partner status (working)								
No partner	0.033**	0.015	-0.031***	0.012	0.004	0.009	-0.006*	0.003
Unemployed	0.051*	0.026	-0.023	0.021	-0.017	0.018	-0.011*	0.006
Temporarily not working	0.042**	0.017	-0.041***	0.014	0.008	0.010	-0.009**	0.004
On DSP or retired	0.033	0.027	-0.032	0.02	0.006	0.017	-0.007	0.006
Status unknown	0.050	0.034	-0.017	0.024	-0.022	0.021	-0.011	0.008
Age of youngest child (No children)								
Age unknown	0.008	0.062	0.020	0.047	-0.025	0.045	-0.003	0.013
Age < 3	0.008	0.020	-0.026*	0.015	0.019	0.013	0.000	0.004
Age >= 3 & age < 6	-0.026	0.021	-0.011	0.017	0.030**	0.014	0.007	0.005
Age >= 6 & age <= 13	-0.006	0.016	-0.017	0.012	0.021**	0.010	0.002	0.003
Age 14 - 15	-0.016	0.026	0.015	0.020	-0.002	0.016	0.003	0.005
Age > 16	-0.002	0.019	-0.007	0.014	0.008	0.011	0.001	0.004
Payment history								
Proportion on IS in past 5 years	0.044***	0.015	-0.008	0.011	-0.026***	0.009	-0.009***	0.003
Nr.of spells in past 5 years	0.000	0.003	-0.004	0.002	0.003*	0.002	0.000	0.001
Benefit type (not on benefits)								
Student	-0.429***	0.035	0.290***	0.021	-0.077***	0.023	0.056***	0.008
NSA	-0.081***	0.013	0.034***	0.009	0.028***	0.009	0.018***	0.003
DSP	0.001	0.016	0.033***	0.011	-0.036***	0.010	-0.002	0.003
PPS	-0.012	0.035	0.059**	0.030	-0.054***	0.020	-0.001	0.007
PPP	0.023	0.043	-0.001	0.034	-0.018	0.027	-0.005	0.009
other	0.049	0.041	0.025	0.028	-0.076***	0.028	-0.014	0.01
Health status (good health)								
Bad	0.038***	0.011	-0.024***	0.008	-0.007	0.007	-0.008***	0.002
Very bad	0.065***	0.016	-0.027**	0.012	-0.024**	0.010	-0.013***	0.004

	No training		Only short training		Only formal training		Both	
	Marg.eff.	SE	Marg.eff.	SE	Marg.eff.	SE	Marg.eff.	SE
Working	-0.011	0.011	0.014*	0.008	-0.004	0.006	0.002	0.002
Financial hardship	-0.011	0.010	0.013*	0.007	-0.004	0.006	0.002	0.002
Attitude to studying	0.064***	0.005	-0.037***	0.005	-0.014***	0.003	-0.013***	0.002
Attitude to work	-0.008*	0.004	-0.005	0.003	0.011***	0.003	0.002**	0.001
Support	0.006	0.004	-0.004	0.003	-0.001	0.003	-0.001	0.001
Cohort 3	-0.014	0.011	-0.007	0.008	0.017**	0.007	0.003	0.002
Post-reform[a]	0.000	0.009	0.026***	0.007	-0.024***	0.006	-0.001	0.002

Notes: ** indicate significant at 5% level, * significant at 10% level.

All time-varying variables are measured at t-1

[a] Welfare-to-work reforms began in July 2006.

Table A6: Marginal effects after bivariate probit, females

Parameter	No training		Only short training		Only formal training		Both	
	Marg.eff.	SE	Marg.eff.	SE	Marg.eff.	SE	Marg.eff.	SE
Age groups (30-34)								
16-19	-0.141***	0.027	0.111***	0.02	-0.006	0.013	0.026***	0.006
20-24	-0.042**	0.019	0.050***	0.015	-0.014	0.009	0.006	0.004
25-29	-0.016	0.018	0.029**	0.014	-0.014	0.010	0.001	0.004
35-39	-0.006	0.016	-0.001	0.012	0.005	0.009	0.002	0.004
40-44	0.018	0.016	-0.031**	0.012	0.016	0.010	-0.003	0.004
45-49	0.012	0.017	-0.044***	0.013	0.034***	0.011	-0.002	0.004
50-54	0.002	0.019	-0.032**	0.014	0.030**	0.012	0.000	0.004
55-59	0.023	0.019	-0.043***	0.014	0.024**	0.012	-0.004	0.004
60-64	0.082***	0.021	-0.054***	0.018	-0.014	0.014	-0.015***	0.004
Education (Year 10 or lower)								
Year 12	-0.047***	0.010	0.034***	0.008	0.004	0.006	0.008***	0.002
Trade/Apprenticeship/TAFE	-0.083***	0.009	0.040***	0.007	0.026***	0.006	0.016***	0.002
Degree	-0.097***	0.011	0.042***	0.008	0.036***	0.007	0.019***	0.002
Ethnicity (Non-indigenous Australian-born)								
ESC	-0.016	0.015	0.014	0.011	-0.001	0.008	0.003	0.003
NESC, speak Eng. at home	-0.016	0.019	0.019	0.013	-0.007	0.010	0.002	0.004
NESC, not speak Eng. at home	-0.029*	0.017	0.024**	0.012	-0.002	0.010	0.005	0.003
ATSI	0.011	0.021	0.005	0.016	-0.014	0.014	-0.003	0.005
Partner status (working)								
No partner	-0.003	0.011	0.014	0.009	-0.011	0.007	0.000	0.002
Unemployed	-0.016	0.018	0.010	0.013	0.003	0.012	0.003	0.004
Temporarily not working	-0.024	0.018	0.015	0.014	0.005	0.012	0.005	0.004
On DSP or retired	0.030	0.02	0.003	0.014	-0.027**	0.012	-0.006	0.004
Status unknown	-0.029	0.026	0.024	0.019	-0.001	0.018	0.006	0.005
Age of youngest child (No children)								
Age unknown	-0.078	0.056	0.104**	0.045	-0.039	0.041	0.013	0.013
Age < 3	0.070***	0.016	-0.027**	0.012	-0.027***	0.009	-0.015***	0.004
Age >= 3 & age < 6	-0.011	0.016	0.016	0.013	-0.006	0.010	0.002	0.004
Age >= 6 & age <= 13	-0.017	0.013	0.024**	0.01	-0.010	0.008	0.003	0.003
Age 14 - 15	-0.014	0.02	0.014	0.016	-0.003	0.012	0.003	0.005
Age > 16	0.031*	0.016	-0.003	0.012	-0.020**	0.009	-0.007**	0.004
Payment history								
Proportion on IS in past 5 years	0.034**	0.013	-0.021**	0.010	-0.006	0.008	-0.007**	0.003
Nr.of spells in past 5 years	-0.002	0.003	0.002	0.002	-0.001	0.002	0.000	0.001
Benefit type (not on benefits)								
Student	-0.341***	0.033	0.252***	0.02	-0.080***	0.022	0.044***	0.007
NSA	-0.087***	0.013	0.047***	0.009	0.019**	0.008	0.020***	0.003
DSP	-0.005	0.016	0.037***	0.012	-0.034***	0.010	-0.001	0.003
PPS	-0.032**	0.016	0.023**	0.011	0.001	0.010	0.007**	0.003
PPP	0.017	0.017	-0.008	0.012	-0.006	0.012	-0.004	0.004
other	0.032	0.027	-0.026	0.022	0.000	0.018	-0.008	0.006

