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# The impact of social policy initiatives on labour supply incentives: A review of the literature

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## Executive summary

This report reviews the recent (from 1995 onwards) international literature on work incentive effects associated with social security and social security policies. One objective is to review the main types of methodologies used in this literature. Three broad groups of approaches are studied:

- ▶ hazard rate modelling as is used in the analysis of exit rates (or durations), such as unemployment duration, employment duration or duration of benefit receipt
- ▶ models of labour supply and welfare participation
- ▶ (quasi-)experimental evaluations.

The second—and main—objective is to review the literature on the work incentive effects associated with social security benefits and policies. The report focuses on three specific issues, which are reviewed in separate sections:

- ▶ the effect of financial incentives, such as the level of benefits or taper rates, on labour market behaviour
- ▶ the effect of education and training on the chances of positive labour market outcomes
- ▶ the effect of workfare—that is, work experience—programs on labour market outcomes.

The findings of each section are summarised below.

### The effect of financial incentives

Three different types of financial incentives are distinguished in this section and discussed in the following order. First, the work incentive effect of a change in the maximum benefit level (including, for example, sanctions involving a temporary reduction in the benefit level) is reviewed. Second, the effect of changes in taper rates is studied and third, the effect of in-work benefits is reviewed.

The benefit level is found to have a negative impact on the exit rate of men from unemployment and on labour supply, although it is rather small and insignificant for some groups. The level of benefits is also found to have a negative, significant but small, effect on female labour supply and on the exit rate from unemployment. Several studies provide evidence that sole parents are quite sensitive to financial incentives, which means they are most likely to respond to policy changes. In Australia, for example, it is predicted that a 10 percentage point decrease in the taper rate results in a 0.1 per cent decrease in labour supply for married men, whereas a similar decrease results in a 0.6 per cent increase of the labour supply of sole parents. It is also found that participation in welfare programs increases with an increase in the maximum benefit level available and decreases when the withdrawal rate increases.

Many policy evaluations are related to the changes in the maximum amount of benefits available. However, other determinants can be important for the individual's labour supply decisions as well. For example, increasing the amount of disregarded income is expected to increase the take up of part-time work.

Both the United Kingdom and the United States have introduced and expanded a system of in-work benefits in the past two decades. The Earned Income Tax Credit (EITC)

in the United States has been evaluated in several articles. It is generally agreed that its success depends on the extent of the positive effect resulting from the increase in labour force participation and the extent of the negative effect which sees people in the phase-out range reduce their labour supply. Most studies on sole parents and married women (especially with an unemployed partner) find that the positive effect of non-workers being drawn into labour force participation dominates the negative effect of people working fewer hours. The in-work benefits schemes make working part-time or working for low wages financially more attractive. These schemes were designed with the sole parents in mind. It is no surprise, therefore, that both in the United Kingdom and the United States these schemes seem to work best for sole parents, increasing their labour force participation without decreasing the hours of individuals already in the labour force by too much.

The effects for married men and married women (with an employed partner) are more ambiguous, but likely to be small. A similar result is found for the Family Credit in the United Kingdom. It is interesting that different effects are found for women married to employed men and women married to unemployed men.

From the above we conclude that women and in particular sole mothers are most sensitive to financial incentives. This is not so surprising, given that most men already work full-time or are looking for full-time employment, regardless of the financial incentives. Women, on the other hand, are more likely to work part-time or not work at all. Wage elasticities are typically high at low hours.<sup>1</sup> As a result, women's labour supply is more responsive to financial incentives.

## The effect of education and training

From recent Australian evidence, we conclude that education generally seems to reduce the time in unemployment, but the subsequent duration of employment is not affected. However, education does seem to increase job tenure in the general population. Overall (from overseas evidence), schooling and vocational training seem beneficial to men's employment prospects, but compared to men, women benefit even more from a higher education level.

The effects of training are more ambiguous. In the United Kingdom, the effects on men in the Youth Training Scheme seem small and the scheme only helps in obtaining a 'good' job more quickly. For women, this training seems more effective. The training given to young people in France who receive social security benefits does not seem to be helpful in obtaining a stable job nor in preventing future unemployment. However, a higher level of schooling is to some extent helpful, which means it would be a better policy to keep young people in school longer rather than provide training once they are out of school. Further evidence on the French youth training identifies the different effects of training on different groups of people. Not unexpectedly, on-the-job training is found to be most effective for young men with lower education levels, whereas there is no effect on more educated men. Workfare programs do not seem to help any of the young men. On the contrary, these programs negatively affect the probability of finding a regular job for the more educated.

An international review of training and employment programs (discussed in section 5.1) finds that disadvantaged adult women in the United States benefited most from the programs. Similar to the United Kingdom and French results, young adults seemed to benefit little from training and employment programs. However, contrary to the French

results, the least skilled participants in the low-skilled group seemed to gain least from training programs and more from work experience programs.

This review further emphasises the importance of using longer-term longitudinal data to examine the effect of programs. This is also illustrated by a study on the effect of training and workfare programs for sole parents in California, where it became evident that caution is needed when evaluating programs using short-term longitudinal data. Revisiting the Californian experiment using longer-term data and using an improved comparison of the programs in the different counties, it was found that instead of workfare being most effective for sole parents, it was training that seemed most effective in the long run.

## The effect of workfare and work experience programs

Tentative results from Australian workfare and work experience programs indicate that they seem effective in reducing unemployment duration and increasing employment duration, with the wage subsidies and brokered employment programs the most effective. It should be noted that in the evaluation of these programs some improvements could be made regarding selectivity issues, dealing with the effect of multiple programs and distinguishing exit rates before and after the start of the program.

United States research shows that even low-skilled women experience wage growth of, on average, 6 per cent per year of work experience. This means that, from a financial point of view, women will benefit from taking up employment (even if it is low-paid at the start).

An international review of United States and European studies concludes that most positive effects from training and employment programs work through increased employment rates instead of increased wage rates. It is argued that, given the fact that one extra year of schooling results in about 10 per cent higher wage rates, not much should be expected from a few weeks of training. However, an increased employment rate might indicate that for the lowest skilled job searchers the training increased their productivity so that employers were now willing to pay the minimum wage rate for their labour.

The review further finds that work experience programs are not so effective for participants who are more skilled. The less disadvantaged group of workers who have recently been displaced from their jobs (and who probably have higher skill levels and more work experience than other program participants) benefit most from job search assistance.

From research on the effect of training schemes provided to young people in France (discussed in sections 4.1 and 4.2), who receive social security benefits, it is found that the workfare type programs do not seem to help any of the young men. On the contrary, these programs negatively affect the probability of finding a regular job for the more educated.



# 1 Introduction

The effect that income support and the associated policies have on the labour supply of income support recipients is an important issue in many developed countries. On the one hand, developed countries would normally like to support citizens who are not able to support themselves through no fault of their own. On the other hand, however, they do not want the system abused. Therefore, they need to balance the level of welfare payments between an amount sufficiently high to support the eligible household, but low enough not to provide a disincentive to participate in the labour force. In addition, if part-time employment is to be encouraged, it is necessary to decide at what rate to withdraw payments once the recipient starts to receive income from employment.

There is a long history of people worrying about the effects of welfare. More than two hundred years ago, Malthus (1798) argued that the poor-laws of the United Kingdom did little to improve the happiness and condition of the poor. He claims it made the poor spendthrift, careless of the future, and it encouraged early marriages and large families. Furthermore, one could expect bad moral effects from being idle and evil habits as a result of depending on alms for a long period of time (Malthus 1798, book III, pp. 38–69). He proposes the (very) gradual abolition of the poor-laws (p. 64).

In the United States in the late 1870s, several large and medium sized cities abolished their public outdoor relief and replaced it by a private charity based on ‘scientific’ charity. This abolition and replacement by a private system was well documented and records were kept of each case. In the new system of private outdoor relief only worthy families would receive support.<sup>2</sup> These families would be assigned to a ‘friendly visitor’ who was to lift the character of the dependent families. The charity organisation promised that a worthy family spending time with the Charity Organization Society would maximise their chance over time of becoming self-reliant. Ziliak (1997) used the records of new entrants between 1881 and 1883 of the experiment in Indianapolis to examine whether this promise was made true by the Society. He finds no evidence of increasing exit rates from unemployment by those who have been on the rolls for a longer time.

