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Do Wage Subsidies Enhance Employability? Evidence from Australian Youth

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Abstract

We examine a panel of unemployed Australian youth to investigate whether participation in a wage subsidy programme offers merely a temporary respite from unemployment, or whether there are longer-lasting positive employability effects. Controlling for selection bias using a bivariate probit analysis, we estimate the effect of participation in the Special Youth Employment Training Program on the probability of being employed in subsequent waves of the data, up to an average of 26 months after subsidy expiry. We find that far from breaking up when support expires, subsidies extend short duration jobs. Furthermore, we find large and significant effects of participation on the subsequent employability. Much of this arises from retention of subsidised jobs, but even excluding this we find evidence of longer-term positive effects.

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1. Introduction

Most of the existing empirical literature on the effects of wage subsidies has focused on short-term effects – whether eligibility for subsidies increases the individual's probability of getting a job, and, if so, to what extent this is at the expense of other job-seekers. However, it is increasingly being argued, in both policy and academic circles, that the main effect of wage subsidies is to enhance the longer-term prospects of participants. The claim is that subsidised workers will not merely enjoy a brief period of employment, but a permanent increase in their employability. Layard, for example, states that 'the main justification for [a wage subsidy] is not that it employs people on a subsidised basis, but that, by doing so, it restores them to the universe of employable people. This is an investment in human capital.' (1997, p. 336).

This claim is almost completely untested. Few studies have tracked participants even until subsidy expiry, and those that have have often suffered from selection bias: those who go on the programme are not a random sample of the eligible population. Any difference in outcomes between participants and non-participants may simply reflect pre-existing, but unobserved, differences between the two groups.

We use a sample of unemployed Australian youth to examine the impact of participation in a subsidy programme, the Special Youth Employment Training Program (SYETP), for slightly over two years after subsidy expiry. By using bivariate probit analysis, we are able to control for selection bias. We find evidence of large and significant positive impacts on the probability of being employed in subsequent years. Much of this effect seems to stem from retention of jobs after subsidy expiry, contradicting the concern that firms will simply lay off participants as soon as the subsidy finishes. We find very little evidence of such lay offs. Instead subsidies appear to extend the duration of jobs that would otherwise have lasted for less time than the subsidy. We also find some evidence that participation helps workers to obtain other jobs, not merely to retain their initially subsidised positions.

The rest of this paper is set out as follows. Section 2 briefly reviews the existing evidence on the long-term effects of wage subsidies. Section 3 looks at the SYETP and the potential sources of selection bias. Section 4 discusses the data. Section 5 sets out the methodology that we adopt to estimate the employability effects of wage subsidy participation. Results are presented in Section 6 whilst Section 7 concludes.

2. Long-term Effects of Wage Subsidies

Long-term unemployed workers may lose skills, become demotivated, or suffer discrimination from potential employers. This will reduce their chances of getting a job, and hence the outflow rate of the long-term unemployed, but it may also lead to an increase in overall unemployment. If the economy is hit by a shock and long-term unemployment rises, then, on average, unemployed workers become less attractive to employers. Firms then find it harder to find suitable workers, increasing the cost of hiring and leading them to offer fewer

vacancies. This, in turn, can perpetuate the high long-term unemployment and consequent loss of skills or motivation, locking in the higher rate of unemployment (Pissarides, 1992).

At the same time, workers with poor or outdated skills are disproportionately likely to become long-term unemployed. If unemployed workers are credit-constrained they may find it hard to update their skills, whilst at the same time they are denied the opportunity of learning on the job. Higher mismatch between the skills demanded by employers and those available in the pool of unemployed workers will also lead to higher aggregate unemployment.

But if skill atrophy or other negative employability effects arise from a period of unemployment, then they may be reversed by a period of employment. Hence even a temporary subsidy may have permanent effects, both for the individual worker, who may be retained or who will find it easier to obtain a subsequent job, and potentially for the aggregate unemployment level. If active labour market policies lead firms to hire and train workers with poor skills, then mismatch may be reduced, shifting the Beveridge curve inwards and reducing aggregate unemployment (Calmfors, 1994).

These effects are potentially far more important than the short-term impact on labour demand. Subsidies could bring about a considerably larger reduction in unemployment than that measured simply by taking the number of people placed and netting off those who would have been hired anyway (deadweight) or who were hired at the expense of other workers (substitution and displacement). Furthermore, the fiscal cost-benefit analysis would be transformed if subsidised workers were not merely removed from unemployment for a temporary spell, but were less likely to claim unemployment benefits in future years. If positive effects were long-lasting, and especially if they were permanent, then the case for concentrating on younger workers, as in the UK's New Deal, would be stronger, since their lifetime gains would be greater.

However, little is known about the subsequent employment histories of those who go on wage subsidy programmes. This is despite the existence of a substantial literature tracking participants in training and job search assistance programmes (see for example, Lalonde, 1995; US Department of Labor, 1995; Friedlander and Burtless, 1995). Furthermore, where these studies have increasingly made use of either random assignment or statistical methods to control for selection bias, the same is not true for studies of wage subsidy participants.

Most studies of wage subsidies have surveyed employers currently using the subsidy, and therefore provide little or no evidence on post-subsidy experience. Breen and Halpin (1989) re-surveyed a sample of employers who had hired workers under the Irish government's Employment Incentive Scheme (EIS), an average of 8 months after subsidy expiry. They found that 54% of EIS employees remained with the firm, whilst in a further 11% of cases the job, but not the specific worker, remained. However, they provide no counterfactual to compare these figures against. RSGB (1996) surveyed participants in the UK Workstart pilot projects, which provided a 12 month subsidy to firms hiring workers who had been unemployed for at least 2 years. They found that 40% were still with their Workstart employer 3 months after the subsidy expired, and a further 15% were employed elsewhere. Only 35% had returned to claiming unemployment benefit (a further 4% were unemployed but not claiming). Again no counterfactual is provided but the findings do compare favourably with the 51.8% of all unemployed workers exiting to employment who re-claim unemployment benefit within 12 months (Sweeney, 1996).

Stretton (1984) compares employment outcomes six months after the end of the programme for participants in five Australian active labour market programmes, including the SYETP. Hence the counterfactual is the outcome for participants in other programmes, rather than those who received no intervention. He finds that those who took part in wage subsidy programmes were significantly more likely to have been employed at the time of the

survey, or to have had any full-time job since the end of the programme, than those who went on a training programme. However, this finding is likely to be heavily affected by selection bias. Wage subsidies require the involvement of employers, who are likely to seek to cream off the best available candidates, whereas training programmes can be expanded administratively, and may be used for those for whom a subsidised job could not be found. In this case, Stretton's results may reflect more on the different make-up of the participants than on the relative effectiveness of the programmes[1].

A more recent Australian evaluation, DEETYA (1997), uses administrative data on all participants in Jobstart, which replaced the SYETP. These were then compared against a matched control group. Three months after the subsidy expired, 50% of Jobstart participants were in unsubsidised work, compared with 22% of non-participants, suggesting a substantial impact of participation on short-term employment prospects. After 12 months the effect was smaller, mainly due to 'catch-up' by the controls, but still positive. However, the use of such matched control groups may give seriously misleading results if there are important unobserved characteristics of the treatment group which are not controlled for in matching. If, for example, more motivated workers were more likely to take advantage of wage subsidies, and to be hired once eligible, then the programme effect would be over-estimated. Alternatively, if employment service staff sought to target programmes on more disadvantaged workers, then the estimated effect would understate the true impact.

The overall picture presented by these few studies is positive. The studies do suggest that an excessive concern with churning – that employers will simply lay off workers when subsidies expire – is misplaced. Retention rates are generally high. RSGB (1996) found that among Workstart participants who survived until subsidy expiry, 77% were still with their employer three months later. Where workers are laid off it appears to occur before subsidy expiry, presumably due to poor matches. Up to a year after subsidy expiry, programme participants appear to enjoy an advantage in their employment prospects. But all these studies are open to considerable criticism. In particular, they are all prone to potentially severe problems of selection bias. In addition, they only look at a relatively short post-subsidy period.

Two studies of US programmes avoid both these problems. They use random assignment to avoid the problem of selection bias, and by making use of administrative data are able to track participants over a much longer time period than either previous studies or, indeed, this study. However, the programmes they examine involved substantial elements of training and support in addition to subsidies, so that it is impossible to separate out the effect of subsidised employment alone. The use of administrative records also restricts their focus to earnings, rather than employment, which is our principal concern here. Both studies, however, reinforce the generally positive findings previously covered.

The National Supported Work Demonstration (Hollister *et al*, 1984) provided a highly structured environment over 12-18 months of subsidised employment. For women on Aid to Families with Dependent Children (AFDC, the main benefit for single parents in the US), earnings gains were sustained for at least 8 years after participation (Couch, 1992). However, there were no positive effects for other target groups. A similar, but less intensive, approach was adopted in the Homemaker-Home Health Aide Demonstrations (Bell and Orr, 1994). These provided specific training and support to lone mothers on AFDC, as well as subsidised employment, and again led to significant increases in earnings, for at least 5 years after the programme (US Department of Labor, 1995).

[1] In an earlier version of this paper (Stretton, 1982), Stretton notes the availability of techniques to correct for sample selection, but states that their use was ruled out through lack of time.

3. The Special Youth Employment Training Program

The Special Youth Employment Training Program was introduced in September 1976, following a rapid rise in teenage unemployment in the mid-1970s. This, together with the earlier failure of a large scale direct job creation programme (the Regional Employment Development Scheme, REDS), led the government to introduce what was Australia's first wage subsidy (Chapman, 1985). The SYETP continued until it was superseded in December 1985 by Jobstart, a wage subsidy for both youth and adults, which has continued until the present.

The SYETP was initially targeted at teenagers, unemployed for four months or more. Subsequently it was extended to cover 15-24 year olds. There was no requirement that jobs be 'additional', nor that the firm retain the worker after the subsidy period (Stretton and Chapman, 1990). Despite the scheme's name, there was little emphasis on training (Scherer, 1985).