	No training		Only short training		Only formal training		Both	
	Marg.eff.	SE	Marg.eff.	SE	Marg.eff.	SE	Marg.eff.	SE
Health status (good health)								
Bad	0.018*	0.010	-0.013*	0.007	-0.001	0.006	-0.004*	0.002
Very bad	0.050***	0.015	-0.021*	0.011	-0.018**	0.009	-0.011***	0.003
Working	-0.031***	0.009	-0.003	0.007	0.027***	0.006	0.008***	0.002
Financial hardship	-0.015*	0.008	0.005	0.006	0.007	0.005	0.003*	0.002
Attitude to studying	0.072***	0.005	-0.050***	0.004	-0.007***	0.002	-0.015***	0.001
Attitude to work	-0.021***	0.004	0.003	0.003	0.013***	0.002	0.005***	0.001
Support	0.009**	0.004	-0.001	0.003	-0.006**	0.002	-0.002**	0.001
Cohort 3	0.014	0.010	-0.015**	0.007	0.003	0.006	-0.003	0.002
Post-reform[a]	-0.038***	0.006	0.036***	0.005	-0.005	0.005	0.007***	0.002

Notes: ** indicate significant at 5% level, * significant at 10% level.

All time-varying variables are measured at t-1

[a] Welfare-to-work reforms began in July 2006.

Table A7: Raw characteristics for those with formal training only

	Wave 2		Wave 3		Wave 4		Wave 5	
	CL	TM	CL	TM	CL	TM	CL	TM
Socio-demographic characteristics (%)								
Female	56.0	64.6	56.4	70.3	54.2	57.3	55.7	69.8
Age	41.2	32.2	41.7	33.9	41.0	33.7	41.7	34.5
Ethnicity								
Non-indigenous Australian-born	74.7	66.6	75.5	71.3	74.3	74.7	75.7	76.5
ESC	8.7	10.4	8.9	8.9	9.2	6.7	9.3	8.9
NESC, speak Eng. at home	6.2	4.2	6.0	8.9	6.1	3.4	5.9	5.2
NESC, not speak Eng. at home	6.8	9.4	6.3	5.9	7.0	9.0	6.2	7.8
ATSI	3.6	9.4	3.3	5.0	3.4	6.2	2.9	1.6
Working (%)	33.4	39.6	38.1	54.5	42.0	43.3	45.7	57.8
Highest level of formal education (%)								
Year 10 or lower	58.7	46.8	57.9	40.5	55	47.3	51.8	33.8
Year 12	15.1	21.9	15.8	21.8	15.8	20.2	17.2	19.3
Trade/Apprenticeship/TAFE	16.5	18.8	16.3	24.8	19.5	21.3	20.6	29.7
Degree	9.7	12.5	10.0	12.9	9.7	11.2	10.4	17.2
Partner status (%)								
No partner	51.1	60.4	51.6	58.4	52.1	56.2	52	58.9
Working	22.6	19.8	24.6	28.7	25.4	22.6	28.5	29.7
Unemployed	3.8	5.2	3.5	3.0	3.8	5.6	3.1	4.7
Temporarily not working	11.0	6.3	11.0	5.9	10.2	11.2	9.1	3.6
On DSP or retired	8.5	3.1	8.2	3.0	6.5	2.2	6.7	2.1
Status unknown	3.0	5.2	1.1	1.0	2.0	2.2	0.6	10.0
Age of youngest child (%)								
Don't know	0.2	2.1	0.8	2.0	0.1	1.1	0.0	0.0
No children	49.4	47.9	48.9	43.5	49.1	50.0	48.6	41.2
Age < 3	16.0	16.7	16.9	18.8	15.4	13.5	15.3	20.8
Age >= 3 & age < 6	6.9	13.5	6.8	4.0	6.8	9.6	6.8	7.8
Age >= 6 & age <= 13	15.5	12.5	15.7	25.7	16.6	19.1	16.3	19.8
Age 14 - 15	3.8	4.2	3.2	1.0	3.7	4.5	3.8	4.7
Age > 16	8.2	3.1	7.7	5	8.3	2.2	9.2	5.7
Payment history (%)								
Proportion on IS in past 5 years	65.7	64.8	67.0	68.1	61.0	59.8	61.8	57.4
Nr.of spells in past 5 years	2.3	2.7	2.2	2.6	2.4	2.6	2.4	2.9
Benefit type (%)								
Not on benefits	25.3	32.3	29.1	35.6	36.7	33.2	40.7	43.8
Student	0.0	2.1	0.0	0.0	0.0	1.7	0.0	0.0
NSA	19.3	26.0	15.9	21.8	24.0	40.4	18.6	25.5
DSP	28.8	11.5	29.5	13.9	22.0	7.3	24.0	8.3
PPS	12.5	19.8	12.8	18.8	8.7	10.1	8.4	14.6
PPP	8.7	7.3	7.4	7.9	5.6	6.7	4.9	5.7
other	5.4	1.0	5.3	2.0	3.0	0.6	3.4	2.1

Health status (%)

Good/very good	55.5	80.2	58.9	76.2	59.2	70.2	61.9	76.1
Bad	26.0	14.6	25.4	13.9	25.2	19.1	23.3	20.3
Very bad	18.5	5.2	15.7	9.9	15.6	10.7	14.8	3.6
Other characteristics								
Financial hardship (%)	75.6	62.5	70.9	67.3	70.5	70.2	68.0	62.0
Attitude to studying[1]	2.1	1.7	2.2	1.6	2.1	1.6	2.1	1.6
Attitude to work[2]	3.3	3.7	3.2	3.7	3.4	3.8	3.4	3.8
Support[3]	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.8
N	**3,620**	**96**	**2,693**	**101**	**4,745**	**178**	**4,120**	**192**