Judging by the size of the literature on work incentive effects of the social security system and the policies associated with this system, the issue is still of great importance today. The literature review in this report looks at recent research on this topic.<sup>3</sup> The report focuses mainly on unemployed people and sole parents. In particular for the first group, work incentive effects are important, as employment is seen as the destination that unemployed people should exit to as soon as possible. For the second group, there is no direct requirement to find work. However, as soon as the youngest child turns 16 years old, eligibility for the parenting payment (sole parent pension) stops. From that moment, if the sole parent is of working age, they will have to look for work to remain eligible for a social security payment. For this reason, it is seen as desirable that sole parents gradually move back into work when their children grow older. Lately, programs have been introduced to help sole parents prepare for the transition to the labour market before they lose eligibility for the parenting payment.

An extensive literature exists on this topic, especially in the United States, Canada, the United Kingdom and other Northern European countries. It is important to draw on overseas research because, while some research exists in Australia, it is a relatively small amount. In order to make sensible comparisons, the report first compares the main features of the different social security and social insurance schemes that are available to unemployed persons and sole parents in the different countries. OECD

(1998) gives a more extensive overview of the different benefit and tax features of several OECD countries.

An examination of table 1 makes it clear that many other countries have an unemployment insurance scheme (in addition to an unemployment assistance scheme) providing benefits for unemployed people who previously were in the labour force. Australia only has an unemployment assistance scheme. However, this scheme is relatively generous compared to comparable schemes for singles and couples with children in the seven other countries included in table 1. However, sole parents are treated less generously, compared to other countries. In particular with respect to the level of payments. The eligibility requirement for the payment to sole parents is comparable to that in other countries, where sole parents with children under 16 years of age are also not required to look for work to qualify for the payment. From table 1, it is clear that the United States provides a less generous social assistance scheme than the other countries. It is also the only scheme that is not universal.

**Table 1: Cross-country comparison of social security schemes**

	AUSTRALIA	UNITED STATES	CANADA	UNITED KINGDOM	NEW ZEALAND	IRELAND	THE NETHERLANDS	SWEDEN
Unemployment/ Social Assistance	Yes, for unlimited time	For a limited time and for families with children only, (at most 5 years in lifetime is federally funded, but states can use own funds to extend benefits). Food Stamps are available to everyone and for an unlimited time.	Yes, for unlimited time	Yes, for unlimited time	Yes, for unlimited time	Yes, for unlimited time	Yes, for unlimited time	Yes, for unlimited time
Replacement ratios <sup>a</sup> :								
Single	37%	7%	25%	50%	37%	33%	60%	58%
Couple +2 chn	73%	48%	59%	73%	64%	62%	78%	101%
Sole par.+2 chn	58%	41%	58%	63%	59%	61%	70%	75%
Unemployment Insurance	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Replacement ratios <sup>a</sup> :								
Single	N.A.	60%	63%	50%	N.A.	33%	75%	72%
Couple +2 chn		61%	69%	64%		62%	85%	84%
Sole par.+2 chn		62%	59%	54%		61%	83%	95%
In-work benefits	No	Yes	Yes	Yes	No	No	No	No
Unemployment <sup>b</sup>	7.9%	4.5%	8.3%	6.3%	7.4%	10.3% <sup>c</sup>	4.3%	6.5%
Sole parent: Eligibility does not require looking for work	Youngest child<16	Youngest child<1 (federal maximum). Could go as low as 3 months in some states.	No	Youngest child<16	Youngest child<15 (part-time work test for those with older dependent, <18, children)	Youngest child<18	Youngest child<5	Youngest child<16 (or 20 if the child still goes to school)
Female participation <sup>d</sup>	65.0%	71.3%	69.4%	67.2%	67.1%	52.6%	62.7%	72.6%

Notes: a) figures for 1997, from <http://www.oecd.org/els/social/mwp/docs.htm#1> (replacement ratio=income out of work / income when working)

b) figures for 1998 from <http://www.oecd.org/publications/figures/2000/english/unemployment.pdf>

c) unemployment in 1997.

d) figures for 1998 from <http://www.oecd.org/publications/figures/2000/english/employment.pdf>

In this report, in-work benefits include those payments that can only be received while working. Family payments do not fall into this category, because they can be received for example, whilst on Newstart Allowance and unemployed.

Section 2 gives an overview of methodologies used in the labour market research that is the subject of this review. The following sections (3 to 5) report on empirical findings from labour market research that are relevant to policy makers. Section 3 reports on results from recent studies on the effect of financial incentives on unemployment duration, labour force participation and labour supply. The results from studies on the effect of education and training are described in section 4 and section 5 reports on the effect of workfare and work experience programs. Section 6 concludes.

## 2 Comparison of methodologies

The literature discussed in this report makes use of a wide variety of methodologies. They can be mainly classified into three groups, since work incentive effects are mostly studied by examining the exit rate to employment, by using models of labour supply and welfare participation for utility maximising households, or by comparing outcomes in comparable treatment and control groups (in [quasi-]experiments) to study these effects. Each approach has its own methodology:

- ▶ hazard rate modelling, as is used in the analysis of exit rates (or durations), such as unemployment duration, employment duration or duration of benefit receipt
- ▶ models of labour supply and welfare participation
- ▶ (quasi-)experimental evaluations.

Over the years, the methods used in the three approaches have been refined and extended, allowing more features of the real world to be incorporated in the models used. In this section, the development of the methodology and the resulting improvement of the research are discussed. Section 2.1 deals with duration or hazard rate modelling, and section 2.2 deals with labour supply and/or welfare participation models. Finally, section 2.3 discusses evaluations when (quasi-) experimental data are available.

### 2.1 Hazard rate modelling

The hazard rate out of unemployment, or transition rate or exit rate as it is alternatively called, represents the probability to exit from unemployment in the next period conditional on being in unemployment in the current period. Therefore, a high hazard rate implies that a short duration of the unemployment spell is expected. Mortensen (1977) laid the foundation for the extensive use of hazard rate models in labour market research. He developed a structural job search model, which formed the economic basis for the use of the reduced form hazard rate models. The structural job search model involves the estimation of reservation wage and market wage equations, whereas the reduced form hazard rate model only implicitly compares market wage and reservation wage in its one equation. However, underlying the probability of exiting at each point in time is the probability that the offered wage rate is higher than the reservation wage rate. Therefore, the equation to be estimated will contain explanatory variables that are related to the reservation wage and the market wage.

#### Proportional hazard function

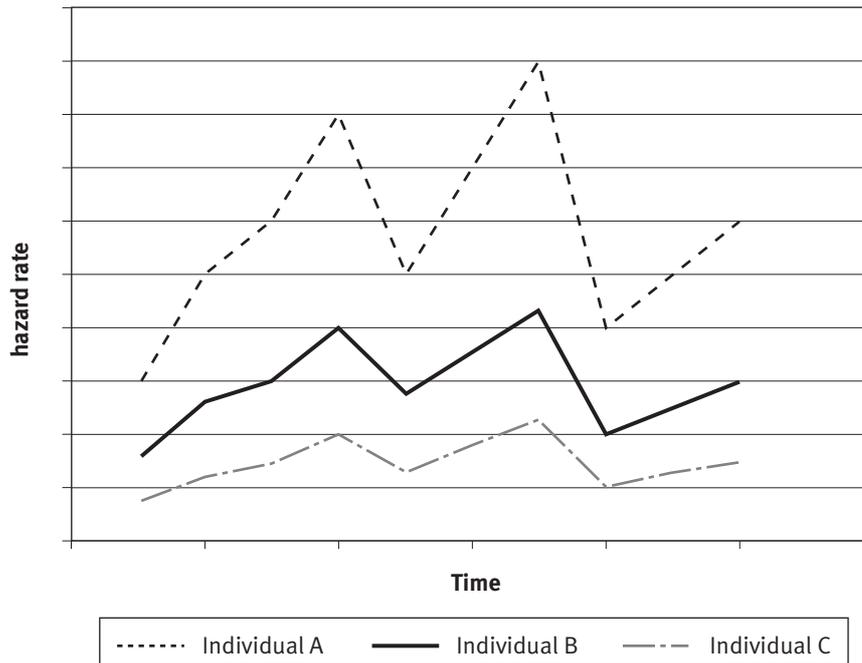
The hazard rate models most commonly used involve proportional hazard functions  $\theta$ , which means that the parts to represent the time dependence (the baseline hazard) and the dependence on individual characteristics are independent of each other:

$$\theta(t | X) = \exp(X\beta) \exp(\alpha(t))$$

$t$  is the time elapsed in the current spell,  $X$  represents the personal and household characteristics,  $\beta$  is a vector of parameters indicating the effect of each characteristic and  $\alpha$  represents the time dependence.