Subsidies were paid at a flat rate, so that they were proportionately greater for low wage workers. In 1984, the main part of the scheme ('Standard SYETP') offered employers a subsidy of A$75 per week for 17 weeks, about half of average teenage wages (Smith, 1984). Standard SYETP was targeted on 15-24 year olds who had been unemployed and not in full-time education for at least 4 of the preceding 12 months. There were two other smaller components. Commonwealth SYETP fully reimbursed agencies of the Commonwealth government for the costs of employing eligible participants for 17 weeks. Extended SYETP offered a subsidy of A$100 for 17 weeks, and A$75 for a further 17 weeks to employers taking on 18-24 year olds who had been unemployed for at least 8 of the preceding 12 months. In practice, however, participants in both Standard and Extended SYETP often had much longer durations than those required for eligibility (Smith, 1985).

In order to obtain the subsidy, employers had to register their vacancies with the Commonwealth Employment Service (CES), and accept workers referred by the CES (Department of Employment and Youth Affairs, 1982). Employers had to agree a 'training plan' with the CES for the individual worker, although in practice such plans could simply cover normal orientation (Smith, 1983). In 1979 the government issued guidelines that employers were expected to take people below their normal hiring standards in order to qualify (Chapman, 1985), although these were withdrawn in 1982.

Selection

Selection onto the SYETP required both referral by the Employment Service and acceptance by the employer. Either, or both, of these could have led to systematic, but unobserved, differences between those who went on the programme and those who did not. Failure to control for these differences would lead to biased estimates of the programme effect. For example, if employers creamed the best workers, then selection biases would lead to an overestimate of the effectiveness of SYETP. Conversely, if the Employment Service referred more disadvantaged workers, as they were required to between 1979 and 1982, then this would lead to a downward bias, and an underestimate of the programme effect.

In addition, individuals who were more likely to get employment anyway may have acted in such a way as to increase or decrease their chances of being referred. For example, if participation on SYETP was seen as advantageous, then more motivated, or better informed, individuals might have lobbied CES staff to refer them. Alternatively, if subsidised employment was seen as 'second best' then more employable people might have tried to avoid being referred, knowing that their chances of obtaining a regular job were high anyway.

A priori we cannot say which way these biases will work. However, assuming that participants were randomly drawn is unlikely to be satisfactory. Instead we need to control for the process by which unemployed youth, who were in the SYETP target group, were selected onto the programme. This can be done by estimating bivariate probits of the joint probability that an individual was both selected onto SYETP, and subsequently employed. We set out this methodology in Section 5 below. First we consider the data that we use.

4. The Data

Our sample is drawn from the list sample of the Australian Longitudinal Survey (ALS). The ALS list sample is a nationally representative sample of Australian youth, aged 15-24 on 1 September 1984, who had been registered as unemployed with the Commonwealth Employment Service for at least 3 months in June 1984 (McRae *et al*, 1984–1987). Thus, the sample frame coincides almost exactly with the eligibility criteria for the SYETP. The sample were initially interviewed in September or October of 1984, and then re-interviewed annually until 1987, so that 4 waves of data are available. The ALS list sample was specifically designed to examine questions around long-term unemployment, and contains a wide range of individual and family background characteristics.

In each wave, respondents were asked to fill in a weekly job calendar for the period starting a week after the previous interview and finishing in the week of the current interview (the 'reference period'). The 1984 reference period started on 1 January 1984, or the week in which they entered the labour force if later. Subsequent reference periods typically started in September or October and ran until the following September or October.

The initial sample consisted of 2403 individuals. Of these, we excluded those who were over 25 at the first interview (ineligible for SYETP), who entered full-time education at any point, or who did not provide a full set of responses for at least the first three waves. This left us with 1283 individuals whose employment status in the 1986 reference period could be established (the '1986 sample'). Table 1 gives some summary statistics for the 1986 sample. Of these, 1084 survive into the 1987 wave, and make up the '1987 sample'. Table 2 contains summary data for them.

The treatment group consists of all those who went on the SYETP between 3 June 1984 and their 1985 interview. Although this means that there were quite considerable differences in the elapsed time since programme participation between treatment group members, we had to use such a long period to obtain a large enough treatment group. Figure 1 shows the distribution of programme start times for treatment group members. Roughly half entered the programme in 1984 and half in 1985, with the mean start week beginning 13 January 1985.

The overall picture given by Tables 1 and 2 is unsurprising for a sample of unemployed youths. There were more males than females. Levels of human capital were relatively low, with over 10% having less than year 10, the school leaving age. More than half had never held a job for more than 1 year, and they spent an average of over 60% of the period from 1 January 1984 (or when they first entered the labour force if later) until 3 June 1984 in unemployment.

The characteristics of those lost through attrition are broadly similar to those of the sample. In particular the characteristics of the 1986 and 1987 samples are virtually identical. Those who are dropped from both samples were somewhat more likely to have less than year 10 education, but were more likely to have held a job for at least 1 year, and less likely never to have had a job. Overall, it seems reasonable to treat attrition biases as a minor problem.

More striking is the contrast between those who went on SYETP and the control group. On average, SYETP participants were less likely to have any post-school qualification (17.3% versus 27.9%) and correspondingly more likely to have year 11 or 12 as their highest qualification. In addition they were less likely to have had any job for 3 years or more, but more likely to have had a job of less than 1 year as their longest. SYETP participants were an average of one year younger, which may partly explain their poorer labour market experience. They spent slightly more of the pre-June period unemployed.

The summary statistics suggest that SYETP participants were younger and more disadvantaged than non-participants, which would be in line with the apparent targeting of the programme. The most disadvantaged, though, those with below year 10 education or who had never held a job, do not appear to be over-represented on the programme, perhaps because employers were unwilling to hire them even with a subsidy. Yet despite their generally poorer characteristics, SYETP participants were nearly 14 percentage points more likely to have been employed at some time in 1986 than non-participants. By 1987, with the economy growing, this difference had fallen to around 5 percentage points, but was still positive.

These findings are reinforced if we examine the durations of SYETP jobs compared with those of other jobs. Figure 2 shows the distribution of lengths of all regular jobs held after 3 June 1984[2], whilst Figure 3 shows the distribution of subsidised jobs. Since this includes all subsidised jobs in the four waves, some may have been obtained through Jobstart as well as through the SYETP. At this time Jobstart was available for 26 weeks. Two features are notable in these diagrams. Firstly, there is little or no evidence in Figure 3 of a peak in job durations at the length of the subsidy. There is a slight peak at 17 weeks (though none at 26 weeks), but certainly no evidence of widespread lay offs on subsidy expiry.

More noticeable though is the difference in the distributions between Figures 2 and 3. SYETP jobs are clearly less likely to be very short, with markedly lower densities below 13 weeks, and correspondingly higher densities between 13 and 33 weeks. The average length of SYETP jobs is 46.0 weeks, compared to 37.1 weeks for regular jobs. However, the averages for SYETP and regular jobs that last more than 13 weeks are 58.8 and 58.5 weeks respectively. From the raw data, the effect of SYETP appears to be to extend very short duration jobs somewhat, perhaps up to the duration of the subsidy.

However, these plots will be affected by a number of biases. Any one person can have more short duration jobs over some given period than long duration jobs. Hence short duration jobs are ‘over-represented’. The same effect could apply to SYETP jobs, since a short SYETP spell would not affect the individual’s entitlement to go on the programme again. But it seems unlikely that the CES would continuously place the same individual into a series of short duration SYETP jobs, and we observe very few people going on SYETP more than once in any wave of the data.

Since we only have data until the 1987 interview, any jobs still held then will be right censored. Aggregate unemployment was falling over this period, so that we would expect a larger proportion of unsubsidised jobs to start towards the end of the period, whilst more of the subsidised jobs start towards the beginning of the period, when unemployment was higher. In Figure 4, we plot the distribution of all jobs that started immediately after a period of unemployment. This will compensate somewhat for right censoring bias, and also for the possibility that entry jobs are less stable, or less desirable, than subsequent jobs. The comparison with SYETP positions is even more marked here. Fully 40% of entry jobs last for less than 13 weeks, whereas fewer than 25% of SYETP jobs end by then. Again the effect of

[2] To minimise problems from right censoring, figures 2–8 are plotted for the 1987 sample.

SYETP appears to be in extending otherwise very short duration jobs, rather than on the distribution at higher durations.

Figures 2–4 take no account of differences between participants and non-participants. We can control for this by looking at before-and-after experiences of SYETP participants. Figures 5 and 6 show the length of unemployment spells before going on SYETP and after participation, again including any subsidy participation in the sample period after 3 June 1984, and not just those counted as the treatment group. Figures 7 and 8 show the equivalent for employment spells (ie periods of continuous employment, which might include job-to-job switches). The pattern is clear: periods of unemployment are shorter, and periods of employment are longer, after going on SYETP.

Of course, we still have the problems of censoring and exogenous changes in the economic climate. Pre-SYETP periods are inevitably earlier, on average, than post-SYETP periods, so that figures 5–8 may simply reflect improvements in the macroeconomy. At the same time, most SYETP spells are earlier in the period, so that left censoring will tend to shorten pre-SYETP spells (spells starting before 3 June 1984 are excluded). This undermines the apparent increase in duration of post-SYETP employment spells, but strengthens the finding that post-SYETP unemployment spells are shorter. Right censoring leads to the opposite bias: post-SYETP spells will be shortened by right censoring, strengthening the apparent effect on the duration of employment spells post-SYETP, but weakening the findings for unemployment spells.

The overall picture from the data is highly supportive of a positive employability effect from SYETP. Subsidised jobs last longer than unsubsidised jobs, mainly because of a substantially lower probability of jobs terminating within the first quarter. There is at most weak evidence of a concentration of lay offs at the time of subsidy expiry, with two-thirds of participants retaining their subsidised job beyond 17 weeks[3]. Furthermore, unemployment spells are shorter, and employment spells are longer, after participating. Nonetheless, these findings may be affected by biases arising from differences between participants and non-participants, censoring, or changes in the economic environment.

5. Modelling Employability

We want to determine what happens to subsidised workers beyond the subsidy period. In particular, do they obtain a lasting improvement in their employability? We can control for biases arising from changes in the economy, and from censoring, by considering individual outcomes over the same time period. We can control for individual differences by including a wide range of background data available to us in the ALS. In addition, we can control for selection biases by using a bivariate probit, giving us an unbiased estimate of the effect of SYETP participation on subsequent employability.