Table A8: Raw characteristics for those with short training only

	Wave 2		Wave 3		Wave 4		Wave 5	
	CL	TM	CL	TM	CL	TM	CL	TM
Socio-demographic characteristics (%)								
Female	56.0	45.3	56.5	48.6	54.2	54.1	55.8	58.0
Age	41.2	40.0	41.7	37.3	41.0	37.9	41.7	40.0
Ethnicity								
Non-indigenous Australian-born	74.7	72.5	75.6	76.1	74.3	75.8	75.6	73.6
ESC	8.7	6.5	8.9	11.6	9.2	8.2	9.3	10.4
NESC, speak Eng. at home	6.2	6.5	6.0	5.5	6.1	3.7	5.9	7.6
NESC, not speak Eng. at home	6.8	8.5	6.3	2.7	7.0	9.0	6.2	6.0
ATSI	3.6	6.0	3.2	4.1	3.4	3.3	3.0	2.4
Working (%)	33.4	44.8	38.0	53.4	42.1	50.8	45.7	57.2
Highest level of formal education (%)								
Year 10 or lower	58.7	56.7	58.0	41.7	55.1	49.2	51.8	39.6
Year 12	15.1	9.5	15.8	17.8	15.7	16.8	17.2	16.4
Trade/Apprenticeship/TAFE	16.5	19.4	16.3	29.5	19.5	22.1	20.6	27.6
Degree	9.7	14.4	9.9	11.0	9.7	11.9	10.4	16.4
Partner status (%)								
No partner	51.1	62.2	51.8	57.5	52	59.4	52.3	58.4
Working	22.6	15.9	24.4	21.9	25.5	20.5	28.5	26.0
Unemployed	3.8	2.5	3.4	6.2	3.8	4.9	3.2	3.6
Temporarily not working	11.0	12.4	11.0	8.9	10.2	11.5	9.2	9.2
On DSP or retired	8.5	5.0	8.3	4.8	6.5	2.5	6.8	2.8
Status unknown	3.0	2.0	1.1	0.7	2.0	1.2	0.0	0.0
Age of youngest child (%)								
Don't know	0.2	0.5	0.0	0.0	0.1	0.4	0.0	0.0
No children	49.4	56.1	49.3	50.8	49.1	49.6	48.5	50.4
Age < 3	16.0	6.5	17.0	11.6	15.4	14.3	15.3	8.8
Age >= 3 & age < 6	6.9	9.5	6.8	11.6	6.8	5.3	6.8	3.6
Age >= 6 & age <= 13	15.5	15.4	15.8	17.8	16.6	20.1	16.4	22.8
Age 14 - 15	3.8	4.5	3.3	0.7	3.7	3.3	3.8	4.0
Age > 16	8.2	7.5	7.8	7.5	8.3	7.0	9.2	10.4
Payment history (%)								
Proportion on IS in past 5 years	65.7	59.9	67.1	65.4	61.0	58.7	61.8	57.5
Nr.of spells in past 5 years	2.3	2.5	2.2	2.4	2.4	2.7	2.3	2.4
Benefit type (%)								
Not on benefits	25.3	28.4	28.9	31.5	36.7	40.6	40.8	46.8
Student	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NSA	19.3	37.3	15.9	28.8	24.0	35.7	18.5	31.6
DSP	28.8	12.4	29.6	16.4	22.0	8.6	24.0	9.6
PPS	12.5	13.4	13.0	14.4	8.7	8.6	8.4	6.8
PPP	8.7	5.5	7.3	8.2	5.6	5.7	4.9	2.8
other	5.4	3.0	5.3	0.7	3.0	0.8	3.4	2.4

Health status (%)

Good/very good	55.5	63.1	59.1	69.2	59.2	72.6	61.9	70.8
Bad	26.0	29.4	25.2	23.3	25.2	18	23.3	19.2
Very bad	18.5	7.5	15.7	7.5	15.6	9.4	14.8	10.0
Other characteristics								
Financial hardship (%)	75.6	78.1	70.8	70.5	70.5	70.1	67.9	62.4
Attitude to studying[1]	2.1	1.9	2.2	1.8	2.1	1.8	2.1	1.9
Attitude to work[2]	3.3	3.7	3.2	3.9	3.4	3.9	3.4	3.8
Support[3]	1.6	1.6	1.7	1.6	1.7	1.7	1.8	1.8
N	**3,619**	**201**	**2,671**	**146**	**4,744**	**244**	**4,095**	**250**

Table A9: Raw outcomes for those with only formal training

	Wave 2		Wave 3		Wave 4		Wave 5	
	CL	TM	CL	TM	CL	TM	CL	TM
Proportion of time on benefits (%) for next								
6 months	69.3	54.7	67.8	62.0	59.3	58.6	57.9	53.6
12 months	67.1	49.0	66.1	58.1	58.0	51.4	59.1	51.9
18 months	65.7	47.7	64.5	53.9	59.3	53.3		
24 months	64.3	51.1	64.6	54.3				
Proportion of sample on benefits (%) after								
6 months	68.0	49.0	66.4	58.4	58.7	55.1	57.4	53.1
12 months	66.0	46.9	65.3	55.4	57.7	49.4	60.1	52.6
18 months	65.2	50.0	63.9	54.5	60.5	54.5		
24 months	63.8	49.0	65.8	52.7				
Job characteristics - after 6 months								
Working (%)	37.7	59.7	39.6	56.0	45.5	59.5		
Ever worked in past 6 months (%)	43.8	67.7	44.4	64.0	52.3	67.6		
Have full-time job (%)	14.6	27.4	14.8	18.7	18.6	25.7		
Hours of main job | working	27.8	31.5	27.5	26.4	28.8	28.1		
Hours worked in all jobs | working	28.3	33.0	28.0	27.0	29.3	29.1		
Hours worked in all jobs	10.5	19.5	10.9	15.1	13.1	17.3		
Wage from main job	20.2	23.3	20.3	18.6	20.8	20.1		
Total weekly earnings | working	537.8	629.7	553.8	433.2	595.6	543.5		
Total weekly earning	180.5	358.3	196.4	216.6	246.8	302.0		
Main job - high skill (%)	19.9	24.3	18.1	23.8	17.3	16.3		
Main job – medium/high skill (%)	75.6	81.1	72.9	88.1	74.0	79.1		
Job characteristics - after 12 months								
Working (%)	39.4	73.5	39.0	60.3				
Ever worked in past 6 months (%)	44.3	75.5	44.8	66.7				
Have full-time job (%)	14.7	22.4	13.9	17.5				
Hours of main job | working	27.6	25.4	27.0	26.0				
Hours worked in all jobs | working	28.0	26.1	27.5	26.3				
Hours worked in all jobs	10.9	19.0	10.6	15.7				
Wage from main job	20.3	20.2	20.7	19.0				
Total weekly earnings | working	553.6	511.5	551.2	521.3				
Total weekly earning	195.6	370.0	191.7	284.3				
Main job - high skill (%)	18.7	25.7	18.1	26.3				
Main job – medium/high skill (%)	73.8	80.0	75.8	86.8				
Job characteristics - after 18 months								
Working (%)	38.6	62.2						
Ever worked in past 6 months (%)	44.6	75.6						
Have full-time job (%)	13.7	26.7						
Hours of main job | working	27.0	29.6						
Hours worked in all jobs | working	27.5	30.4						
Hours worked in all jobs	10.5	18.9						
Wage from main job	20.6	23.2						
Total weekly earnings | working	548.7	641.8						
Total weekly earning	188.9	399.3						
Main job - high skill (%)	18.7	21.4						
Main job – medium/high skill (%)	76.2	85.7						
N	**3,620**	**96**	**2,693**	**101**	**4,745**	**178**	**4,120**	**192**