Such a specification imposes a pattern of exit rates through time, which is the same for everyone. Different individuals have hazard rates at different levels, but at each point in elapsed time the ratio of the exit rates of the individuals is the same. Figure 1 illustrates this. Individual A in figure 1 has a hazard rate which at all points in time is two times as high as the hazard rate for individual C and only half of the hazard rate for individual B.

**Figure 1: Proportional hazard rates**



**Base line hazard**

Several different specifications for the baseline hazard have been used. Some specifications may impose constant baseline hazards ( $\alpha(t)=c$ ), others imply monotonically increasing or decreasing baseline hazards (for example, a Weibull specification  $\alpha(t)=\alpha t^{a-1}$ , which is increasing for  $a>1$  and decreasing for  $a<1$ ), or other fixed patterns. Currently the piecewise constant baseline hazard is popular because of its flexibility. The piecewise constant approach does not a priori impose a particular shape on the baseline hazard. The shape of the baseline hazard determines whether there is positive, negative or no duration dependence. Negative (positive) duration dependence means that the baseline hazard is downwards (upwards) sloping over time.

To estimate a piecewise constant baseline hazard, time intervals covering the range from 0 to the maximum duration observed are defined:

$$\alpha(t)=\alpha_k \text{ for } t \in [c_{k-1}, c_k) \text{ with } k = 1, \dots, M \text{ and } 0 = c_0 < c_1 < \dots < c_{m-1} < c_m = \infty$$

where  $\alpha(.)$  is the baseline hazard function;  $\alpha_k$  is the estimated constant for time interval  $k$ , which runs from  $c_{k-1}$  to  $c_k$ ; and  $M$  is the number of time intervals distinguished in the baseline hazard function.

The number and position of the time intervals can be chosen freely as long as at least one person is observed to exit in each time interval. For each interval a parameter is estimated, which indicates how likely exit is in that particular interval compared to exit in the other intervals. The advantage is that a researcher can start with a large number of intervals and reduce intervals by merging intervals, when parameters (indicating the level of the exit rate) for adjoining time intervals are not significantly different from each other.

Duration dependence can be made even more flexible by using an alternative specification, which allows the duration dependence to vary over the business cycle (Cockx & Dejemeppe 2000). This means that under different economic circumstances, hazard rates may depend in different ways on the elapsed time in a spell. They find that in a recession, men over 28 years old experience negative duration dependence, whereas under improved labour market conditions, positive duration dependence is found. This supports the idea that in a downturn employers rank potential employees by their unemployment duration, employing those who have been unemployed for the shortest amount of time. In an upturn this ranking procedure is less important. For younger men no duration dependence is found in good or bad labour market circumstances. This is possibly explained by the fact that education attainment is a more informative measure of a young person's productivity than unemployment duration.

### Unobserved heterogeneity

Another important issue in the development of hazard rate models has been the way in which researchers deal with unobserved heterogeneity. It is unlikely that all differences between individuals are captured by the characteristics of a person that we observe in a data set. In such circumstances it is said that there is unobserved heterogeneity  $\tilde{v}$ . The heterogeneity terms enter the hazard rate functions in a multiplicative way:

$$\theta(t|X, \tilde{v}) = \theta(t|X) \tilde{v} = \theta(t|X) \exp(v)$$

where  $\tilde{v}$  has to be positive and is therefore reparameterised as  $\exp(v)$ . Because  $v$  is unobserved, it needs to be integrated out of the hazard function. Different specifications for the distribution of  $v$  can be chosen to achieve this.

If the researcher cannot control for the differences in exit rates that occur as a result of these unobserved differences between individuals, duration dependence will be biased downwards. In the early stages of spells, a group of individuals with mixed characteristics will be at risk of exiting. However, those individuals in the group with the most favourable characteristics will exit in the early stages of the duration, leaving behind those who are less likely to exit. As a result, it appears as if hazard rates later in the spell are lower than hazard rates earlier in the spell. However, this is not a true duration dependence effect. Instead it represents changes in the distribution of unobserved characteristics in the population yet to exit from unemployment.

In the early days of research in this field, many researchers did not control for unobserved heterogeneity. In the more recent literature, it is widely acknowledged that unobserved heterogeneity is an important issue and several methods for dealing with unobserved heterogeneity are available.

However, separating duration dependence and unobserved heterogeneity is difficult to achieve. Identifying the effect that each has on the hazard rate often requires assumptions on the functional form of either duration dependence or unobserved heterogeneity. Barrett (2000) estimates hazard rate models with two alternative specifications for the unobserved heterogeneity. The effects of the personal characteristics are robust to this change in specification, but the duration dependence parameters alter markedly after the change: from indicating negative duration dependence to no or hardly perceivable duration dependence. This is unfortunate for policy makers, because there is a difference in the type of policies one would use to address the two different problems. If duration dependence is the cause for long-term unemployed not exiting from unemployment, then the key to preventing this is to

prevent people from becoming long-term unemployed. On the other hand, if unobserved heterogeneity is the cause for low exit rates, then it is important to identify these unemployed people early in their unemployment and target them with appropriate policies. In that case it would be important to find out what is underlying this unobserved heterogeneity that distinguishes these long-term unemployed people from other unemployed people.

A recent paper addresses this issue by looking at time series data on aggregate outflows from different duration classes (Van den Berg & Van Ours 1996). This allows them to separate the two effects. In United States data, they find that except for white men, duration dependence is dominated by unobserved heterogeneity. Earlier work has discussed the value of panel data where repeated spells can be observed for one person. Assuming that unobserved heterogeneity does not change over time (but is person-specific), the longitudinal information for an individual provides a tool for separating unobserved heterogeneity from duration dependence. This is discussed in Chamberlain (1982) and Heckman and Singer (1982). Applications using this multiple spell approach can be found in Olsen and Wolpin (1983) and in Newman and McCullough (1984), who look at fertility, and in Jain and Vilcassim (1991), who study purchase timing. If multiple spells of unemployment were observed for each individual, this approach could be applied to separate duration dependence and unobserved heterogeneity in the duration analysis of unemployment spells.

Research has also been extended to analysis of multiple types of spells<sup>4</sup> (such as following sequences of unemployment and employment durations) that may be correlated with each other. This requires a multivariate distribution function of the unobserved heterogeneity terms. Van den Berg (1997) discusses several possible options and the range of values for the correlation coefficient that each of the options can attain.

To estimate a structural job search model, data with information on reservation wages and offered wages are needed. Often, not enough information is available to identify such a model. Progress in these types of models has involved identifying a reservation wage path instead of assuming a stationary reservation wage over the whole length of the duration (Van den Berg 1995), which allows the reservation wage to change as the unemployment spell progresses.