Employability, of course, is not observed. What we observe instead is employment. Nor is there a precise definition of 'employability', despite the growing use of the term. We do not propose to enter the debate as to what exactly is meant by employability. Instead, we shall assume that there is a simple mapping between an individual's underlying, but unobserved, employability and the employment outcome which we observe. We assume that employability is a latent variable, y^*, such that:

[3] The effect is slightly stronger, if we exclude those jobs which might have come under the longer Jobstart subsidy, with 69.1% exceeding 17 weeks duration against 65.5% for all subsidised jobs in the data. Of these, 45.4% last beyond the 34 week maximum subsidy for Extended SYETP.

(1) $y_i^* = \alpha d_i + \beta x_i + \mu_i$

where d_i is a dummy variable taking the value 1 if the person goes on the wage subsidy programme, and 0 otherwise; x_i is a vector of individual characteristics; and μ_i is a disturbance or error term. We observe employment, y, where y=1 if the person is employed in some period, and y=0 otherwise. If $y = 1$ when $y^* > 0$ and $y = 0$ otherwise, then provided μ_i is distributed as a standard normal, we can estimate (1) using standard probit estimation.

The selection problem arises because programme participants are not randomly selected from the population. In particular, suppose that the likelihood of being selected onto the programme is represented by d^*, which is determined by:

(2) $d_i^* = \gamma z_i + \varepsilon_i$ such that: $d_i = 1$ if $d_i^* > 0$ and $d_i = 0$ otherwise.

where z_i is a vector of individual characteristics and ε_i is an error term. Provided ε_i is distributed as a standard normal, we could again estimate (2) by a univariate probit. However, if there are unobserved characteristics which affect both selection onto the programme and subsequent employability then μ_i and ε_i will be correlated and univariate probit estimates will be biased.

Using a technique originating with Van de Ven and Van Praag (1981), we can address this problem by estimating a bivariate probit of the joint probabilities of selection and employment of the form:

$$y_i^* = \alpha d_i + \beta x_i + \mu_i$$

(3) $d_i^* = \gamma z_i + \varepsilon_i$ where: $E(\mu_i, \varepsilon_i) = \rho$

$$\text{Prob}(y_i = 1, d_i = 1) = \Phi_2(\alpha d_i + \beta x_i, \gamma z_i, \rho)$$

Where Φ_2 is the cumulative distribution function for the standard bivariate normal. This is essentially an extension of the well-known Heckman (1979) two-stage procedure, where the second stage here also has a discrete dependent variable. This approach has been applied to a number of economic problems which suffer from selection bias. In particular, O'Higgins (1994) uses it to examine the effect of participation in the UK Youth Training Scheme on subsequent employment, whilst Zweimüller and Winter-Ebmer (1996) use it to look at the effect of Austrian training programmes on employment stability. Both find that selection bias is important in their studies, with those who would otherwise be less likely to be employed tending to be selected onto these programmes.

The dependent variables

For the selection equations, the dependent variable is whether the person went onto the SYETP at any time between 3 June 1984 and the end of the 1985 reference period. For the 1986 sample, the dependent variable for the employment equation is whether the person held any regular, unsubsidised, job during the 1986 reference period, but excluding the first 17 weeks. Retained jobs that were previously subsidised in 1984/85 are included, but any subsequent SYETP/Jobstart jobs are excluded. Jobs obtained through other government

programmes are also excluded. We exclude the first 17 weeks after the 1985 interview, since anyone entering SYETP in the week of their 1985 interview would still be being subsidised for those 17 weeks. Hence the relevant period starts four months later, at the end of January 1986.

In principle, some of our treatment group might have gone onto Extended SYETP, in which case they would be subsidised for up to 34 weeks. Unfortunately, we cannot distinguish between the two types of SYETP in our data. Of the treatment group, 23 people started their subsidy in the last 17 weeks of the 1985 reference period, and hence might still have been on Extended SYETP 18 or more weeks into their 1986 reference period. However, of these, 21 were either ineligible for Extended SYETP or had already lost their subsidised job before the 17 week cut-off period. Both the remaining people were employed for the entire 1986 reference period, and hence were clearly employed after subsidies had expired. Therefore, we believe that we can safely ignore any problems arising from Extended SYETP.

For the 1987 sample, our dependent variable in the employment equation is whether the person held any unsubsidised job, excluding those obtained through another government programme, at any time in the 1987 reference period (October 1986 – September 1987). Again we include any previously subsidised jobs retained from 1984/85, but exclude any obtained with subsequent subsidies, even if they are retained beyond the subsidy period. Thus we are looking at the effect on subsequent regular employment, and not simply any propensity for participants to cycle between government programmes and periods of unemployment.

On average, for the 1986 sample, we look at employment in the period starting 1 year after participants entered SYETP (8 months after subsidy expiry), and ending 17 months after programme entry. The 1987 reference period starts 18 months after entry, and ends 30 months after entry (26 months after expiry).

Identification

Our model is identified provided there is at least one variable in z_i which is not in x_i (Maddala, 1983). Hence, we need at least one variable which affected the probability of selection, but not the subsequent probability of being employed. Selection onto SYETP required both that the individual was hired by an employer, and that they were referred by the employment service. Any variables that affected the employer's decision are also likely to have affected subsequent employment prospects, and should be in both the selection and the employment equations.

To identify the model, therefore, we need a variable that affected the individual's probability of being referred by the CES. We only observe SYETP referrals if they lead to employment, but we do observe how many times an individual was referred, in 1984, to another programme, the Community Employment Programme (CEP), whether or not they went on the CEP. If employment service staff pushed the same individuals towards a range of available programmes, then we would expect this to be correlated with selection onto the SYETP. Given an element of discretion in the referral decisions of employment service staff, and that we control in the employment equation for whether the person actually went on the CEP, it seems reasonable to assume that referrals onto the CEP would not affect subsequent employment prospects.

This is our principal identifying assumption. However, our model is also identified in two other ways. Firstly, age is never significant in the employment equation, presumably because of the narrow age range within our sample, and is dropped. However, SYETP places were predominantly taken up by teenagers (Stretton and Chapman, 1990), and we find that age has a negative and strongly significant coefficient in all our selection equations.

Secondly, time varying characteristics, such as human capital and marital status, are 1984 dated in the selection equation, but 1985 or 1986 dated in the employment equations.

Since the model will remain identified, formally at least, if we include CEP referrals in the employment equation, we can test this identifying assumption. We always find that CEP referrals are insignificant in the employment equation, but significant in the selection equation, and so we conclude that excluding CEP referrals from x_i and including it in z_i is a valid identifying assumption.

6. Results

Table 3 gives the results of univariate probit estimates of the probabilities of being employed in 1986 and 1987. We can see that SYETP participation has a positive effect on employability in both years, although it is only significant in 1986. The magnitudes of the marginal effects of participation in both years are similar to raw differences in the summary statistics. Most other coefficients are much as we would expect. Women are less likely to be employed than men, women with children overwhelmingly so. Marriage has no significant effect, but having an employed spouse is significantly positive in 1986. Employment prospects are worse in South Australia and the Northern Territories. More human capital or past work experience increases the probability of being employed, whilst health problems reduce it.

Participation in a government employment programme, other than SYETP, between June 1984 and the 1985 interview has a strongly negative effect on employment. The main other programmes at the time were the Community Employment Programme and the Wage Pause Programme, both direct job creation schemes targeted specifically at those with particular labour market disadvantages (Stretton and Chapman, 1990). Thus this may reflect these disadvantages rather than any negative effects of the programmes themselves.

Controlling for selection

If selection biases are a significant problem, then the results in Table 3 may be misleading. We present the bivariate probit results for the employment equation, controlling for selection, in Table 4. Columns 1 and 2 are the 1986 results, and columns 3 and 4 those for 1987. The corresponding selection equations are given in Table 5.

The results in Table 4 are coefficients from the bivariate probit. We report marginal effects below. However, the pattern of signs and significant coefficients is almost identical to the univariate probits, except that now the effect of SYETP is positive and significant in both years, falling just below 5% significance in 1987, but easily significant at 10%.

In both cases the correlation coefficient, □, is negative, implying that those most likely to be selected onto the programme have unobserved characteristics that make it less likely that they would otherwise be employed. Wald tests on □ reject the hypothesis that the errors are uncorrelated. This shows the importance of allowing for selection biases. Failing to control for selection would underestimate the impact of SYETP participation on subsequent employment prospects. In particular, the univariate probits imply an insignificant effect in 1987, whereas the effect is significant when we allow for the selection process. A negative value of □ is consistent with employment service staff targeting programmes on those who are more disadvantaged.

Marginal effects

Table 6 gives the marginal effects. The first part shows the marginal effect of the SYETP, averaged across the whole sample and across various sub-samples. For example, the marginal effect of SYETP for females is the result of calculating the individual marginal effect for each of the females in the sample, and then averaging[4]. This method takes account of any systematic differences in other characteristics between females and males, as well as the effect of being female *per se*. The bottom half of the table gives the marginal effects (averaged across the whole sample) of various other characteristics, which are all fairly similar to those in the univariate probits.

The effect of SYETP participation on subsequent employability is found to be not only significant, but also large. After controlling for selection biases, the effects are substantially greater than those reported in the univariate probits, consistent with our finding that more disadvantaged workers were selected onto the programme (□ negative). Going on SYETP increases the average probability of having a job at some time between 8 and 13 months after subsidy expiry by 26%. Between 14 and 26 months after subsidy expiry, the effect is still nearly 20%.

Looking at the various sub-sample effects it is clear that participation in SYETP is most useful for those with greater disadvantage: females, those with lower human capital or poorer work records and from more disadvantaged families[5] all gain more than the average, as do those living in South Australia or the Northern Territories. The effect is also stronger for younger people. By contrast, the effect is roughly halved for those who went to private school, have an apprenticeship or have had a previous job for 3 or more years.

The pattern of effects across the different sub-samples is very similar in the two years, with the same groups gaining more or less than the average in every case. The effects are always smaller in 1987. This fall-off probably reflects a combination of 'catch-up' by the control group, against a background of falling unemployment, and depreciation of the advantage of participation, especially as retained jobs break up. Although there is no particular reason to suppose that this fall-off was linear, a simple extrapolation would imply that SYETP participants had an employability advantage for 4 years after subsidy expiry.