Table A10: Raw outcomes for those with only short training

	Wave 2		Wave 3		Wave 4		Wave 5	
	CL	TM	CL	TM	CL	TM	CL	TM
Proportion of time on benefits (%) for next								
6 months	69.3	56.4	67.9	54.2	59.3	50.6	57.8	45.7
12 months	67.2	49.5	66.1	49.7	58.0	44.7	59.0	44.7
18 months	65.7	46.8	64.6	51.2	59.3	48.2		
24 months	64.3	44.1	64.7	53.1				
Proportion of sample on benefits (%) after								
6 months	68.0	53.2	66.5	49.3	58.7	45.5	57.3	46.0
12 months	66.0	44.8	65.4	52.1	57.7	45.9	60.1	44.4
18 months	65.3	44.8	64.0	50.7	60.5	50.4		
24 months	63.8	43.8	65.9	55.2				
Job characteristics - after 6 months								
Working (%)	37.6	52.3	39.4	62.5	45.5	60.7		
Ever worked in past 6 months (%)	43.8	66.4	44.1	74.1	52.4	73.1		
Have full-time job (%)	14.6	18.8	14.8	33.0	18.6	31.8		
Hours of main job | working	27.8	29.0	27.6	31.2	28.8	31.8		
Hours worked in all jobs | working	28.3	29.5	28.0	31.8	29.3	32.3		
Hours worked in all jobs	10.5	15.3	10.9	19.9	13.1	19.5		
Wage from main job	20.2	18.9	20.3	20.9	20.8	22.4		
Total weekly earnings | working	538.1	527.6	554.8	633.3	595.6	681.8		
Total weekly earning	180.5	242.8	195.7	382.4	246.9	395.3		
Main job - high skill (%)	19.9	23.1	18.1	22.9	17.3	21.3		
Main job – medium/high skill (%)	75.6	78.5	72.9	77.1	74.0	73.8		
Job characteristics - after 12 months								
Working (%)	39.4	60.6	39.0	69.2				
Ever worked in past 6 months (%)	44.2	66.1	44.7	81.3				
Have full-time job (%)	14.7	21.1	13.9	31.9				
Hours of main job | working	27.6	30.0	27.0	29.1				
Hours worked in all jobs | working	28.0	31.2	27.5	29.8				
Hours worked in all jobs	10.8	18.5	10.6	20.6				
Wage from main job	20.3	18.0	20.6	21.7				
Total weekly earnings | working	553.6	542.6	550.6	590.9				
Total weekly earning	195.4	294.4	191.1	402.9				
Main job - high skill (%)	18.8	13.8	18.0	22.6				
Main job – medium/high skill (%)	73.8	73.8	75.9	77.4				
Job characteristics - after 18 months								
Working (%)	38.5	57.0						
Ever worked in past 6 months (%)	44.5	68.8						
Have full-time job (%)	13.7	22.6						
Hours of main job | working	27.0	33.3						
Hours worked in all jobs | working	27.5	33.4						
Hours worked in all jobs	10.5	18.6						
Wage from main job	20.6	19.3						
Total weekly earnings | working	548.8	587.2						
Total weekly earning	188.7	278.1						
Main job - high skill (%)	18.7	13.5						
Main job – medium/high skill (%)	76.1	78.8						
N	**3,619**	**201**	**2,671**	**146**	**4,744**	**244**	**4,095**	**250**

Table A11: Matched control characteristics for those with formal training only

	Wave 2		Wave 3		Wave 4		Wave 5	
	CL	TM	CL	TM	CL	TM	CL	TM
Socio-demographic characteristics (%)								
Female	65.0	64.6	70.2	70.3	56.6	57.3	69.5	69.8
Age groups								
16-19	8.7	9.4	6.9	6.9	6.7	7.3	3.9	4.2
20-24	19.7	20.8	15.5	16.8	17.2	16.9	13.7	14.1
25-29	11.8	11.5	9.8	9.9	17.4	17.4	17.5	17.7
30-34	17.4	17.7	11.6	11.8	9.1	10.1	10.1	9.7
35-39	9.0	8.3	19.5	19.8	13.1	12.9	14.1	14.1
40-44	9.3	9.4	8.5	7.9	7.8	7.3	13.9	14.1
45-49	4.2	4.2	13.7	13.9	10.8	10.1	10.3	9.9
50-54	11.6	10.4	4.6	4.0	6.2	6.2	7.4	6.8
55-59	5.4	5.2	5.8	5.0	7.4	7.3	6.6	6.8
60-64	2.9	3.1	4.1	4.0	4.3	4.5	2.5	2.6
Ethnicity								
Non-indigenous Australian-born	67.6	66.6	72.1	71.3	74.5	74.7	77	76.5
ESC	10.4	10.4	8.6	8.9	7.1	6.7	8.5	8.9
NESC, speak Eng. at home	4.3	4.2	9.4	8.9	3.4	3.4	5.4	5.2
NESC, not speak Eng. at home	8.5	9.4	5.2	5.9	8.9	9.0	7.3	7.8
ATSI	9.2	9.4	4.7	5.0	6.1	6.2	1.8	1.6
Working (%)	41.4	39.6	53.8	54.5	43.2	43.3	57.5	57.8
Highest level of formal education (%)								
Year 10 or lower	48.2	46.8	42.9	40.5	45.7	47.3	33.3	33.8
Year 12	20.6	21.9	21.5	21.8	21.3	20.2	19.6	19.3
Trade/Apprenticeship/TAFE	19.0	18.8	23.4	24.8	21.9	21.3	29.8	29.7
Degree	12.2	12.5	12.2	12.9	11.1	11.2	17.3	17.2
Partner status (%)								
No partner	59.6	60.4	57.5	58.4	55.8	56.2	57.5	58.9
Working	20.9	19.8	29	28.7	23.2	22.6	31.3	29.7
Unemployed	5.3	5.2	3.2	3.0	5.3	5.6	4.8	4.7
Temporarily not working	6.1	6.3	6.2	5.9	11.6	11.2	3.2	3.6
On DSP or retired	3.1	3.1	3.2	3.0	2.2	2.2	2.2	2.1
Status unknown	5.0	5.2	0.9	1.0	1.9	2.2	1.0	1.0
Age of youngest child (%)								
Don't know	1.0	2.1	2.2	2.0	1.1	1.1	0.0	0.0
No children	47.2	47.9	42.5	43.5	49.3	50	39.3	41.2
Age < 3	18.0	16.7	18.0	18.8	13.7	13.5	21.3	20.8
Age >= 3 & age < 6	13.2	13.5	4.4	4.0	9.8	9.6	8.3	7.8
Age >= 6 & age <= 13	13.5	12.5	26.9	25.7	19.5	19.1	20.0	19.8
Age 14 - 15	4.1	4.2	1.1	1.0	4.5	4.5	4.9	4.7
Age > 16	3.0	3.1	4.9	5.0	2.1	2.2	6.2	5.7
Payment history (%)								