## 2.2 Labour supply and/or welfare participation models

Blundell et al. (2000) show that behavioural modelling is important when examining the effects of policy changes. Behavioural modelling makes use of the estimated parameters of a model, which describes the relationship between labour supply, wage rate, other income and individual characteristics. The main underlying assumption is that individuals choose levels of labour supply and income, conditional on the attainable options, that optimise their utility. Gross income at the different levels of labour supply is calculated using the relevant labour supply, wage rate and other income. A behavioural model depends on an accurate representation of benefit and taxation rules to calculate what the net income is at all levels of gross income. The model can then be used to predict what the change in a person's labour supply behaviour will be as a result of a policy change. The effect of any policy change affecting the gross to net income transformation can be calculated. In Blundell et al. (2000) it is shown that inclusion of behavioural effects (changes in labour supply) in a microsimulation model results in a predicted cost of extending Family Credit to the more generous Working Families Tax Credit (WFTC) in the

United Kingdom that is 14 per cent lower than would have been predicted without allowing for behavioural changes. Creedy and Duncan (2001) provide an extensive discussion of the use of labour supply models in microsimulation.

### Types of labour supply models

Empirical labour supply models have seen major changes over time. With the increased computing power available to researchers, previously impossible or extremely cumbersome approaches have now become achievable. However, the basic underlying model of utility maximisation subject to a budget constraint has remained the same:

$$\max U(x, l_1, l_2)$$

subject to:

$$T = l_1 + h_1$$

$$T = l_2 + h_2$$

$$x = \int_0^{h_1} g_1(t_1, h_2) dt_1 + \int_0^{h_2} g_2(h_1, t_2) dt_2 + n(y_1) + n(y_2) + n(B(c))$$

where:

$U(\ )$  is the utility function of a two-adult household

$l_1$  and  $l_2$  indicate the aggregate of leisure time and home production time of the husband and wife (married or de facto) respectively

$x$  indicates net income (representing consumption)

$T$  is the total available time for each person in the household

$h_1$  and  $h_2$  are the hours of work of husband and wife

$g_1(\ , \ )$  and  $g_2(\ , \ )$  are the marginal net wages of husband and wife at the different hours of work  $h_1$  and  $h_2$  taking into account taxation and withdrawal of benefits

$y_1$  and  $y_2$  are the non-labour incomes of husband and wife

$c$  is household composition

$B(c)$  is the amount of benefit a household is eligible for, given their household composition  $c$

$n(\ )$  is the amount of income after the deduction of taxes.

The first two restrictions are time restrictions for the two adults. The third restriction, the budget constraint, denotes the level of available income in the household. If the three restrictions are taken together, the budget constraint may be written:

$$x + \int_{T-l_1}^T g_1(t_1, T-l_2) dt_1 + \int_{T-l_2}^T g_2(T-l_1, t_2) dt_2 =$$

$$\int_0^T g_1(t_1, T) dt_1 + \int_0^T g_2(T, t_2) dt_2 + n(y_1) + n(y_2) + n(B(c))$$

Three types of approaches in labour supply modelling that can be distinguished are:

- a) the first generation of labour supply models, which approximates the non-linear budget constraint by a linear constraint in order to derive labour supply equations that could be easily estimated. Average net wage rates or marginal wage rates in the observed labour supply points are used in the approximations.
- b) the second generation of models, which looks for the optimal labour supply at each of the separate linear segments and at each of the kinks of a budget constraint that was non-linear but piecewise linear. Burtless and Hausman (1978) are the first to use this approach, which allows researchers to incorporate tax and benefit systems more accurately into labour supply modelling. Moffitt (1986) gives an extensive description of the method and provides an overview of papers that have applied this method. A disadvantage of this approach is that one has to impose restrictions on the parameters so that the Slutsky conditions are satisfied<sup>5</sup> in a broad region. Failing to do so may result in a model that is statistically not meaningful (such as negative probabilities of being in particular labour supply points). MaCurdy, Green and Paarsch (1990) explain that this restriction of the parameter space may bias substitution effects upwards and income effects downwards. In addition, for a large number of separate linear segments, the method can become econometrically complicated and computationally cumbersome to apply. This means that to use it in labour supply models for couples, where the budget constraint is determined by the wage rates, benefit withdrawals and tax rates of two persons, can be extremely difficult. As a result, few papers have appeared using this method for couples.
- c) the third generation of models, which simplified matters by only considering a limited number of discrete labour supply points instead of the full range of possible hours. From a theoretical point of view, the choice from a limited number of labour supply points can be defended by the fact that in real life people normally do not get to choose their labour supply freely between zero and a maximum number of hours. Some studies have compared the capability of different models to capture features of observed labour supply. They found that discrete labour supply models generally do a good job.

### Comparing specifications

Within each of the three strands of labour supply models used in the literature, several variations are possible, increasing the number of possible specifications further. Unfortunately, relatively few papers make comparisons between alternative model specifications to study the results' sensitivity to the chosen model. Exceptions are Mroz (1987), Gerfin (1993), Van Soest (1995), Blomquist (1996), and Kawaguchi (1994).

Mroz (1987) uses United States data to find that a wide range of responses to changes in wage rates and other income can be found for married women's labour supply using different specifications for the labour supply model. He uses a restrictive sample only including married women with working husbands, where both the wife and the husband are between 30 and 60 years old. Female labour supply is estimated using a reduced form equation where male labour supply is considered exogenous. Mroz (1987) examines the importance of controlling for self-selection into the labour force, the assumption on exogeneity of the women's labour market experience and wages, and the endogeneity of children and non-wife income. He specifies a large number of different models, tests the different specifications and compares the outcomes with regard to the wage and income elasticities. He finds that the three most important assumptions are the way self-selection into the labour force is treated, endogeneity of wages, and use of labour force experience

as an instrumental variable to control for the endogeneity of wages. Assumptions that were found to be unimportant are the exogeneity of non-wife income and the number of children, controls for non-proportional income taxes and self-selection into the labour force once labour force experience is treated as endogenous. Mroz finds that amongst the models that cannot be rejected are models that generate elasticities of female labour supply that are no larger than those for men. This is an interesting finding, because it is generally believed (and found in empirical analysis) that women's labour supply is more responsive to wage or income changes than men's labour supply.

Gerfin (1993) compares three models where the unobserved market wages for non-workers are treated differently, using Swiss data for married women. He estimates a simultaneous wage and labour supply model, which is how such a model should be estimated ideally. The results of this model are then compared with two commonly used alternative specifications, where the unobserved wages for non-workers are replaced by their expected values. The expected values are obtained from a separately estimated wage equation. One version of the model only replaces the unobserved wages and the other version also replaces the observed wages (of the workers) by their expected values. From the three models, the elasticity of labour supply with regard to wages and income can be simulated. A comparison shows that the elasticities are quite different in the three specifications. The model where only the unobserved wages are replaced by expected values is most different with regard to the wage elasticities, whereas the model where all wage values are imputed is most different with regard to the income elasticities.

Van Soest (1995) compares four specifications of a labour supply model for couples in the Netherlands. One of the comparisons is between a model where wages are imputed by replacing unobserved wages by the expected value and a model where unobserved wages are integrated out of the likelihood function. The latter means that the uncertainty in predicting wages is taken into account. The differences in the resulting elasticities are not as large as in Gerfin's (1993) paper, but the elasticities seem to be slightly biased upwards as a result of not accounting for prediction errors. A more important inclusion in the model is the hours restriction in the form of a penalty function for part-time hours. Leaving the hours restriction out of the model more severely biases the own wage elasticities upwards, while the cross wage and income elasticities are biased slightly downwards. Accounting for random preferences to allow for unobserved differences in the preference for leisure hardly has an effect on any of the elasticities.

An interesting approach is taken by Blomquist (1996). He carries out Monte Carlo simulations to investigate the properties of different estimators. In one specification, the endogenous wage equation and labour supply are estimated simultaneously, accounting for all the details of the nonlinear budget constraint (caused by taxes and benefit payments). In the other specifications, the budget constraint is linearised in the optimal point, which simplifies estimation. This gives a wage rate and other income to use as inputs in a labour supply equation. The use of Ordinary Least Squares to estimate the labour supply equation would result in a bias. Therefore, an instrumental variables method is used. Blomquist estimates two versions of this instrumental variables specification using different instruments. He does a Monte Carlo simulation to explore the behaviour of the different estimators in different circumstances and finds that no estimator is the best under all circumstances. Instead, the optimal estimator mainly depends on the sample size and the type of measurement errors in the data. He proposes to complement actual estimates in empirical studies with a simulation study that generates data similar to the real data and to examine the effects of imposing

measurement errors similar to those in the real data on the performance of the different estimators. This might help with choosing a preferred approach and give an indication of how the estimates should be interpreted. Unfortunately, identifying the measurement errors present in the real data might not always be easy to achieve.