Comparing the marginal effect of SYETP with those for other variables reinforces our conclusion that programme participation has a very large impact. Only the negative effect for women with children is larger in magnitude than the average SYETP effect, even in 1987.

Job retention and subsequent employability

Much of the positive effect arising from SYETP participation probably arose from retention of subsidised jobs after subsidy expiry. This was clearly part of the point of the programme, to get disadvantaged workers into jobs and support them for long enough that they could remain profitably employed in those jobs subsequently, without the need for a subsidy. However, we are also interested in what happened to participants after they left their initially subsidised job: did they then find it easier to obtain another job than they would otherwise have done?

Ideally, we would want to measure employment outcomes after all the retained jobs have terminated, but this is not possible given the data. Hence we have to restrict the sample in such a way as to exclude those who retained their subsidised jobs throughout the period.

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[4] Greene (1997, p. 876) states that current practice favours this approach over the alternative of evaluating at the sample mean.

[5] The pattern of coefficients for mother's status is similar to that for father's.

We do this by excluding all people who were continuously employed from the time when they first got a job, or went on SYETP, until the end of the 1986 reference period. Since we only consider SYETP participants who entered the programme between June 1984 and the end of the 1985 reference period, we similarly only exclude people whose jobs started within that period and were continuously employed until the end of the 1986 reference period.

By restricting the sample in this way, we are excluding the most employable workers. Implicitly, we are assuming that they would have obtained, and kept, jobs with or without the subsidy. Amongst those whom we exclude, exactly the same proportion (79%) of those who went on the SYETP, and those who did not, remain continuously employed until the end of the 1987 reference period. The proportion of SYETP participants remaining in the restricted sub-sample is virtually unchanged from the full 1987 sample (7.6% vs 8.0%). In addition, we saw in section 4 that at long durations the distribution of job tenure was broadly the same for SYETP and regular jobs. Hence we believe that it is reasonable to assume that restricting the sample in this way will not introduce any biases.

Table 7 shows the employment equation, from the bivariate probit, for the probability of being employed at some point in 1987 for the sub-sample of less employable workers. The dependent variable is now employment in a job that has never been subsidised, nor obtained through any other government programme. The coefficient on SYETP is positive and significant, suggesting that participation in the SYETP had a positive employability effect even for those who lost their initially subsidised job. The correlation coefficient, □, is again negative and significant, implying that, within the restricted sub-sample as well as the whole sample, those selected onto the programme were less likely to have been employed otherwise. The marginal effect of participation, averaged over the sub-sample, of SYETP participation on the probability of being employed in 1987 is 23.7%. However, this is not comparable with the whole sample effect, since we saw in Table 6 that the effect of SYETP participation was highest among those with initially greater disadvantage.

Participation in the SYETP therefore appears to have had a positive employability effect beyond just the advantage from retaining initially subsidised jobs. Even those who lose their initially subsidised job are more likely to be employed at some time in 1987 than if they had never been on the programme. Hence the evidence implies that a period of subsidised employment can mitigate the damaging effects of unemployment, even for those who return to unemployment after going on the programme.

7. Conclusion

The impact of wage subsidies on subsequent employability has been much discussed but little researched. Despite the copious equivalent literature for training programmes, and job search assistance, we know surprisingly little about what happens to participants in wage subsidies after the subsidy runs out. Using a panel of Australian youth, we have attempted to answer two main questions. Firstly, do subsidised jobs break up when the subsidy expires, so that they only offer a temporary respite from unemployment? And secondly, are there longer-term benefits for participants, in the form of higher future employability?

We find little evidence that subsidised jobs break up when the subsidy expires. Instead, subsidies appear to extend the life of very short duration jobs, that would otherwise have broken up before the subsidy expired. For jobs lasting longer than 13 weeks, subsidised and unsubsidised jobs have almost identical average durations. This finding is consistent with subsidies being used to overcome fixed costs of hiring and training, after which subsidised workers become sufficiently productive that the job is viable even without the subsidy (Richardson, 1997).

Furthermore, we find a large and significant positive effect on subsequent employment prospects. Controlling for both a wide range of individual and family background characteristics, and for selection biases, we estimate that participants in the Special Youth Employment Training Program were 26% more likely to have a job at some point between January and September 1986, and 20% more likely to have a job at some point between October 1986 and September 1987. The effects are larger still for more disadvantaged and younger workers.

A large part of this effect, particularly in 1986, stems from retention of the initially subsidised job. Nonetheless, by 1987 there was also a positive and significant effect on the probability of obtaining a subsequent, never subsidised, job.

These findings suggest that wage subsidies do far more than provide a brief period of employment. Instead they appear to offer a lasting improvement in employment prospects, both through retention of initially subsidised jobs, and through improved employability once the initial job breaks up. However, further research is needed to establish how long these effects last for, and how quickly they die away. This would make possible a proper cost-benefit analysis of policies that are all too often evaluated only on their immediate effects. Data covering a longer period would also allow an investigation of the kinds of jobs subsequently obtained by participants.

Table 1: Summary Statistics, 1986 sample

Variable	Whole sample	SYETP	Non SYETP	Attrition
Personal characteristics				
Male	58.8%	56.7%	59.0%	61.6%
Female	41.2%	43.3%	41.0%	38.4%
Average age, 1984	20.0	19.0	20.1	20.2
Aboriginal/TSI	3.0%	1.0%	3.1%	3.2%
Other ethnic minority	7.9%	7.7%	7.9%	8.3%
Married, 1984	11.7%	2.9%	12.5%	11.0%
Spouse employed	5.9%	1.9%	6.3%	4.0%
Children, 1984	5.5%	1.9%	5.8%	3.4%
Human capital, 1984				
Degree/diploma	11.9%	7.7%	12.2%	11.0%
Apprenticeship	8.1%	2.9%	8.6%	7.4%
Other post-school qualification	7.1%	6.7%	7.1%	6.6%
Year 12	14.7%	23.1%	13.9%	13.2%
Year 11	13.9%	17.3%	13.6%	11.9%
Year 10	31.5%	31.7%	31.5%	32.3%
Year 9 or below	12.5%	10.6%	12.6%	17.0%
Parental background				
Father post-school qualification @14[1]	33.9%	26.0%	34.6%	31.9%
Mother post-school qualification @14[1]	18.3%	20.2%	18.2%	19.1%
Father manager, professional, para-professional @14[1]	25.7%	25.0%	25.8%	23.7%
Father not-employed @14[1]	5.5%	3.8%	5.6%	4.1%
Father not present @14	15.7%	19.2%	15.4%	19.1%
Mother manager, professional, para-professional @14[1]	9.6%	6.7%	9.8%	8.7%
Mother not-employed @14[1]	54.7%	48.1%	55.3%	54.4%
Mother not present @14	5.3%	8.7%	5.0%	6.7%
Longest ever job by 1984				
Never held a job	11.6%	11.5%	11.6%	8.7%
<1 year	42.1%	55.8%	40.1%	42.1%
1 year	13.5%	13.5%	13.5%	19.4%
2 years	14.1%	13.5%	14.1%	11.2%
3 years +	18.7%	5.8%	19.8%	18.5%
Average pre-June unemployment[2]	61.6%	68.5%	61.0%	66.4%
Employment				
Ever employed 1986[3]	74.0%	86.5%	72.9%	n/a
Ever on govt programme 1986[4]	11.0%	14.4%	10.7%	n/a
N	1283	104	1179	645

Notes:
1. Only asked if that parent was present when the respondent was aged 14.
2. Proportion of 1984 reference period up to 3 June spent unemployed.
3. Ever held any non-subsidised, non-government programme job in the 1986 reference period, after the first 17 weeks.
4. Ever go on a government programme, including SYETP, in the 1986 reference period, after the first 17 weeks.

Table 2: Summary Statistics, 1987 sample

Variable	Whole sample	SYETP	Non SYETP	Attrition
Personal characteristics				
Male	57.8%	54.0%	58.1%	62.2%
Female	42.2%	46.0%	41.9%	37.8%
Average age, 1984	20	19	20.1	20.1
Aboriginal/TSI	2.3%	1.1%	2.4%	4.0%
Other ethnic minority	7.2%	9.2%	7.0%	9.0%
Married, 1984	12.3%	3.4%	13.0%	10.4%
Spouse employed	6.5%	2.3%	6.9%	3.6%
Children, 1984	5.6%	2.3%	5.9%	3.6%
Human capital, 1984				
Degree/diploma	12.0%	6.9%	12.4%	11.0%
Apprenticeship	7.9%	3.4%	8.3%	7.7%
Other post-school qualification	7.4%	6.9%	7.4%	6.3%
Year 12	15.0%	24.1%	14.2%	13.0%
Year 11	13.9%	19.5%	13.4%	12.3%
Year 10	31.6%	29.9%	31.8%	31.9%
Year 9 or below	11.5%	9.2%	11.7%	17.1%
Parental background				
Father post-school qualification @14[1]	34.3%	27.6%	34.9%	31.8%
Mother post-school qualification @14[1]	18.7%	19.5%	18.7%	18.4%
Father manager, professional, para-professional @14[1]	26.2%	25.3%	26.3%	23.6%
Father not-employed @14[1]	5.4%	4.6%	5.4%	4.6%
Father not present @14	15.0%	20.7%	14.5%	19.2%
Mother manager, professional, para-professional @14[1]	9.5%	6.9%	9.7%	9.0%
Mother not-employed @14[1]	54.8%	50.6%	55.2%	54.3%
Mother not present @14	4.7%	6.9%	4.5%	7.2%
Longest ever job by 1984				
Never held a job	12.0%	12.6%	11.9%	8.9%
<1 year	42.0%	56.3%	40.7%	42.3%
1 year	12.7%	12.6%	12.7%	19.0%
2 years	14.2%	11.5%	14.4%	11.7%
3 years +	19.1%	6.9%	20.2%	18.1%
Average pre-June unemployment[2]	62.2%	68.0%	61.7%	64.5%
Employment				
Ever employed 1987[3]	77.1%	82.8%	77.9%	n/a
Ever employed 1986	74.3%	86.2%	73.2%	n/a
N	1084	87	997	852

Notes:
1. Only asked if that parent was present when the respondent was aged 14.
2. Proportion of 1984 reference period up to 3 June spent unemployed.
3. Ever held any non-subsidised, non-government programme job in the 1987 reference period.