Proportion on IS in past 5 years	63.9	64.8	68.5	68.1	58.7	59.8	57.6	57.4
Nr.of spells in past 5 years	2.8	2.8	2.6	2.6	2.6	2.6	2.8	2.9
Benefit type (%)								
Not on benefits	33.2	32.3	34.2	35.6	34.2	33.2	44.8	43.8
Student	2.1	2.1	0.0	0.0	1.1	1.7	0.0	0.0
NSA	25.8	26.0	21.9	21.8	39.7	40.4	24.4	25.5
DSP	10.9	11.5	15.1	13.9	7.3	7.3	8.1	8.3
PPS	20.1	19.8	19.0	18.8	10.3	10.1	14.6	14.6
PPP	7.1	7.3	7.9	7.9	6.8	6.7	6.2	5.7
other	0.8	1.0	1.9	2.0	0.6	0.6	1.9	2.1
Health status (%)								
Good/very good	78.3	80.2	74.6	76.2	70.2	70.2	76.4	76.1
Bad	16.4	14.6	15.1	13.9	18.7	19.1	19.9	20.3
Very bad	5.3	5.2	10.3	9.9	11.1	10.7	3.7	3.6
Other characteristics								
Financial hardship (%)	64.6	62.5	69.3	67.3	68.5	70.2	62.0	62.0
Attitude to studying[1]	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.6
Attitude to work[2]	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8
Support[3]	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8
N	**96**	**96**	**101**	**101**	**178**	**178**	**192**	**192**

Table A12: Matched control characteristics for those with short training only

	Wave 2		Wave 3		Wave 4		Wave 5	
	CL	TM	CL	TM	CL	TM	CL	TM
Socio-demographic characteristics (%)								
Female	46.4	45.3	49.4	48.6	54.0	54.1	58.2	58
Age groups								
16-19	4.2	5.0	4.3	4.8	3.3	2.9	1.7	1.6
20-24[a]	8.9	8.0	9.3	9.6	10.7	11.1	8.7	8.8
25-29	9.1	9.0	10.4	10.3	10.2	10.2	10.0	10.0
30-34	7.2	7.4	12.8	13.7	12.3	12.3	7.0	6.8
35-39	10.0	10	12.7	13	15.1	15.6	14.9	15.2
40-44	11.7	11.4	14.7	15.1	10.6	10.2	12.8	12.8
45-49	16.2	16.4	7.2	6.8	10.6	10.7	12.9	12.4
50-54	13.8	13.9	13.5	13	10.1	9.8	15	15.2
55-59	11.1	10.9	9.8	8.9	11.8	12.3	8.8	8.8
60-64	7.8	8.0	5.3	4.8	5.3	4.9	8.2	8.4
Ethnicity								
Non-indigenous Australian-born	74	72.5	76.1	76.1	76	75.8	73.1	73.6
ESC	6.4	6.5	11.6	11.6	8.3	8.2	10.6	10.4
NESC, speak Eng. at home	6.5	6.5	4.7	5.5	3.6	3.7	7.5	7.6
NESC, not speak Eng. at home	8.1	8.5	2.8	2.7	8.6	9.0	6.3	6.0
ATSI	5.0	6.0	4.8	4.1	3.5	3.3	2.5	2.4
Working (%)	45.8	44.8	55.5	53.4	51.9	50.8	57.8	57.2
Highest level of formal education (%)								
Year 10 or lower	56.7	56.7	41.6	41.7	49.8	49.2	41.0	39.6
Year 12	9.9	9.5	17.8	17.8	17.0	16.8	16.1	16.4
Trade/Apprenticeship/TAFE	19.2	19.4	29.0	29.5	21.7	22.1	27.4	27.6
Degree	14.2	14.4	11.6	11.0	11.5	11.9	15.5	16.4
Partner status (%)								
No partner	63.1	62.2	57.4	57.5	59.3	59.4	58.7	58.4
Working	16.1	15.9	22.0	21.9	20.8	20.5	26.2	26
Unemployed	2.5	2.5	5.3	6.2	5.2	4.9	3.8	3.6
Temporarily not working	11.6	12.4	9.6	8.9	10.7	11.5	8.7	9.2
On DSP or retired	4.8	5.0	4.9	4.8	2.7	2.5	2.6	2.8
Status unknown	1.9	2.0	0.8	0.7	1.3	1.2	0.0	0.0
Age of youngest child (%)								
Don't know	0.5	0.5	0.0	0.0	0.2	0.4	0.0	0.0
No children	57.1	56.1	50.3	50.8	49.8	49.6	51	50.4
Age < 3	6.2	6.5	13.1	11.6	14.4	14.3	9.3	8.8
Age >= 3 & age < 6	9.1	9.5	10.8	11.6	5.4	5.3	3.7	3.6
Age >= 6 & age <= 13	15.6	15.4	18	17.8	19.9	20.1	22.1	22.8
Age 14 - 15	4.4	4.5	0.5	0.7	3.4	3.3	4.0	4.0
Age > 16	7.1	7.5	7.3	7.5	6.9	7.0	9.9	10.4

Payment history (%)

Proportion on IS in past 5 years	60.0	59.9	64.4	65.4	58.6	58.7	57.8	57.5
Nr.of spells in past 5 years	2.5	2.5	2.4	2.4	2.6	2.7	2.4	2.4
Benefit type (%)								
Not on benefits	29.5	28.4	31.6	31.5	41.5	40.6	47.1	46.8
Student	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NSA	35.7	37.3	28.7	28.8	34.8	35.7	30.7	31.6
DSP	12.5	12.4	16.2	16.4	8.1	8.6	9.5	9.6
PPS	14.1	13.4	14.9	14.4	8.9	8.6	7.3	6.8
PPP	5.2	5.5	8.2	8.2	5.9	5.7	2.9	2.8
other	3.0	3.0	0.4	0.7	0.8	0.8	2.5	2.4
Health status (%)								
Good/very good	63.9	63.1	68.6	69.2	72.6	72.6	70.7	70.8
Bad	28.4	29.4	24.3	23.3	18	18	19.3	19.2
Very bad	7.7	7.5	7.1	7.5	9.4	9.4	10	10
Other characteristics								
Financial hardship (%)	78.0	78.1	69.9	70.5	69.7	70.1	62.2	62.4
Attitude to studying[1]	1.9	1.9	1.9	1.8	1.8	1.8	1.9	1.9
Attitude to work[2]	3.7	3.7	3.8	3.9	3.9	3.9	3.8	3.8
Support[3]	1.6	1.6	1.7	1.6	1.7	1.7	1.8	1.8
N	**201**	**201**	**146**	**146**	**244**	**244**	**250**	**250**

[a] All control variables between the two groups are not significantly different from zero at the 10% level, except of this age category which is different from zero just at the 5% level. However, the difference is very small and does not bias the results.

Appendix B: Methodological note on imputing education

We noted that there are 4,373 individuals whose highest level of education changed between any two waves (having dropped the pensioners, non-students, etc.). It is natural to expect people to retain or raise their skill level, but quite suspicious if their skill level drops. It needs to be noted that we can only compare changes between waves 1 and 3 (as the question was not asked in wave 2), waves 3 and 4, and waves 4 and 5.

We have been required to regroup educational attainment in order to identify changes in the level of skills between the waves. The following three groups serve to identify movement in education groups:

1. Year 10 or below (includes primary school, whether finished or not);
2. Year 12; all trade, TAFE, and apprenticeship qualifications; and
3. All degrees (Bachelor's, Master's, Doctorate)

This distinction allows us to identify up to four separate points of educational attainment for each individual (depending on cohort and attrition). Our focus lies on those where the highest level or education drops. Whilst we don't know the reasons for the vast discrepancy of the data (i.e. an individual moving from PhD to primary then back to TAFE), it seemed sensible to utilise all the data available for each individual and "smooth out" educational attainment to arrive at an imputed variable.