Another specification issue regards the type of utility function that is chosen as the utility being maximised by the household. Usually, a unitary model is selected, where it is assumed that the household maximises one common utility function, which depends on the amount of leisure time of the different members and on total consumption. More recently, models are being proposed where the different members in a household are maximising individual utility functions, which may be dependent on the other member's overall wellbeing. Kawaguchi (1994) estimates four models of household labour supply, each based on a different type of utility function. The specifications are the neoclassical utility function (where there is a common household utility), wife as secondary earner model (where the husband's labour supply is pre-determined and independent of the wife's labour supply), the intra-household trade model (where there is no joint consumption of goods and where non-market time is traded within the household at the market price), and the Nash bargaining model (where the household bargains over the allocation of non-market time based on a threat point, for example, the level of utility of each person when separated). He then tests whether the restrictions necessary for the first three models are fulfilled. The last model cannot be tested. He finds that the conditions necessary for the first three conditions are all rejected. However, the sample used is rather restrictive in order to simplify estimation (for example, only couples where husband and wife are working, the wife is between 20 and 40 years old and the husband is between 20 and 45 years old are included).

The above five studies show that different specifications may result in different outcomes. A wide variety of specifications is examined. One thing that three of the above studies have in common is that they all identify the way of dealing with the unobserved wages as an important issue. The impact of the choice of a particular specification in several of the above comparative studies indicates that a systematic and thorough comparison of alternative models can be important when, for example, specifying a model for policy simulations. Such a comparison should allow several aspects of the specification to be changed and assessed on the effect these changes have on the results generated by the model.

### **Neglected issues**

Welfare participation and labour supply are mostly analysed separately. However, the decisions made about hours of work and welfare participation are very likely to be taken simultaneously, given that eligibility for welfare depends on earned and unearned income. In many labour supply models it is assumed that everyone who is eligible for benefits will participate in welfare. The question is whether this is a reasonable assumption. Duclos (1997) finds that even after accounting for other possible sources of differences between eligibility rates and take-up rates of Supplementary Benefits in the United Kingdom, the take-up rate still is 20 per cent lower than the eligibility rate. In addition, inclusion of a possible negative effect on the household utility level if the household participates in welfare provides a possible explanation for households working for an income that is only slightly more than welfare participation would have provided.

Another important issue in labour supply that is often neglected is involuntary unemployment. Not everyone who is willing to work can find employment. In a recent

paper by Holzer and Stoll (2000), the employer's demand for the labour supply of welfare recipients is explored in four large metropolitan areas in the United States. They find that even if the labour market for welfare recipients is quite strong, it is uneven in terms of the individual recipient's access to employment, depending on the recipient's location and race (minorities are less likely to be hired). This labour market can also be substantially weakened during an economic recession.

In addition to involuntary unemployment, many people cannot work the exact number of hours they would prefer. Most data sets only contain information on actual labour supply and do not ask for preferred hours of work. As a result, observed labour supply is often influenced by labour demand. Exceptions are for example two Dutch surveys, the Socio-Economic Panel starting in 1984 and the OSA (Dutch acronym for Organisation of Strategic Labour Market Research) survey held in 1985. Examples of studies that have used these data on preferred hours are Woittiez (1991), Euwals, Melenberg and Van Soest (1998), Euwals and Van Soest (1999), and Euwals (2001).

Most of the above discussion relates to cross-sectional data, neglecting any longer-term effects, and assumes people are not considering the impact of current decisions on the future. Ziliak and Kniesner (1999) conclude in a recent paper that studies on work incentive effects of income taxes should use longitudinal data, which would allow for time-nonseparable labour supply. They argue that a progressive tax on wage and interest income makes this important. In addition, cross-sectional data neglect influences on labour supply from the stage of the life cycle someone is in. In particular, this may be important for women who have children or are planning to have children. Furthermore, a model based on cross-sectional data cannot incorporate the importance of working in a period on lifetime earnings, where temporarily dropping out of the labour market can set back one's career. This consideration is probably most important for people with high education levels and/or a large amount of work experience. Unfortunately, the amount of longitudinal data is limited, especially in Australia.

### 2.3 Evaluations and experiments

The United States has a long history of experiments with taxation and benefit systems. There is an extensive literature on the methodology associated with the analysis of experiments and evaluation of policy changes.

Most evaluations of experiments or changes centre on the average impact that a particular change has on, for example, unemployment duration. Heckman, Smith and Clements (1997) argue that the distribution of effects over program participants is equally relevant in assessing a program or changes in policy. Examples of other criteria in the evaluation that may be of interest are the proportion of program participants benefiting from it, the proportion of the total population benefiting from the program, quantiles of the impact distribution and the distribution of gains over subgroups.

Blundell and Costa Dias (2000), in their overview of evaluation methods for non-experimental data, distinguish five categories of evaluation methods. Four experimental approaches, including the pure randomised social experiment, the natural experiment (or differences-in-differences approach), the matching method and the selection method; and the structural simulation approach (which is non-experimental). In the first experimental approach, individuals are randomly assigned to a treatment and control group. This makes evaluation very simple, since in principle one could compare the mean values of the variable of interest in the two groups to obtain the effect of a policy.

However, even in this case, Hotz, Imbens and Mortimer (1999) recommend the collection of detailed pre-training or pre-policy change data, which would facilitate the extrapolation of results to other populations than the one studied. In addition, information on the exact nature of programs would make the evaluation of programs more useful to policy makers. It is also important to distinguish between the effect of the 'intention to treat' (that is, being allocated to the treatment group) and the effect of the treatment on those who are actually treated when evaluating experimental data. Heckman, LaLonde and Smith (1999) warn that not all evaluations are best done using an experimental approach, for example, in ongoing programs or when close substitutes to the evaluated program are available the experimental approach will not provide the estimated parameters of interest.

The three other experimental methods are based on finding comparable individuals to those in the treatment group for comparison. First there is the natural experiment, in which a control group is constructed with similar characteristics and observed in a comparable period. Second there is the matching method, which is based on selecting a comparable non-treatment individual for every treatment individual based on a group of selected factors, the matching variables. It is assumed that the matching variables can be selected in such a way that people with the same values of these factors react in the same way to policy changes. Finally there is the selection method (or Heckman approach), which aims to take the bias of being selected for treatment out of the estimated treatment effect. This approach needs at least one factor that contributes to being selected for treatment but not to the effect of the treatment. This allows researchers to estimate the part of the error term in the outcome equation, which is correlated with selection into treatment.

The advantage of the (quasi-)experimental approaches is that fewer assumptions are needed and that the choice for a particular economic theory (or behavioural model) is less important than in the structural simulation approach. By comparing the behaviour of appropriate groups the effects of particular policies can be deduced. However, the disadvantage of this approach is that the results are specific to the policy evaluated in the experiment and it is impossible to extrapolate them to alternative policy changes in the same way as can be done using more structural simulation analyses.

The most important issue in the (quasi-)experimental approach is to compare the right groups, which have common time effects across groups and no composition changes within each group. This can be difficult to achieve.<sup>6</sup> The availability of high-quality data to construct these groups is of major importance and no method can make up for bad data (Heckman, LaLonde & Smith 1999). Especially in quasi-experiments where policy changes have occurred over time to particular groups, one has to take care to control for possible other changes that occurred around the same time. However, these experiments provide an opportunity to compare behaviour before and after the change or (the change in) behaviour of one group with another group.