Table 3: Univariate probits

Dependent variable: ever employed in regular, unsubsidised job	*Univariate Probit 1986*		*Univariate Probit 1987*	
	dF/dx[1]	*t*	dF/dx[1]	*t*
SYETP	0.1338***	3.26	0.0424	0.96
Female	–0.1188***	–4.15	–0.0950***	–3.14
Married	–0.0301	–0.51	0.0366	0.68
Children	–0.0771	–1.00	–0.0476	–0.68
Children x female	–0.4549***	–3.84	–0.2963***	–2.94
Spouse employed	0.1329**	2.48	0.0134	0.23
Aboriginal/TS Islander	–0.1077	–1.48	–0.1655*	–1.85
Other ethnic minority	–0.1033*	–1.66	–0.0421	–0.67
State initially interviewed in				
Victoria	–0.0158	–0.44	0.0401	1.14
Queensland	–0.0020	–0.05	–0.0723*	–1.71
S.Aus/NT	–0.1098**	–2.33	–0.1152**	–2.38
W. Aus/Tas	–0.0091	–0.22	0.0578	1.45
Education				
School overseas	–0.0134	–0.16	–0.1538	–1.46
RC school	–0.0186	–0.37	–0.0146	–0.29
Private school	0.1198*	1.79	0.1173*	1.75
Degree/diploma	0.1274***	3.41	0.1280***	3.68
Apprenticeship	0.1015**	1.97	0.0816	1.57
Other post–school	0.0157	0.35	0.0550	1.37
Year 12	–0.0003	–0.01	0.1066***	2.71
Year 11	0.1011***	2.62	0.0840**	2.17
Year 9 or less	–0.0763*	–1.79	–0.0778*	–1.71
Initial labour market experience				
Longest job by 1984: None	0.0054	0.11	–0.0516	–1.01
<1 year	0.0651*	1.79	0.0542	1.42
2 years	0.0721*	1.70	0.0852**	2.04
3 years +	0.1488***	3.71	0.1269***	3.12
Other government programme[2]	–0.2223***	–5.55	–0.1680***	–4.12
Pre–June unemployment %	–0.1281***	–3.87	–0.0723**	–2.13
Work restricted by health	–0.1120***	–3.07	–0.1995***	–4.89
Family background				
Other city before 14	–0.0818**	–2.15	–0.0352	–0.95
Country town before 14	–0.0209	–0.63	–0.0396	–1.15
Rural area before 14	–0.0690	–1.25	–0.0877	–1.58
Overseas before 14	0.0968	1.09	0.0839	0.82
No. of siblings	–0.0091*	–1.64	–0.0105	–1.61
English good	0.0951*	1.77	0.0554	0.95
English poor	0.1732**	2.44	0.0704	0.74
Sexist[3]	–0.1369**	–2.19	–0.0198	–0.32
Sexist x female	0.0922	1.02	0.0429	0.44

Dependent variable: ever employed in regular, unsubsidised job	*Univariate Probit 1986*		*Univariate Probit 1987*	
	dF/dx[1]	*t*	dF/dx[1]	*t*
Father's occupation @14				
Father not present @14[4]	–0.0651	–0.94	–0.0268	–0.41
Labourer	0.0325	0.48	0.0787	1.31
Plant operative	0.0127	0.19	0.0667	1.14
Sales	–0.0219	–0.27	0.0224	0.29
Tradesperson	–0.0801	–1.18	–0.0146	–0.24
Manager, professional, para–prof.	0.0312	0.50	0.0485	0.84
Not employed	0.0269	0.36	0.0463	0.68
Father post–school qual. @14	0.0269	0.87	0.0327	1.04
Mother's occupation @14				
Mother not present @14[4]	–0.0782	–0.99	0.0014	0.02
Labourer	–0.0385	–0.53	0.0005	0.01
Plant operative	–0.1622*	–1.92	–0.1297	–1.56
Sales	–0.1203	–1.68	0.0029	0.04
Tradesperson	–0.0603	–0.59	0.0698	0.79
Manager, professional, para–prof.	0.0560	0.91	0.0094	0.15
Not employed	–0.0215	–0.41	–0.0173	–0.34
Mother post–school qual. @14	–0.0101	–0.27	–0.0399	–1.02
Religion brought up in				
Catholic	0.0955***	2.85	0.0642*	1.87
Presbyterian	0.1136**	2.35	0.0410	0.79
Methodist	0.0402	0.84	0.0416	0.87
Other Christian	–0.0236	–0.38	–0.0073	–0.12
Other Religion	–0.0073	–0.16	0.0235	0.50
No religion	0.0871**	2.11	0.0104	0.23
N	1283		1084	
Log likelihood	–569.76		–451.02	

Notes:
* Indicates significance at 10% level, ** at 5% and *** at 1%.
Omitted categories are: European (ethnic origin), New South Wales/Australian Capital Territory (state), government school, Year 10 (highest education qualification), longest job 1 year, lived mostly in (state) capital city till 14, English first language, Father clerical worker, Mother clerical worker, Anglican (religion brought up in).
1. Marginal effects are calculated at the sample mean.
2. Went on a government labour market programme, other than SYETP, between 3 June 1984 and their 1985 interview.
3. Respondents were asked 7 questions about women and work. *Sexist* equals one if they gave reactionary answers to more than 5 of the 7.
4. Questions about parental occupation and education at age 14 were only asked if that parent was present at 14.

Table 4: Bivariate probit employment equations

Bivariate probit analysis	*Ever employed 1986*		*Ever employed 1987*	
	coefficient	*t*	coefficient	*t*
SYETP	1.590**	2.45	1.133*	1.93
Female	–0.398***	–3.99	–0.359***	–3.20
Married	–0.055	–0.28	0.154	0.74
Children	–0.238	–0.98	–0.154	–0.62
Children x female	–1.212***	–3.79	–0.857***	–2.93
Spouse employed	0.542**	2.40	0.052	0.24
Aboriginal/TS Islander	–0.272	–1.17	–0.465	–1.63
Other ethnic minority	–0.318*	–1.66	–0.179	–0.81
State initially interviewed in				
Victoria	–0.061	–0.51	0.136	0.97
Queensland	0.027	0.19	–0.222	–1.45
S.Aus/NT	–0.306*	–1.94	–0.362**	–2.18
W. Aus/Tas	–0.101	–0.67	0.170	0.96
Education				
School overseas	–0.095	–0.33	–0.513	–1.56
RC school	–0.010	–0.06	–0.001	0.00
Private school	0.603**	2.07	0.681**	1.96
Degree/diploma	0.513***	3.22	0.585***	3.43
Apprenticeship	0.431**	2.10	0.365	1.60
Other post–school	0.049	0.32	0.210	1.27
Year 12	–0.063	–0.40	0.403**	1.98
Year 11	0.357**	2.18	0.319*	1.81
Year 9 or less	–0.222	–1.59	–0.251	–1.58
Initial labour market experience				
Longest job by 1984: None	0.042	0.25	–0.161	–0.88
<1 year	0.190	1.40	0.175	1.15
2 years	0.252	1.56	0.374**	2.05
3 years +	0.657***	4.00	0.615***	3.32
Other government programme[1]	–0.624***	–4.74	–0.537***	–4.12
Pre–June unemployment %	–0.473***	–4.19	–0.309**	–2.39
Work restricted by health	–0.306**	–2.43	–0.580***	–4.07
Family background				
Other city before 14	–0.218	–1.61	–0.118	–0.87
Country town before 14	–0.001	–0.01	–0.098	–0.74
Rural area before 14	–0.128	–0.65	–0.229	–1.14
Overseas before 14	0.494	1.36	0.446	0.96
No. of siblings	–0.028	–1.49	–0.038	–1.51
English good	0.403*	1.91	0.234	0.96
English poor	1.050***	2.75	0.442	1.05
Sexist[2]	–0.440**	–2.35	–0.108	–0.47
Sexist x female	0.463	1.25	0.187	0.47

Bivariate probit analysis	*Ever employed 1986*		*Ever employed 1987*	
	coefficient	*t*	coefficient	*t*
Father's occupation @14				
Father not present @14[3]	–0.180	–0.79	–0.070	–0.29
Labourer	0.134	0.55	0.392	1.49
Plant operative	0.058	0.25	0.325	1.33
Sales	–0.049	–0.18	0.145	0.48
Tradesperson	–0.214	–0.95	0.009	0.04
Manager, professional, para–prof.	0.114	0.52	0.220	0.96
Not employed	0.146	0.55	0.249	0.88
Father post–school qual. @14	0.141	1.26	0.158	1.29
Mother's occupation @14				
Mother not present @14[3]	–0.335	–1.33	–0.066	–0.22
Labourer	–0.151	–0.64	–0.005	–0.02
Plant operative	–0.576**	–2.30	–0.531*	–1.94
Sales	–0.392*	–1.80	–0.022	–0.09
Tradesperson	–0.229	–0.70	0.220	0.56
Manager, professional, para–prof.	0.217	0.97	0.031	0.13
Not employed	–0.087	–0.49	–0.091	–0.46
Mother post–school qual. @14	–0.067	–0.52	–0.161	–1.14
Religion brought up in				
Catholic	0.327**	2.52	0.249*	1.79
Presbyterian	0.413*	1.88	0.116	0.54
Methodist	0.133	0.77	0.164	0.84
Other Christian	–0.102	–0.50	–0.018	–0.08
Other Religion	–0.045	–0.28	0.077	0.42
No religion	0.280	1.58	–0.018	–0.10
□	–0.622**	2.17	–0.553**	2.24
N	1283		1084	
Log likelihood	–875.96		–711.58	

Notes:
* Indicates significance at 10% level, ** at 5% and *** at 1%.
Omitted categories are: European (ethnic origin), New South Wales/Australian Capital Territory (state), government school, Year 10 (highest education qualification), longest job 1 year, lived mostly in (state) capital city till 14, English first language, Father clerical worker, Mother clerical worker, Anglican (religion brought up in).
1. Went on a government labour market programme, other than SYETP, between 3 June 1984 and their 1985 interview.
2. Respondents were asked 7 questions about women and work. *Sexist* equals one if they gave reactionary answers to more than 5 of the 7.
3. Questions about parental occupation and education at age 14 were only asked if that parent was present at 14.