We therefore designed the following imputation rules: we ignore cases where individuals solely retain or increase their skills, but focus on individuals who at some stage report a lower level of education than before. Now, if we have four observations of education for an individual, there are two options

- if there are three of the same level, we smooth out the only inconsistent one with these three
- if we have less than three of the same level, we cannot determine the highest level of education with much certainty, so we are forced to drop them.

If we have three observations of education for an individual, there are two options

- if there are two of the same level, we smooth out the only inconsistent one with the other two
- if there is no majority for one level of education, we are forced to drop them.

Appendix C:
Literature review summary results (part of the table are from

Study	Measure of training	Target group	Data	Observation period	Outcome variables	Methodology	Results
Australia							
Rahmani, Z. and Crosier, T. and Pollack, S. (2002)	Dummy for participation in LANT programme (LANT=Literacy and Numeracy training)	Unemployed job seekers (LANT programme)	Administrative data held by DEST and DEWR; data from telephone surveys	1998-1999	Employment probabilities, earnings, post-LANT income support status, post-LANT education	OLS, logit, two-step binomial probit	- very comprehensive survey, many results - insignificant effect on wages - self-perceived improvements in literacy and numeracy skills were also positively related to employment outcomes for clients who started LANT. - income support status: significant, lower likelihood for late-leavers of exiting support than early-leavers
Austria							
Zweimüller, Winter-Ebmer (1996)	Number of occurrences of training episodes	Unemployed adults	Administrative data from the Austrian labour offices	1986-1987	Employment stability: occurrence of repeated unemployment spells 12 months after individual leaves unemployment register	Bivariate probit model for repeated unemployment and selection into training. Earnings replacement ratio of UI benefits used as instrument	+ Positive effects for men. Disadvantaged and less motivated unemployed are given priority in program enrollment. Programs improve employment stability.
Belgium							
Cockx (2003)	Dummy - participation in training (no information on nature of training, completion, etc)	Unemployed	Administrative data by Wallonian employment agency	1989-1993	Transition rate from Unemployment	Control function Estimator	+ Positive effect on the transition rate Simulated decrease of unemployment duration 4 to 6 month
Denmark							
Geerdsen (2006)	Participation in the	Recipients of UI	Various administrative	1995-1998	Transition into employment,	Hazard estimation,	very strong threat effect, in size comparable to

			sources, compiled by Statistics Denmark		transition into all other states	multinomial logit specification	effects found in studies of UI systems where individuals are at risk of losing benefits completely
	Unemployment Insurance (UI) system						
Graversen and van Ours (2008)	Participation in one of the two: a) treatment group (intensive labour market programme) b) control group (normal labour market programme) -- experimental setting	Unemployed	Administrative data from the Public Employment Service (PES) and the DREAM database by the Danish National Labor Market Authority	2005-2006	Transition rate from unemployment to employment	mixed proportional hazard (MPH) model	+ significant treatment effect, independent of allowance for observed or unobserved heterogeneity + on average, job finding rate increased by 30% for treatment group (results appear to be driven by the 'threats' rather than incentives
Rosholm and Svarer (2004)	Dummy for participation in any of the following: a) Private sector employment subsidies b) Public sector temporary jobs c) Education / training d) Other programmes	UI benefit recipients (analysis only on males, 25-59 years of age)	Administrative data - event history data set developed by the Danish National Labour Market Authority.	1998-2002	Unemployment duration	Timing-of-events and functional form specification of hazard rate out of unemployment	+ Strong threat effects, + private sector employment programs reduce unemployment duration, – all other program types increase unemployment duration
Finland							
Hämäläinen, K. and Uusitalo, R. and Vuori, J. (2008)	Paper compares two randomised experiments, one conducted in 1996 (Työhön Programme) and one in 1999 Training	1st experiment: Short- and long-term unemployed, recruited by the Employment Office 2nd experiment:	Combined administrative data from the Job Seekers register, pension register, population register	1993-2003	Employment rates	Various matching methods, propensity score matching, logit regressions	Paper is concerned with addressing the bias in matching estimates - finds that even controlling for almost all covariates, selectivity bias remains when programme participation is entirely voluntary - if caseworker decides selection of programme, typical matching methods yield reasonably good estimates

	categorized as one of the two: a) treatment group (intensive labour market programme) b) control group (normal labour market programme)	Unemployed, selected by caseworker where only those who had no previous job search training and, according to the caseworker, could benefit from job search training were assigned to the programme						
France								
Crepon, B. and Dejemeppe, M. and Gurgand, M. (2005)	Counselling in terms of four categories: 1) Skill assessment 2) Project assessment 3) Job-search support 4) Project support	Unemployed	Administrative data by the French unemployment agency	2001-2004	1) transitions from unemployment to employment 2) recurrence into unemployment	duration models	+ significant favorable effects on both outcomes - the impact on unemployment recurrence is much stronger than on unemployment duration + Job-search support program displays the strongest effects - Effects are larger for people that do not receive unemployment benefits
Germany								
Huber, Lechner, Wunsch, Walter (2009)	Three broad groups: 1) 1-Euro-jobs 2) short trainings 3) further training with a planned duration of up to 3 months (4) non-participation	Welfare recipients	Administrative data from 1998-2007 from the FEA; plus survey data including two waves of stratified sample data of welfare recipients; plus regional data	2006/07-2007/08	a) welfare recipiency b) further programme participation c) employment status	regression adjusted caliper propensity score matching	0 no significant effects of the programmes on the likelihood of future welfare receipt + participation induces further subsequent programme participation. + employment: positive and significant effects for some programmes and groups of participants, in particular for short training and for welfare recipients without a migration background.
Fitzenberger,								

Osikominu (2006)							
Biewen, Fitzenberger et al (2007)	Participation in a) classroom training b) practically ortiented further training programs	Unemployed		2000-2002		propensity score matching methods in a dynamic, multiple treatment framework (see Sianesi, 2004)	
Rinne, Uhlendorf et al (2008)	Participation in a specific labour market training programme; pre/and post-reform	Unemployed - But differentiate between voucher-effect and selection-effect	Administrative data: the Integrated Employment Biographies (IEB) of the FEA	Two cohorts: i) 2002 (pre-reform) ii) 2003 (post-reform) -- each for 19 months i.e. 2002-2004	employment probability and earnings	Two step propensity score matching, regression analysis	+ overall, slightly positive impact of Hartz reform + voucher effect positive for both employment and earnings - selection effect slightly negative, if at all
Lechner and Wunsch (2006)	Participation in one of the five types: 1) Basic job-search assistance 2) practice firms 3) Short training 4) long training 5) Retraining	Unemployed	Administrative data from social insurance records on employment, data on benefit receipt during unemployment and information on participation	1986-1995	Unemployment, Employment, monthly earnings	Adapted propensity score matching estimators	- negative lock-in effects + positive medium to long-run employment and earnings effects ~ considerable variation of those effects over time (related to unemployment rate)
Lechner and Melly (2007)	Participation in one of the five types: 1) Basic job-search assistance 2) practice firms 3) Short training 4) long training 5) Retraining	Unemployed in 1993/94	Administrative data from IAB (institute for employment research) employment subsample, the benefit payment register, and the training	1993/94-2000/01	Annual employment and earnings during the seventh year after program start	consistent, nonparametric estimators; Estimate propensity scores with parametric binary probits	Positive effect on the earnings capacity for three of the four groups