In evaluations, it is important to recognise the possibility of differences in effects of programs on different types of people or under different economic circumstances. In addition, the analysis should allow these different effects to play a role in the decision of a individual to participate in a program (the self-selection process). Accounting for this endogeneity of participation is important to determine the effect of a program. As a result, care should be taken when extrapolating the estimated effects of a program to a different situation, if the experiment has not been set up to allow such generalisations of results. Furthermore, implementation of an experimental program on a large scale

may change the prices and opportunities of everyone in the population, changing general equilibria and/or displacing other workers.

The most appropriate approach to follow when evaluating non-experimental data depends on the available data and the policy parameter of interest. Sometimes a combination of methods can be most suitable. However, the approach taken has to be decided on a case-by-case basis; there is no 'method of choice' (Heckman, LaLonde and Smith 1999; Blundell and Costa Dias 2000).



### 3 The effect of financial incentives

The financial incentives associated with social security policies have been an important part of the field of applied labour economic studies. The effect of financial incentives can be explored by answering different questions. First, the effect of the maximum benefit level (available when out of work) or the taper/withdrawal rate on the time spent in unemployment or on the probability of employment can be examined. The effect of sanctions (associated with a temporary reduction of the maximum benefit level) falls under this heading as well. Second, the effect of in-work benefits, which make labour force participation financially more appealing, on labour force participation or the hours worked, can be analysed.

In the following subsections, the results for studies on mixed populations, men, women and sole parents are presented separately in 3.1 to 3.4. A summary of these results is presented in table 2. The main findings are then summarised in section 3.5. Each section first discusses the effect of changes in maximum benefit levels, followed by the effect of changes in the taper rate and the effects of in-work benefits.

**Table 2: Financial incentives**

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
Duncan & Harris 2001	Australia	Effect on sole parent's labour force participation of a:	
		• reduction in withdrawal rate	+
		• increase in lowest rate of taxation	+
		Effect on sole parent's hours worked of a:	
		• reduction in withdrawal rate	-
		• increase in lowest rate of taxation	-
Kalb 2000a	Australia	Increase in maximum benefit level on:	(all effects very small)
		• married men's labour supply	-
		• married women's labour supply	-
		Decrease in withdrawal rate on:	
		• married men's labour supply	-
		• married women's labour supply	-
Duncan & MacCrae 1999; Blundell et al. 2000; and Blundell & Hoynes 2000	United Kingdom	Net effect of Family Credit on labour force participation and hours worked:	
		• sole parents	+
		• married women with unemployed partner	+
		• married men	ambiguous (small)
		• women married to employed partner	ambiguous (small)
Bingley & Walker 1997	United Kingdom	Effect of an increase in Family Credit on:	
		• part-time employment	+
		• full-time employment	no adverse effects
Blundell, Duncan & Meghir 1998	United Kingdom	Wage elasticities of married women with employed men	+
		With children < 4 yrs	higher elasticity
Bingley et al. 1995	United Kingdom	Effect of introduction of disregard for income from child support in Housing Benefit and Family Credit, but not in income support on:	
		• welfare participation	-
		• labour force participation	+

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
Blundell & Hoynes 2000	United Kingdom	Family Credit	Clustering of labour supply around the 24 hours eligibility point and then around the 16 hours point after the policy change
Bingley & Walker 2001	United Kingdom	Change in taper rate of housing benefits on: <ul style="list-style-type: none"> <li>▶ participation</li> <li>▶ hours worked (conditional on participation)</li> </ul>	+ insignificant
Scholz 1996 and Eissa & Hoynes 1999	United States	Net effect of EITC on labour force participation and hours worked: <ul style="list-style-type: none"> <li>▶ sole parents</li> <li>▶ married men</li> <li>▶ married women</li> </ul>	+ ambiguous (small) ambiguous (small)
Eissa & Liebman 1996	United States	Net effect of EITC on labour force participation and hours worked: <ul style="list-style-type: none"> <li>▶ sole parents</li> </ul>	+ (possibly an overestimation)
Smith 1997	United States	Effect of decrease in benefit level: <ul style="list-style-type: none"> <li>▶ on labour supply</li> <li>▶ on welfare participation</li> </ul> Effect of decrease in withdrawal rate: <ul style="list-style-type: none"> <li>▶ on number of working recipients</li> <li>▶ on hours worked of current recipients</li> </ul> Effect of higher wages on working reciprocity (without changes to earnings disregard)	+ - + - small
Gensler 1996	United States	Effect of maximum benefit level on welfare participation: <ul style="list-style-type: none"> <li>▶ married couples</li> <li>▶ sole parents</li> </ul> Effect of taper rate on welfare participation: <ul style="list-style-type: none"> <li>▶ married couples</li> <li>▶ sole parents</li> </ul>	+ + (larger than above) - - (larger than above)
Anderson & Meyer 1997	United States	Effect of maximum benefit level on take-up rate Effect of tax rate on take-up rate	+ -
McCall 1996	United States	Effect of an increase in the disregarded earnings: <ul style="list-style-type: none"> <li>▶ on part-time work</li> <li>▶ on joblessness</li> </ul>	+ -
Figlio, Gundersen & Ziliak 2000	United States	Effect on the Food Stamp caseload per state from differences in: <ul style="list-style-type: none"> <li>▶ macroeconomic conditions</li> <li>▶ policy</li> </ul>	large small
Moffitt 2001	United States	Effect of level of benefits on female headship	+

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
Barrett 2000	Canada	Effect of benefit level on exit rate from welfare for: <ul style="list-style-type: none"> <li>▶ men</li> <li>▶ women</li> </ul>	– – (larger than for men)
Fortin & Lacroix 1997	Canada	Effect of benefit level on unemployment duration for: <ul style="list-style-type: none"> <li>▶ men (single, aged up to 29)</li> <li>▶ women (single, aged up to 25)</li> </ul>	– –
McCall 1997	Canada	Effect of Unemployment Insurance receipt on: <ul style="list-style-type: none"> <li>▶ re-employment</li> <li>▶ part-time re-employment for women</li> <li>▶ re-employment in first year being part-time</li> </ul>	– in month 1–5 – in month 1–2 +
Abbring, Van den Berg & Van Ours 1996	Netherlands	Effect of a sanction (reduction in benefits and closer monitoring) on probability of exit to employment	+
Van den Berg, Van der Klaauw & Van Ours 1999	Netherlands	Effect of a sanction (reduction in benefits and closer monitoring) on probability of exit to employment	+

### 3.1 Mixed populations

#### Change in maximum benefit level

Studies by Gensler (1996) and Anderson and Meyer (1997) find that participation in welfare programs increases with an increase in the maximum benefit level available and decreases when the withdrawal rate increases.

Gensler analysed welfare participation rates from 1979 to 1990 in the United States income maintenance programs for families. He analyses the effects of the guarantee level (or maximum benefit level) and tax rates. An increase in the guarantee level increases participation in welfare and an increase in tax rates decreases welfare participation. He further compares both effects for single-female households and for married couples and finds that the effects are largest for the former group.

Anderson and Meyer analysed take-up rates of unemployment insurance by using administrative unemployment insurance data over several years (1979–83) in some states of the United States. They have a wealth of information on benefit characteristics, such as the level of benefits and tax treatment, and some information on the firms where people were working and wage levels of the workers. However, there are no personal characteristics, and Anderson and Meyer do not distinguish between men and women or married and unmarried people. They find that a 10 per cent increase in the benefit level would increase the take-up rate by 2 to 2.5 percentage points and a 10 per cent increase in the duration of benefits would increase the take-up rate by 0.5 to 1 percentage point. This smaller effect of duration is common in the literature. A tax change reducing the net value of benefits by 10 per cent would decrease take-up by 1 to 1.5 percentage points.