Table 5: Selection equations

Bivariate probit analysis	*SYETP participation, 1986*		*SYETP participation, 1987*	
	coefficient	*t*	coefficient	*t*
Female	0.088	0.71	0.074	0.56
Age, 1984	–0.107***	–3.16	–0.100***	–2.73
Married, 1984	–0.855	–1.52	–0.779	–1.36
Children, 1984	0.465	0.78	0.439	0.71
Children x female	–0.296	–0.37	–0.168	–0.20
Spouse employed, 1984	0.498	0.81	0.365	0.57
Aboriginal/TS Islander	–0.451	–1.01	–0.238	–0.49
Other ethnic minority	0.081	0.33	0.121	0.46
State initially interviewed in				
Victoria	0.112	0.72	0.137	0.80
Queensland	–0.279	–1.30	–0.135	–0.62
S.Aus/NT	–0.157	–0.77	–0.071	–0.33
W. Aus/Tas	0.317*	1.78	0.337*	1.70
Education				
School overseas	0.078	0.22	0.251	0.64
RC school	–0.310	–1.30	–0.296	–1.11
Private school	–0.636	–1.38	–0.746	–1.42
Degree/diploma, 1984	0.120	0.51	0.014	0.05
Apprenticeship, 1984	–0.129	–0.42	0.027	0.08
Other post-school, 1984	–0.036	–0.14	0.110	0.42
Year 12, 1984	0.433**	2.46	0.441**	2.30
Year 11, 1984	0.101	0.53	0.285	1.49
Year 9 or less, 1984	–0.074	–0.35	–0.020	–0.09
Initial labour market experience				
Longest job by 1984: None	–0.348	–1.34	–0.377	–1.40
<1 year	–0.020	–0.11	0.000	0.00
2 years	0.173	0.80	0.035	0.14
3 years +	–0.326	–1.26	–0.344	–1.18
CEP referrals, 1984	0.144**	1.97	0.164**	2.27
Pre-June unemployment %	0.487***	2.92	0.387**	2.19
Work restricted by health, 1984	–0.633**	–2.53	–0.561**	–2.23
Family background				
Other city before 14	–0.244	–1.48	–0.140	–0.79
Country town before 14	–0.473***	–2.94	–0.379**	–2.23
Rural area before 14	–0.446*	–1.69	–0.340	–1.24
Overseas before 14	–0.757	–1.48	–0.556	–1.06
No. of siblings	–0.011	–0.70	–0.003	–0.08
English good	–0.185	–0.72	–0.001	0.00
English poor	–0.591	–1.13	–0.468	–0.89
Sexist	0.317	1.22	0.238	0.96
Sexist x female	–0.903	–1.38	–[1]	–[1]

Bivariate probit analysis	*SYETP participation, 1986*		*SYETP participation, 1987*	
	coefficient	*t*	coefficient	*t*
Father's occupation @14				
Father not present @14	–0.309	–1.11	–0.191	–0.66
Labourer	–0.263	–0.84	–0.332	–1.02
Plant operative	–0.267	–0.96	–0.343	–1.14
Sales	–0.086	–0.26	–0.277	–0.73
Tradesperson	–0.300	–1.10	–0.338	–1.17
Manager, professional, para-prof.	–0.153	–0.59	–0.201	–0.73
Not employed	–0.457	–1.29	–0.435	–1.15
Father post-school qual. @14	–0.315**	–2.14	–0.234	–1.45
Mother's occupation @14				
Mother not present @14	0.480	1.49	0.370	1.03
Labourer	0.176	0.57	0.041	0.12
Plant operative	0.697**	2.26	0.677**	2.05
Sales	0.190	0.66	0.085	0.26
Tradesperson	0.119	0.28	0.188	0.42
Manager, professional, para-prof.	–0.247	–0.85	–0.198	–0.60
Not employed	0.041	0.17	0.084	0.32
Mother post-school qual. @14	0.266*	1.66	0.178	0.99
Religion brought up in				
Catholic	0.061	0.38	0.006	0.03
Presbyterian	0.322	1.34	0.390	1.53
Methodist	0.017	0.06	0.018	0.06
Other Christian	0.075	0.27	0.001	0.01
Other Religion	0.176	0.80	0.151	0.63
No religion	0.138	0.66	0.205	0.95
N	1283		1084	

Notes:
* Indicates significance at 10% level, ** at 5% and *** at 1%.
Omitted categories are: European (ethnic origin), New South Wales/Australian Capital Territory (state), government school, Year 10 (highest education qualification), longest job 1 year, lived mostly in (state) capital city till 14, English first language, Father clerical worker, Mother clerical worker, Anglican (religion brought up in).
1. Dropped due to perfect collinearity with SYETP.

Table 6: Marginal Effects

Marginal effect of SYETP on probability of employment[1]	*1986*	*1987*
Whole sample average	0.264	0.197
Female	0.317	0.245
Married	0.246	0.192
Married, spouse employed	0.186	0.178
S. Aus/NT	0.324	0.255
Degree/diploma	0.162	0.135
Apprenticeship	0.105	0.081
Year 12	0.263	0.147
Year 10	0.316	0.256
Private school	0.127	0.098
No previous job	0.371	0.306
Longest job 1 year	0.327	0.241
Longest job 3 years+	0.133	0.101
Work restricted by health	0.358	0.307
Father not employed @14	0.317	0.258
Father plant operative @14	0.262	0.181
Father manager, professional, para-professional @14	0.185	0.148
Father post-school qualification @14	0.213	0.161
Age 22+ in 1984	0.204	0.152
Age <21 in 1984	0.299	0.225
Age <19 in 1984	0.308	0.236
Marginal effect of selected other significant characteristics	*1986*	*1987*
Female	–0.108	–0.095
Child x female	–0.353	–0.237
S. Aus/N.T.	–0.082	–0.094
Private school	0.129	0.129
Degree/diploma	0.123	0.130
Apprenticeship	0.104	0.084
Longest job 3 years+	0.157	0.142
Work restricted by health	–0.079	–0.154

Notes:

1. $$\frac{\Phi_2(\delta + \beta'x, q\gamma'z, q\rho)}{\Phi(q\gamma'z)} - \frac{\Phi_2(\beta'x, q\gamma'z, q\rho)}{\Phi(q\gamma'z)}$$

where Φ is the standard (univariate) normal cumulative distribution function, and q takes the value 1 if the person is selected onto the programme, and –1 otherwise.

Table 7: Subsequent, never-subsidised, jobs

Dependent variable: Ever employed in a never subsidised, non-programme job	*1987* coefficient	*t*
SYETP	1.049**	2.19
Female	–0.343***	–2.79
Married	0.185	0.87
Children	–0.119	–0.44
Children x female	–0.695**	–2.23
Spouse employed	–0.119	–0.53
Aboriginal/TS Islander	–0.574*	–1.84
Other ethnic minority	–0.207	–0.86
State initially interviewed in		
Victoria	0.097	0.61
Queensland	–0.149	–0.89
S.Aus/NT	–0.388**	–2.17
W. Aus/Tas	0.122	0.65
Education		
School overseas	–0.681*	–1.77
RC school	–0.052	–0.25
Private school	0.693*	1.90
Degree/diploma	0.603***	3.29
Apprenticeship	0.347	1.37
Other post-school	0.298*	1.67
Year 12	0.354*	1.72
Year 11	0.392**	2.11
Year 9 or less	–0.229	–1.32
Initial labour market experience		
Longest job by 1984: None	–0.213	–1.01
<1 year	0.211	1.26
2 years	0.391*	1.95
3 years +	0.559***	2.74
Other government programme[1]	–0.451***	–3.19
Pre-June unemployment %	–0.314**	–2.20
Work restricted by health	–0.497***	–3.56
Family background		
Other city before 14	–0.015	–0.10
Country town before 14	–0.105	–0.73
Rural area before 14	–0.148	–0.65
Overseas before 14	0.336	0.63
No. of siblings	–0.049*	–1.78
English good	0.181	0.64
English poor	0.462	0.98
Sexist[2]	–0.127	–0.51
Sexist x female	–0.006	–0.01

Dependent variable: Ever employed in a never subsidised, non-programme job	*1987* coefficient	*t*
Father's occupation @14		
Father not present @14[3]	0.004	0.02
Labourer	0.428	1.42
Plant operative	0.358	1.28
Sales	0.290	0.86
Tradesperson	0.105	0.39
Manager, professional, para-prof.	0.234	0.90
Not employed	0.382	1.22
Father post-school qual. @14	0.071	0.52
Mother's occupation @14		
Mother not present @14[3]	0.018	0.06
Labourer	0.036	0.12
Plant operative	–0.457	–1.55
Sales	–0.008	–0.03
Tradesperson	0.032	0.07
Manager, professional, para-prof.	0.031	0.12
Not employed	–0.070	–0.33
Mother post-school qual. @14	–0.087	–0.56
Religion brought up in		
Catholic	0.240	1.58
Presbyterian	0.193	0.81
Methodist	0.104	0.49
Other Christian	–0.220	–0.79
Other Religion	0.140	0.71
No religion	0.002	0.01
□	–0.631***	3.77
N	781	
Log likelihood	–552.23	

Notes:
* Indicates significance at 10% level, ** at 5% and *** at 1%.
Omitted categories are: European (ethnic origin), New South Wales/Australian Capital Territory (state), government school, Year 10 (highest education qualification), longest job 1 year, lived mostly in (state) capital city till 14, English first language, Father clerical worker, Mother clerical worker, Anglican (religion brought up in).
1. Went on a government labour market programme, other than SYETP, between 3 June 1984 and their 1985 interview.
2. Respondents were asked 7 questions about women and work. *Sexist* equals one if they gave reactionary answers to more than 5 of the 7.
3. Questions about parental occupation and education at age 14 were only asked if that parent was present at 14.