			participant data.				
Lechner, Miquel and Wunsch (2005)	Participation in either of a) short training b) long training c) re-training d) practice firm e) career improvement f) "residual category"	Unemployed and those threatened by unemployment	Administrative data from social insurance records on employment, data on benefit receipt during unemployment and information on participation	1993-2002	i) Employment ii) unemployment iii) monthly earnings all outcomes observed up to eight years after participation started	propensity score matching (Nearest neighbour matching with weighted oversampling) in a multiple treatment framework	i) + Short training: sign. negative effect in the very short run and positive effect in the long run on employment 0 Long training: sign. negative effect in the short run and insignificant effect in the long run on employment + Retraining: sign. negative effect in the short run and sign. positive effect on the long run on employment ii) in the short run vice versa to i) and in the long run zero iii) + increase in 100 to 200 EUR in the long run for all programs, except practice firms
Bergemann, Fitzenberger, Schultz, Speckesser (2000)	--paper not available -- (rest of information is taken from Kluve (2006))	Long-term unemployed and other hard to place persons	---	1990-1998	Employment rates	Propensity score matching combined with DiD in a repeated participation framework	–/0 First treatment: significant negative effect on employment; 2nd treatment: no significant effect –/0 First treatment: sign. negative effect on employment; 2nd treatment: no significant effect, except for women (+ sign. positive)
Hujer, Thomsen, Zeiss (2006)	Participation in one of these training programmes: a) Short-term (< 3mths) b) medium-term(=6mths) c) long-term (12 months)	Unemployed and those threatened by unemployment	Administrative data from the Federal Employment Administration (FEA), the Employment Statistics Register, and data from the programme participants' master data set (MTG)	1999-2002	Duration of unemployment and locking-in effect	Multivariate duration model (simultaneous model of duration until treatment and duration until transition into employment)	0 No significant evidence, neither on locking-in nor on effect on unemployment duration 0 significant locking-in, no significant effect on U duration – significant locking-in, significantly rises U duration
Rinne, U. and Schneider, M. and Uhlendorff, A.	Three categories: a) class-room training b) practical	Unemployed	Administrative data: the Integrated Employment	2002-2004	Employment probabilities, monthly earnings	Propensity score matching methods	+ positive impact on employment probabilities for all sub-groups and program Types + some evidence to suggest positive effect on

(2007)	experience c) training within practice firms		Biographies (IEB) of the Federal Employment Administration (FEA)					earnings for all categories
Latvia								
Dmitrijeva, J. and Hazans, M.(2007)	Authors construct the share of trained unemployed (TU) divided by total number of unemployed (U) for each month and region. These are constructed from the number of persons completing training and re-qualification programmes, the number of trained individuals that got a job.	Unemployed	Monthly panel data from the Latvian State Employment Agency	1998-2003	Outflows to employment	Augmented matching function; use FE model to estimate two models: 1) stock–stock matching 2) stock–flow matching	Model 1) in traditional stock–stock setting, the stock of vacancies has no explanatory power Model 2) + Positive and significant effect of the share of trained unemployed on outflows to employment
Netherlands								
van den Berg and van der Klaauw, 2006,	Data from a controlled social experiment, with full randomization. - Treatment group: participation in program "counseling and monitoring"	Type I unemployed workers ("those are expected to have sufficient skills to find a job")	Administrative data	1998-1999	individual transition rate to employment.	mixed proportional hazard (MPH) specification: nonparametric and parametric methods, with duration models and with limited-dependent	0 no significant effect, at best small effects - monitoring mainly causes a shift from informal to formal job search - authors suggest to focus monitoring on individuals with worse opportunities

	- control group (receive no C&M, only need to report)						variable models.	
Norway								
Zhang (2003)	Participation in three types of programmes: a) Labour market training programmes (mainly qualification schemes) b) Temporary employment in public sectors c) Wage subsidy, stand-in jobs, courses in active job search, etc	Unemployed	Official administrative registers collected at the Ragnar Frisch Centre for Economic Research.	1990-2000	Transition to employment	Mixed proportional hazard rate (MPH) model	+ Positive effects for training + Positive effects for wage subsidies 0 No overall effects for employment programs, but some benefits for youth
Raaum, Torp, Zhang (2002)	Participation in the The *Labour Market Training* programme (*which covers* about 40 per cent of all ALMP-participants)	Unemployed	Various administrative data drawn from the *Frisch Centre Database*; tax register information on annual labour earnings	1992-1997	Earnings	Propensity score matching	+ Positive effects for participants with recent labor market experience 0 Lower or insignificant effects for labor market entrants Cost-beneficial for experienced women Benefits for experienced men close to direct costs and lower for labor market entrants
Hardoy (2001)	Four broad categories: 1) one or several employment programmes (on-the-job training in the public and private sector); 2)	Young unemployed	Data from the following registers: social security, employment, unemployment, education, and demographic	1989-1993	Employment probability and education level	Maximum likelihood method	0 Overall, no positive effects on employment or education - Negative effects for (classroom) training - Negative effects for vocational programs + Increased employment probability for employment and combination programs for women 0 No effects for men of any program

	one or several vocational programmes for youth (a combination of on-the-job and off-the-job training); 3) one or several training programmes (classroom courses) and; 4) various combinations of these three		registers				
Spain							
Arellano (2005)	Participation in a training course (four types of courses identified – broad basis, occupation, specialization, adaption and occupation)	Unemployed	Data from the Spanish Department of Employment (INEM)	2000-2001		Mixed proportional hazard rate (MPH) model	+ Positive effects, higher for women than for men
Sweden							
Andrén, Andrén (2002)	To have completed one state-sponsored training program during 1993-1994	Unemployed (differentiate between Swedish-born and foreign-born)	SWIP (Swedish Income Panel) and Händel (event history database, from the official employment offices)	1993-1997	Employment probability	Latent index sample selection model	+ Small positive effects for Swedish-born, –/+ Negative effects for Foreign-born in the first year, positive afterwards
Andrén, Gustafsson (2002)	Participation in a training course	Unemployed (but authors split up the sample into three	SWIP (Swedish Income Panel)	1984/1985 1987/1988 1990/1991	Earnings	Switching regression model	+ Positive effects for Swedish-born and Foreign-born for the first two cohorts; –/ 0 Negative effects for Foreign-born and no effects for Swedish-born for the last cohort;