Two studies in the Netherlands have focused on the effect that sanctions have on unemployment duration.<sup>7</sup> Abbring, Van den Berg and Van Ours (1996) analysed the transition into employment of unemployed people (originating from the banking sector and the metal industry) receiving unemployment insurance in the Netherlands. They focus on the effect of sanctions on the transition rate. Sanctions are associated with a temporary reduction in the benefits level. In order to account for the endogeneity of the imposition of sanctions, a bivariate duration model is estimated which simultaneously models the process of getting a sanction and the process of finding employment allowing for correlation between the two processes. They find that a sanction increases the probability of exiting to employment and that the effect does not seem to decrease over time. They argue that the total effect is composed of a benefits effect and of a search intensity effect. They have not separately estimated these two effects, but believe that the effect could not be as high as it is without the benefits effect. They also conclude that the two processes are simultaneously affected by several characteristics (observed and unobserved). This means that a univariate approach—treating the sanction as an exogenous variable—would lead to a bias in the measured effects.

Van den Berg, Van der Klaauw and Van Ours (1999) estimated a comparable bivariate duration model using Dutch data on welfare recipients in Rotterdam. They found that having a sanction imposed, nearly doubles the probability of moving from welfare to work. They argue that a sanction that is imposed at a relatively early stage of the welfare spell considerably reduces the risk of long-term welfare dependency. The sanction consists of a reduction in the welfare payment with the threat of more severe punishment in the case of recidivism. In addition to the financial punishment, a sanction is often accompanied by closer monitoring and counselling of the welfare agency. The two components of a sanction may each have their effect on the transition into work.

### **Change in taper rate**

Many policy evaluations are related to the changes in the maximum amount of benefits available. However, other determinants can be important for an individual's labour supply decisions as well. For example, increasing the amount of disregarded income is expected to increase the take up of part-time work. McCall (1996) uses information on Unemployment Insurance recipients (who were displaced from a full-time job) from different states in the United States over the years 1986 to 1992. He finds that increasing the disregard increases the probability of people taking up part-time work and decreases the duration of joblessness. However, since there is no information on the duration of this first job, it is not known whether recipients remain in a part-time job longer (before moving on to a full-time job) when the disregard is higher. Thus, it is unknown whether the total benefit payments will be lower or higher as a result of an increase in the disregard. In a follow-up to this analysis using Canadian data, McCall (1997) finds that women are more likely than men to become re-employed in part-time jobs and that non-recipients of Unemployment Insurance are more likely to become re-employed (full-time and part-time) in the first five months than recipients of Unemployment Insurance. However, female recipients of Unemployment Insurance only have a lower part-time re-employment hazard during the first two months. Finally, he finds that for those who become re-employed in the first year, Unemployment Insurance receipt increases the probability of this re-employment being part-time. This may reflect the incentive to accept part-time work built into the Unemployment Insurance system through the disregard.

### **In-work benefits**

Scholz (1996) and Eissa and Hoynes (1999) find that the positive effect of non-workers being drawn into labour force participation dominates the negative effect of people working fewer hours for sole parents and married women (with an unemployed partner). The effects for married men and married women (with an employed partner) are more ambiguous. A similar result is found for the Family Credit in the United Kingdom (Blundell et al. 2000).

Blundell and Hoynes (2000) argue that from their study of in-work benefit reforms in the United Kingdom it can be concluded that the target groups respond to the work incentives. For example, hours of work are clustered around the 16 hours eligibility point compared to being clustered around the 24 hours eligibility point before the 1992 change in Family Credit. The authors also point out that in evaluating incentive changes the total package of benefits (in-work and other) and the interactions between the benefits are important. In addition, the effects of changes in the economic cycle and the different effects these changes have on different groups should be taken into account.

## **3.2 Men**

### **Change in maximum benefit level**

The benefit level is found to have a negative effect on the exit rate of men from unemployment and on labour supply, although it is rather small and not significant for all groups. In Australia, small wage elasticities are found for married men, which are insignificant for men on higher wages and barely significant for men on lower wages (Kalb 2000a). The average effect of a 10 per cent increase in the maximum benefit level is simulated for a sample of Australian couples; its decreasing effect on labour supply is about 0.4 per cent. The effect of a decrease in the withdrawal rate on labour supply is even smaller (– 0.1 per cent). These results are obtained from a model where male and female labour supply are estimated simultaneously with welfare participation.

Barrett (2000) finds a negative effect of welfare benefits on the exit rate for single and married men in Canada, which is, however, smaller than the effect for women. The effect of welfare benefits is rather small compared to the effect of having a low education, a high unemployment rate, having a low employment potential or being married.

In another Canadian study, the benefits level is found to have a significant effect on unemployment duration only for younger single men (up to 29 years of age) (Fortin & Lacroix 1997). A higher minimum wage increases the duration of unemployment of this age group whereas it decreases the duration in the 25 to 29 year age group. No effect is found for the older age group of men from 30 to 45 year old.

### **In-work benefits**

Although many papers study the effect of in-work benefits, most of them focus on women (in particular sole parents) and pay little attention to men, besides noting that the effects on men are rather small. Eissa and Hoynes (1999) find that the level of Earned Income Tax Credit (EITC) has little effect on men's labour supply in the United States. Similarly, Blundell and Hoynes (2000) find that the effect on married men is quite small, where the positive effect on men with an unemployed wife (+0.37 per cent) is nearly cancelled out by the negative effect on men with an employed wife (-0.30 per cent).

### 3.3 Women

#### Change in maximum benefit level

The level of benefits is found to have a negative but small effect on labour supply and on the exit rate from unemployment. In Australia, moderately sized significant wage elasticities are found for married women (Kalb 2000a). Women with children and women on lower wages have higher wage elasticities and are thus more likely to respond to financial incentives. The average effect of a 10 per cent increase in the maximum benefit level is simulated for a sample of Australian couples; its decreasing effect on labour supply is about 0.3 per cent. The effect of a decrease in the withdrawal rate is even smaller. These results are obtained from a model where male and female labour supply are estimated simultaneously with welfare participation.

Barrett (2000) finds a negative effect of welfare benefits on the exit rate for single and married women in Canada. Although the effect of welfare benefits is larger than for men, it is still rather small compared to the effect of the education level, a high unemployment rate, having a low employment potential or being married.

In another Canadian study, the benefits level is found to have a significant effect on unemployment duration only for younger single women (up to 25 years of age) (Fortin & Lacroix 1997). A higher minimum wage increases the duration of unemployment of the 18 to 24 years age group whereas it decrease the duration in the 25 to 29 year age group. No effect is found for the older age group of women from 30 to 45 year old.

Blundell, Duncan and Meghir (1998) use the tax changes of the 1980s to study labour supply effects for 20- to 50-year old women married to an employed man with or without children. Restricting the analysis to this group of women means the budget constraint to be considered is simplified. They use repeated cross-sections over the period 1978–92. The tax changes provide an opportunity to examine the effect of exogenously changing wages. They use a differences-in-differences approach, where the differences in labour supply responses are compared for different groups, defined by birth cohort (before 1940, 1940–49, 1950–59, and 1960 or later) and education (compulsory/post-compulsory). The key assumption is that, regarding preferences for work, the composition of each of the groups does not change as a result of the tax changes. A labour supply equation is estimated that allows for the endogeneity of participation, for being close to the kink where people start paying taxes, for the wage rate and for other income. The equation is also set up to be consistent with life cycle behaviour.<sup>8</sup> Separate elasticities are estimated for women without children, and with children in different age groups. The wage and income elasticities of women with younger children (less than 4 years old) are higher than those of other women. Although the wage elasticities are moderately sized, they are significant and robust to a number of specification changes, which indicates that the welfare effects of major tax reform are not negligible. The advantage of the above approach is that it depends on fewer assumptions about the specification of the model. It is similar to a natural experiment where the effects on different groups are evaluated.

Blundell et al. (1998) find results for married women's wage elasticities using a collective labour supply model that are similar to earlier results found for the United Kingdom, which have been obtained using a unitary model (the standard neoclassical utility maximising model).

### **Change in taper rate**

Further evidence for the responsiveness of women (married or unmarried) to labour supply incentives is found by Bingley and Walker (2001). They estimate a model of female labour supply and participation in Housing Benefit for the United Kingdom. Male labour supply (for the married women) and participation in other benefits is assumed to be exogenous. The model is then used to simulate the effect of changes in the taper rate for married women with unearned income and a high rent to pay. They find that an increasing taper rate increases the percentage of workers, but average hours change only little as a result of more full-time workers becoming part-time workers with an increase in the taper.