Figure 1: Start weeks of SYETP spells, treatment group

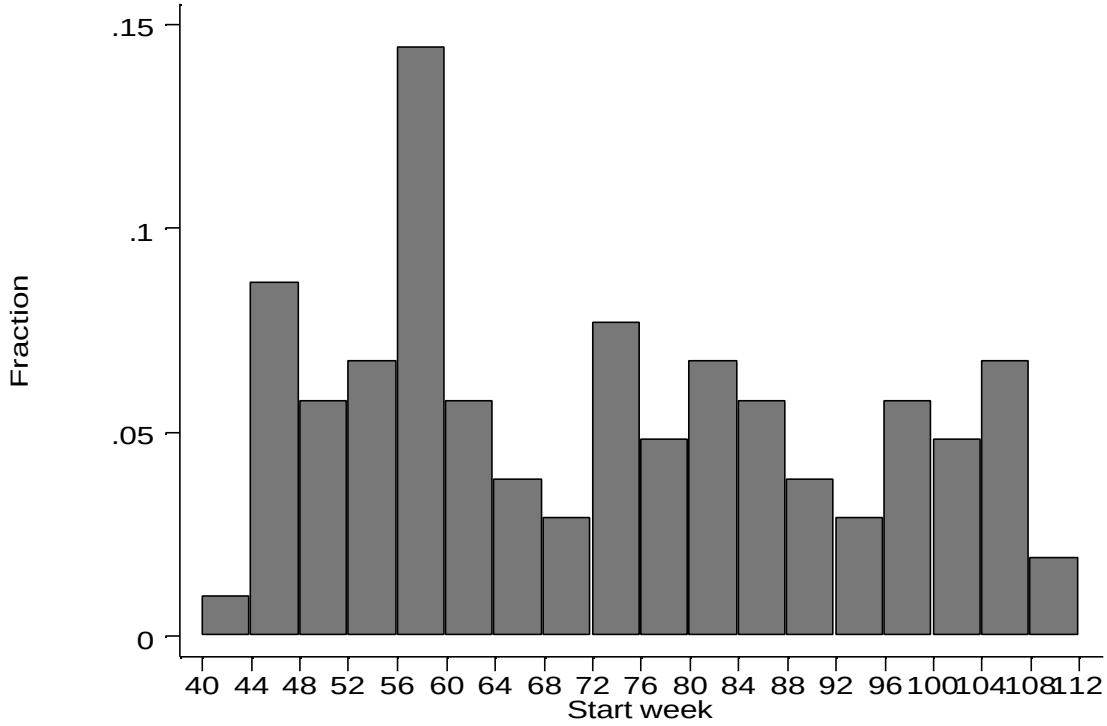


Figure 2: Length of regular jobs

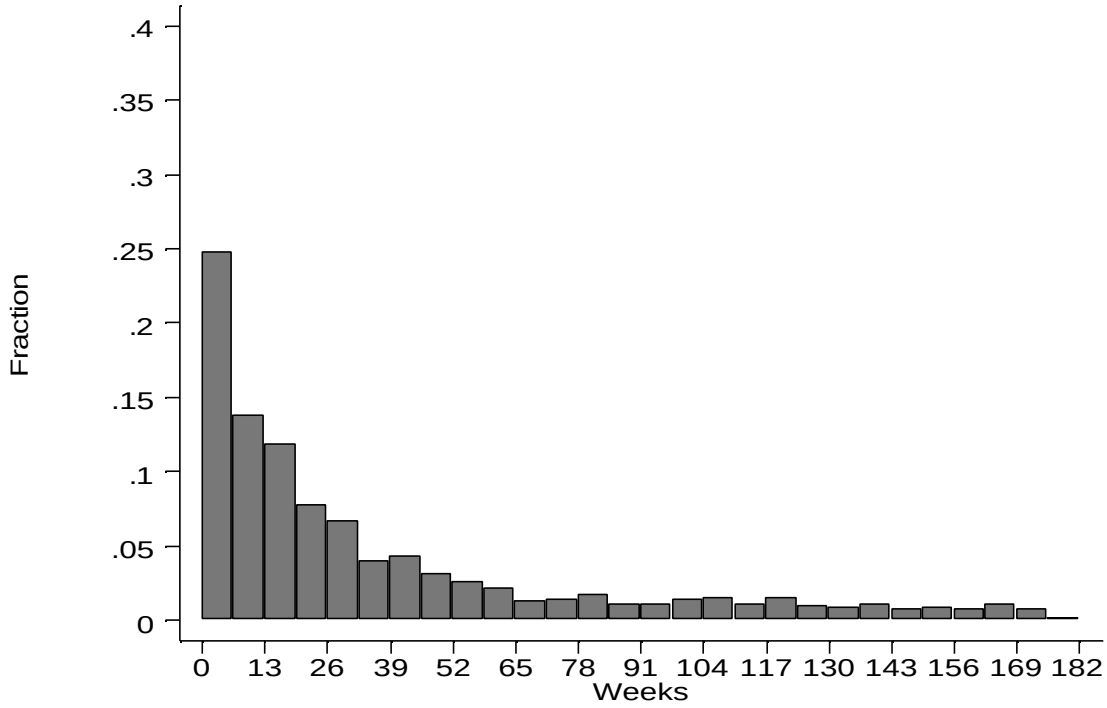


Figure 3: Length of SYETP jobs

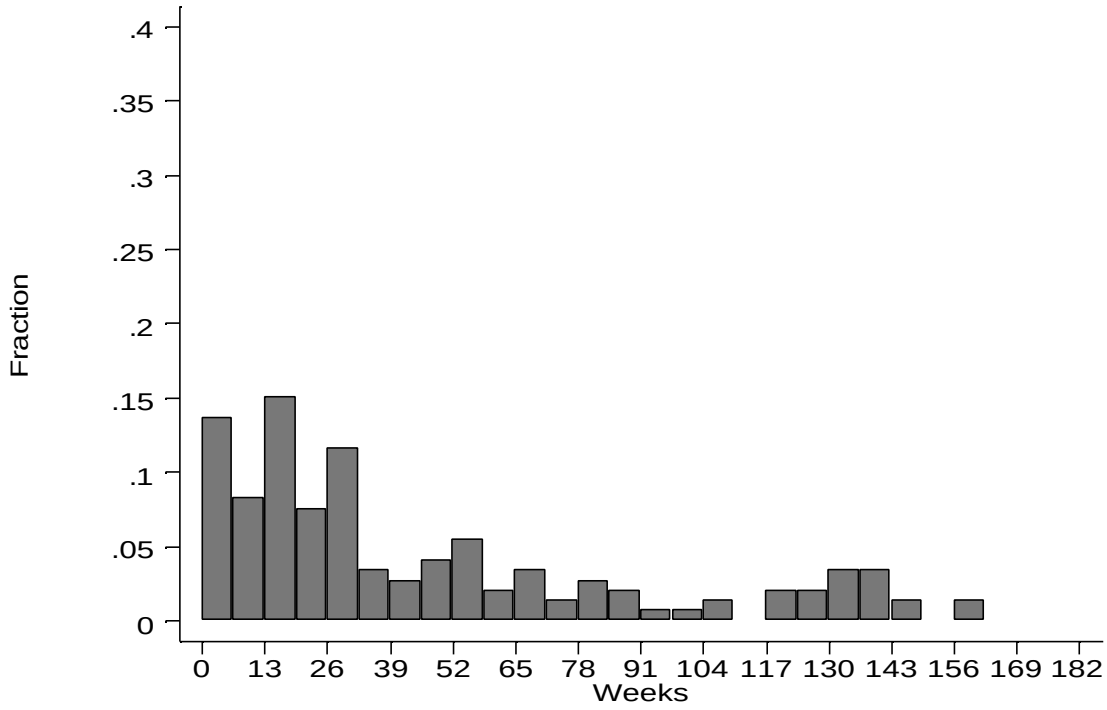


Figure 4: Length of post-unemployment jobs

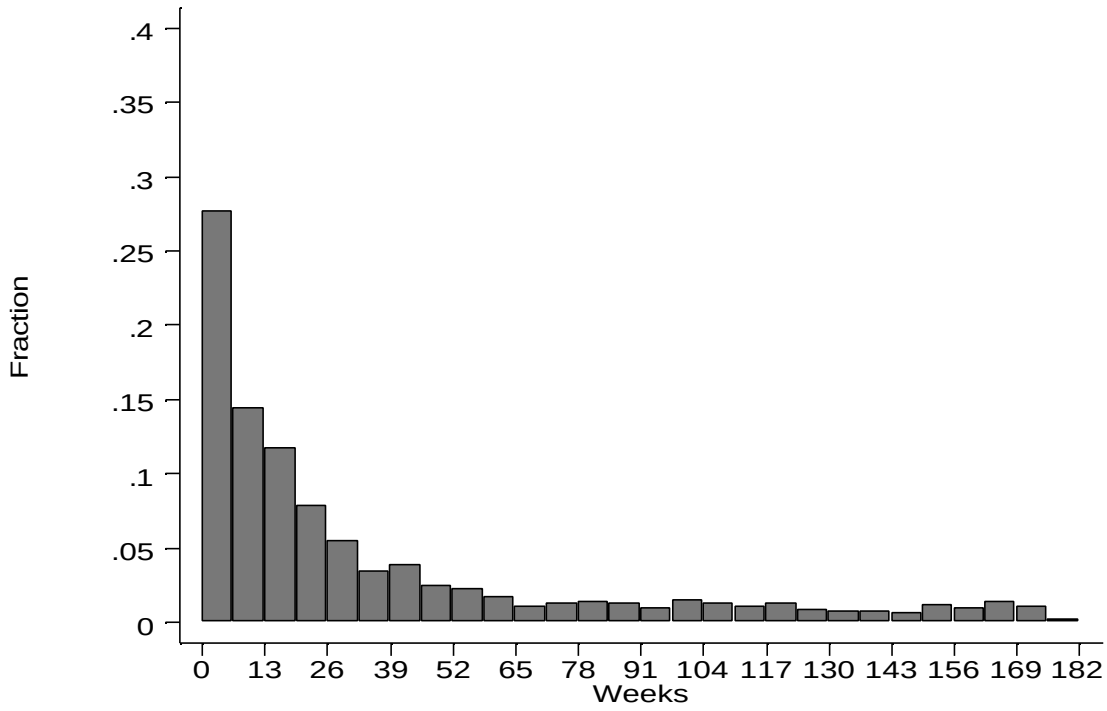


Figure 5: Length of pre-SYETP unemployment spells