71

		cohorts: those who received training 1984/85, 1987/88 and 1990/91					–/0 Negative or low pay-off for young adults and individuals with primary education; Better pay-off for males than for women
Richardson, van den Berg (2001)	Participation in both AMU (state sponsored) programs and non-AMU programs	Unemployed	Administrative data sets Haendel and Akstat (from the unemployment insurance fund).	1993-2000	Transition rate from unemployment to employment	Bivariate duration models	0/+ Net effect on unemployment duration about zero (taking time spent within the program in account), Significantly higher transition rate from unemployment to employment after participation
Stenberg (2003)	Participation in either of the two groups: those in the AEI (Adult Education Initiative) and those in other LMT (Labor Market Training)	Unemployed (but differentiate between those in AEI and LMT)	Several official registers, including the municipal adult education centers, *Händel*, Swedish National Tax Board, and Statistics Sweden	1996-2000	Earnings, mobility between branches	OLS, IV, Logit	– Negative effect on wage and mobility compared to LMT vocational part
Barbara Sianesi (2002)	Participation in one of the six groups: 1) labour market training 2) workplace introduction 3) work experience placement 4) relief work 5) trainee replacement 6) employment subsidies	Unemployed	Administrative data from the National Labour Market Board (AMS), Haendel, and the unemployment insurance funds	1994-1999	Employment probabilities, collection of unemployment benefits over time.	Matching method	Mixed evidence + higher employment rates found - but also to be more likely to draw unemployment benefits over time - find strong evidence that programmes most similar to regular employment perform best
Stenberg (2007)	Participation in	Unemployed	Administrative	1991-2003	Annual wage	Fixed effects	- weaker effects of AEI relative to vocational

					earnings	regressions	Training (LMT) on earnings - no differences between programmes for age group 43-55 - results warrant more careful targeting
	the Adult Education Initiative (AEI)	(comparison between those in AEI and LMT)	data from the total population register, the register of adult education, and Haendel				
Stenberg (2005)	Participation in the Adult Education Initiative (AEI) (i.e. started program, but not necessarily completed it)	Unemployed (comparison between those in AEI and LMT)	Administrative data from the register of adult education, and Haendel, merged at Statistics Sweden (SCB).	1997-2002	Incidence of Unemployment, Unemployment duration	Bivariate probit model, Powell IV	0 Decreased incidence of unemployment, but increased unemployment duration compared to LMT
Richardson, K. and G. J. v. d. Berg	Participation in the AMU (employment training program)	Unemployed	Administrative data sets HÄNDEL and AKSTAT (from the unemployment insurance fund)	1993-2000	transition rate from unemployment to employment	bivariate duration models	+ significantly positive effect on exit to work after exiting the program - magnitude is very large shortly after leaving the course but diminishes afterwards - taking account of the time spent in the program, the net effect of participation in the program on the mean unemployment duration is close to zero
Stenberg and Westerlund (2008)	Participation in either AEI or LMT (i.e. started program, but not necessarily completed it)	Long-term unemployed either in i) AEI ii) LMT iii) open unemployment	Administrative data sets by Statistics Sweden and AMS.	Data from 1996-2001	Annual wage earnings	OLS; also perform "backcasting" OLS regressions	i vs. iii) those with more than 1 semester of adult education experienced an increase in annual wage earnings compared with those who remained in open unemployment. 0 at the compulsory level no significant effects are found - LMT preparatory training had positive effects on wage earnings but these effects were smaller thanto those achieved by LMT vocational training
Albrecht, van den Berg, and Vroman,(2005)	Participation in "Knowledge Life" (KL) programme	Low skilled unemployed	Administrative data sets RAMS (for income and wealth), HAENDEL, AKSTAT,	1990-2000	i) employment ii) annual income iii) labour market equilibrium	probit; fixed effect methods allowing for treatment effect heterogeneity; equilibrium search model with	i)+ii) 0 KL has no significant effect on average income and employment of women i) + KL participation has significantly positive employment effect for young men ii) 0 no significant effect on average annual income iii) program generates an equilibrium

			KOMVUX (for participation in any adult education program)				heterogeneous worker skills for iii)	response of the skill distribution of vacancies towards the higher skill
Sianesi (2004)							matching methods	
Switzerland								
Rafael Lalive, Jan C. van Ours and Josef Zweimueller (2005)	Don't look at training but at effect of sanctions and warnings	Unemployment insurance recipients	unemployment insurance register	1997-1999	Re-employment rates	Bivariate duration model		+ Substantial and significant effct of both sanctions and warnings
Rafael Lalive, Jan C. van Ours and Josef Zweimueller (2008)	Investigate four types of programmes: a) basic training (PC, language, job) b) advanced training c) employment programmes d) subsidized jobs	Unemployed	Unemployment data: administrative records of the State Secretariat for Economic Affairs (AVAM and ASAL databases); these are matched with data from social security records social security records (AHV data).	Dec. 1997 – May 1999	Length of unemployment	a) matching method b) proportional hazard model with time-varying treatment effects c) a bivariate MPH-model where regular jobs and ALMPs are competing destinations		a+b) subsidising jobs has highest positive effects on the transition rate c) allowing for selectivity even the treatment effect of subsidised jobs fades away d) matching approach and the timing-of-events approach generate different treatment effects once we allow unobserved heterogeneity to influence the inflow into ALMPs.
United States								
Leela Hebbar (2006)	Dummy for participation in ITG (Individual Training Grant) training programme	Unemployed eligible for UI - two sub-groups studied (high school dropouts and women enrolled in engineering or computer	Administrative data obtained from the New Jersey Department of Labor and Workforce Development; merged with	1995-1999	Re-employment rates, wages	difference-in-difference wage model combined with an employment regression model		- ITG participation has a positive impact on re-employment beginning in the seventh quarter after claiming UI - type of training matters - generally, training has no impact on wage recovery - the impact on re-employment for high school dropouts varies by race

programming)		wage data from New Jersey's unemployment insurance wage record system					
Multiple countries assessments							
Martin and Grubb (2001) (OECD countries)				1985-2000			Paper i) surveys the literature on the evaluation of ALMP ii) uses country reviews and analytical studies on active and passive ALMP
Kluve, J. (2006)	Dummies for 1) direct employment 2) private sector inventive scheme 3) services and sanctions 4) youth programs		Other evaluation studies	Range between 1984 and 2004	Program success, (binomial: positive and negative; multinomial: including neutral)	Binomial probit and multinomial probit regressions (meta-analysis)	- Once program type is taken into account, there is little systematic relationship between program effectiveness and a host of other contextual factors 0+ traditional training programs are found to have a modest positive impact on employment rates. + Relative to these programs, private sector incentive programs and Services and Sanctions show a significantly better performance - target group seems to matter,
Arulampalam, Booth and Bryan (2006) (Austria, Belgium, Britain, Denmark Finland, France, Ireland, Italy, Netherlands, Spain)	Construct a variable measuring the cumulative count of completed training events since the 1st wave of the sample	Employed private sector males aged 25-54	European Community Household Panel (ECHP): British data adapted using BNHS and BHPS	1994-1999	Hourly wages	Authors use OLS and quantile-regression techniques to estimate the relationship between work-related training and wages	OLS shows considerable inter-country differences; QR analysis finds that the training effect is uniform across the conditional wage distribution within a country

75