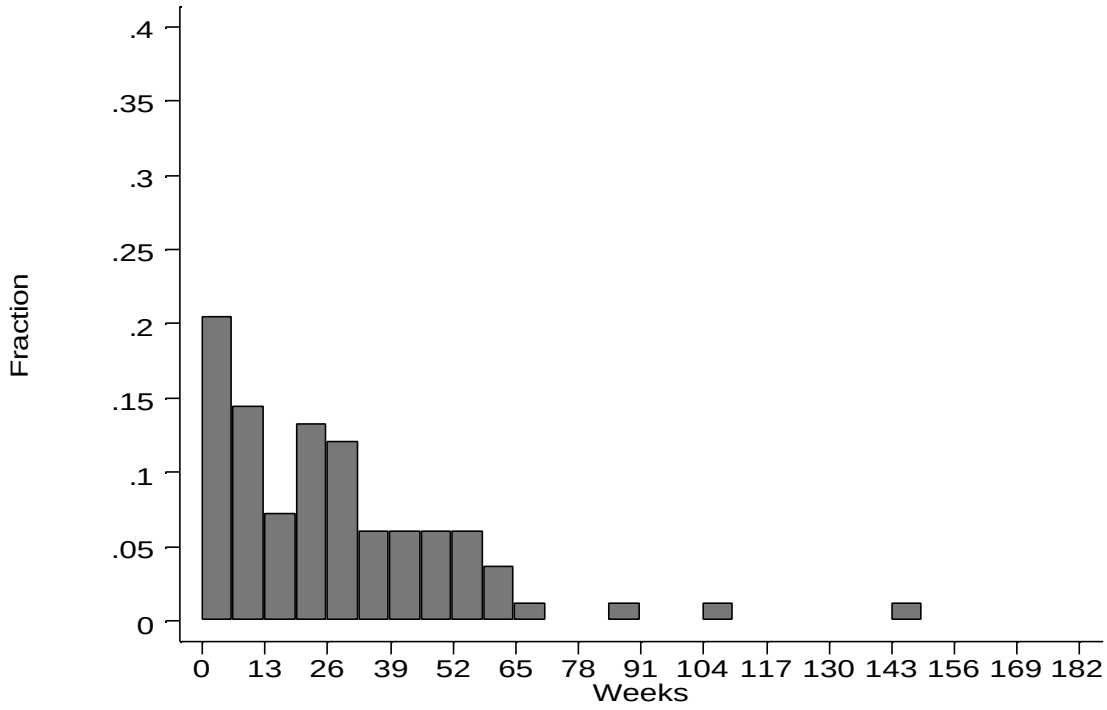


Figure 6: Length of post-SYETP unemployment spells

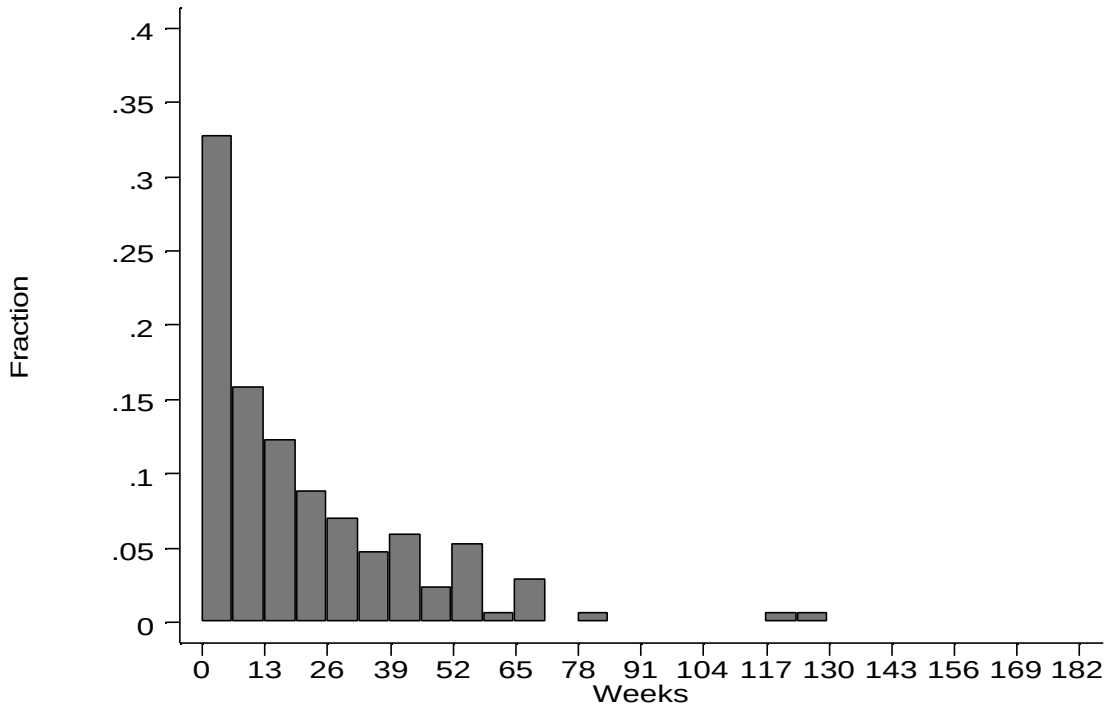


Figure 7: Length of pre-SYETP employment spells

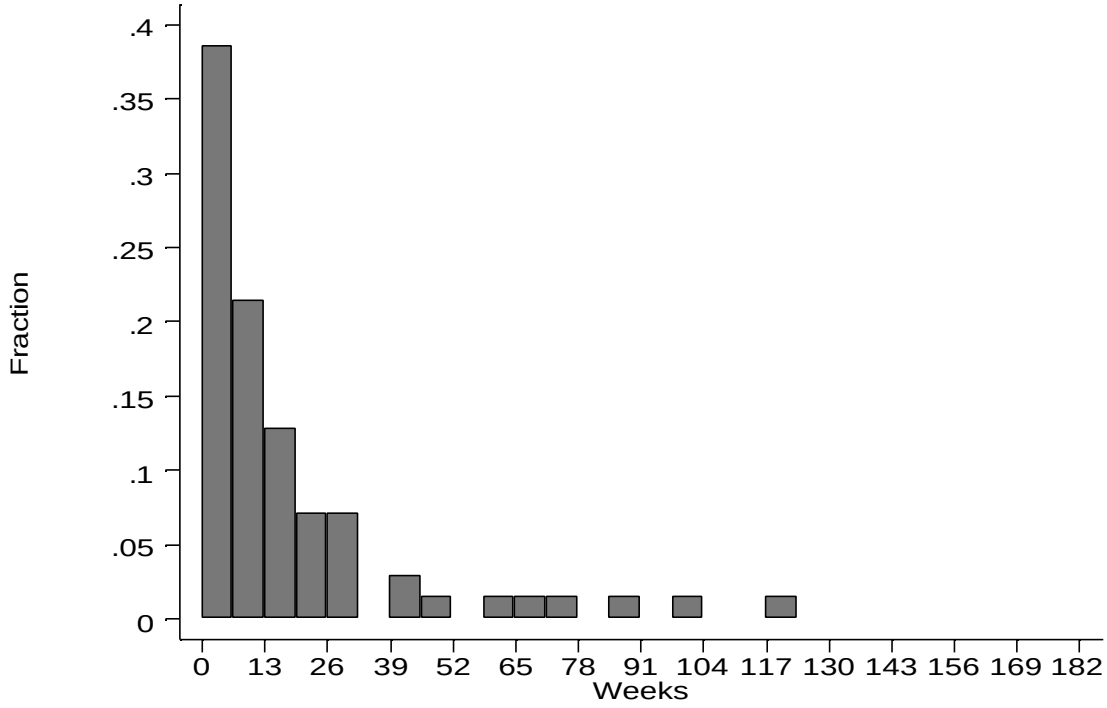
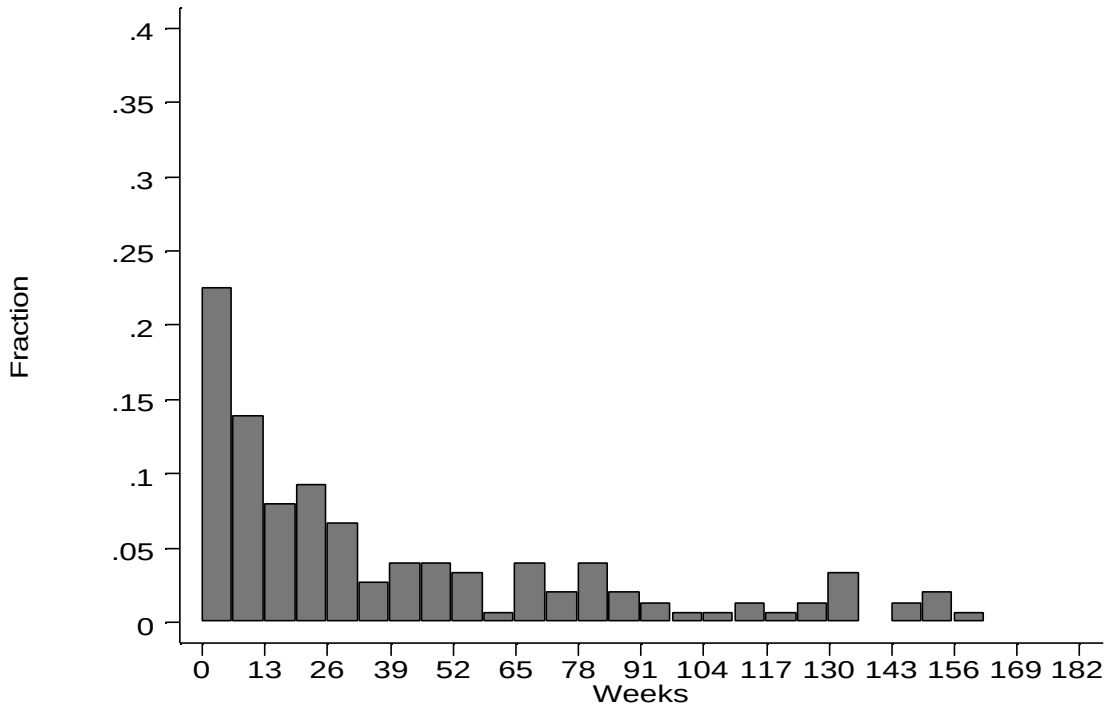


Figure 8: Length of post-SYETP employment spells



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