### **In-work benefits**

Recent research in the United States and the United Kingdom has focused on the work-incentive effects of their respective in-work benefits schemes EITC and Family Credit. They find different effects for women married to employed men and women married to unemployed men. The first group is expected to participate less and work fewer hours as a result of the policy, whereas women married to unemployed men are expected to increase their labour force participation slightly. Blundell and Hoynes (2000) compare the United States and the United Kingdom, searching for the answer to the differences in labour supply of sole parents and women with unemployed husbands in these two countries. Notwithstanding a similar socio-demographic structure and system of in-work benefits, the United States seems to have been more successful in drawing these two target groups into the labour market. From simulations of the extension of Family Credit to the WFTC, they find that in the United Kingdom there is a small negative effect on labour force participation and on the number of hours worked for women with employed men. For women with unemployed husbands, participation increases by 1.32 per cent. A joint simulation of the effect on men and women for this latter group shows that it is unlikely that both husband and wife move into employment.

Blundell et al. (2000) examine the effects of the extension of the Family Credit to the more generous WFTC in the United Kingdom. The effects on women with employed and unemployed husbands are presented separately. Women married to employed men experience a 0.57 per cent reduction in the number who are working. This comprises two partly counteracting flows: about 0.2 per cent move into the labour force whereas about 0.8 per cent move out of the labour force. On the other hand, women who are married to unemployed men are encouraged to work. A 1.32 per cent increase in the number of working women is found. The discrete labour supply model on which this simulation is based (Duncan & MacCrae 1999) accounts for benefit payments and taxation rules, fixed costs of working, costs of childcare, random preferences and the involuntarily unemployed. The discrete labour supply points are 0, 10, 20, 30 and 40 hours for women, and 0 and 40 for men. The model used in this paper identifies discouraged workers, who are defined as people who would like to work but do not participate because of the amount of fixed costs involved. Thus, there are four types of labour market states in the model: non-participants, unemployed seekers, discouraged workers and workers. Labour supply is estimated simultaneously for men and women. The simulated effects of the policy changes are found to be negligible for men.

Eissa and Hoynes (1999) find that EITC has a negative effect on married women's labour supply, especially for those who are in the phase-out range of the credit, subsidising them to stay at home. This effect is not present for single women. Their suggested solution is to base EITC on individual earnings rather than on family earnings.

### 3.4 Sole parents

In many countries, sole parents form one of the larger groups to receive social security payments. They are also often long-term benefit recipients. There are large differences between countries with respect to the eligibility for benefits and job search requirements. At one end of the scale there is the United States where, in some states, sole parents are required to look for work when their child is three months old. At the other end of the scale is Ireland where sole parents can stay at home to look after their children until the youngest child turns 18 years old. Notwithstanding these differences, many countries are interested in providing a system that does not discourage sole parents from working (part-time or full-time). Several studies provide evidence that sole parents are quite sensitive to financial incentives, which means they are likely to respond to policy changes.

#### **Change in maximum benefit level**

Sole mothers are the largest group in the United States to receive welfare payments, whereas eligibility for welfare is more restricted for other groups. Moffitt (2001) asks whether the bias of the United States welfare system towards sole mothers can explain the increasing levels of female household headship. Cross-sectional evidence seems to support the belief that the welfare system influences female headship in the United States. However, time-series evidence appears to contradict this finding with the real payment levels decreasing while female headship is rising. Moffitt identifies other developments over time that have pushed female headship rates up while the decreasing welfare benefits pushed headship rates down. He finds that besides changes in female wages, changes in male wages have played a critical role in explaining the changes in female headship rates. Including these wage rates in the model for female headship reverses the effect of the level of benefits from negative to positive.

The welfare system in the United States changed with the introduction of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. The Aid to Families with Dependent Children (AFDC) payment was replaced with Temporary Assistance for Needy Families (TANF). The latter scheme is less generous in terms of the amount of benefits and the amount of time an individual can receive these benefits (no longer than five years). In addition, a work requirement has been imposed to maintain eligibility for benefits. Wolfe (2000) makes a comparison between the two systems. She finds that up to the poverty line (around US\$13 000), withdrawal rates are reasonable and there seem to be sufficient work incentives. However, once income exceeds that amount, effective marginal tax rates increase to high levels, and over some income ranges more earnings would result in lower total income as a result of the withdrawal of several benefits at the same time. Figlio, Gundersen and Ziliak (2000) examine the effect of macroeconomic factors on the Food Stamp caseload, which decreased by 30 per cent from 1994 to 1999. They try to quantify the relative impacts of welfare reform and macroeconomic changes. They find that macroeconomic conditions play a large role in state-to-state differences whereas policy differences seem to explain only a small part of the state-to-state variation.<sup>9</sup> This result implies that with a downturn in the economy, Food Stamp caseloads are likely to increase again.

#### **Change in taper rate**

In Australia, recent research confirms the responsiveness of sole parents to policy changes. Duncan and Harris (2001) estimate a labour supply model for sole parents and use a microsimulation model to examine the effects of some hypothetical policy

changes. They find that reducing the withdrawal rate of the sole parent pension from 0.5 to 0.4 increases sole parents' labour force participation by about 2.5 per cent and increases the average number of hours worked by about 0.6 per cent. An increase in the lowest rate of income taxation from 20 to 30 per cent decreases labour force participation by about 3 per cent and decreases the average number of hours worked by about 1.2 per cent.

Bingley et al. (1995) study the change in child support arrangements for sole parents in the United Kingdom. The amount of child support to be paid by absent parents and the enforcement of child support orders were increased. The latter should provide more certainty about the payments. To improve work incentives, disregards for income from child support were introduced in the Housing Benefit and in the Family Credit (an in-work benefit), but not in Income Support. The simulations of the policy change show that welfare participation decreases and labour force participation increases as a result of the greater work incentives in the new system. They conclude that the sole parent's labour supply is quite sensitive to economic incentives and that those who receive child support are more likely to work than those who do not receive child support.

An analysis of the *1981 United States Omnibus Budget Reconciliation Act*<sup>10</sup> by Smith (1997), using a structural labour supply and welfare participation model, finds that participation was reduced by about 8 per cent and reciprocity whilst working by over 40 per cent. The share of the Food Stamps program in total income increased, indicating that this program was important in preventing an even larger decrease in the wellbeing of welfare recipients. Smith simulates the separate effects of components of the total change and of some hypothetical changes. He finds that: a lower benefit level encourages some sole parents to leave welfare and others to increase labour supply; a lower benefit withdrawal rate increases the number of working recipients but also reduces the hours worked of women who are now eligible for welfare; and higher wage levels only have a small effect on working reciprocity unless higher earnings disregards are introduced.

### **In-work benefits**

The in-work benefits schemes of the United Kingdom and the United States were designed with the sole parents in mind. These schemes make working part-time or working for low wages financially more attractive. It is no surprise, therefore, that in both the United Kingdom and the United States these schemes seem to work best for sole parents, increasing their labour force participation without decreasing the hours of individuals already in the labour force by too much.

Bingley and Walker (1997) estimate a simultaneous discrete choice model for labour supply and participation in in-work welfare programs. This means participation in in-work welfare is treated as a choice in addition to the choice of working a certain number of hours. The model also allows for involuntary unemployment so that they can distinguish between sole parents who do not want to participate in the program and sole parents who would like to participate but who cannot find employment and remain ineligible as a result. They specify a model with three points of labour supply: zero hours (0 hours, observed hours less than 15), part-time (24 hours, observed hours between 15 and 34 hours) and full-time hours (40 hours, observed hours 35 or more). They show that an increase in the Family Credit increases the probability of working part-time and has no adverse effects on the probability of working full-time. However, the results also show that the average utility loss from participation in Family Credit is around £6 (compared to an average value of receipts of £25). This means that there is a stigma or

cost associated with participation in Family Credit, which makes the program less effective than it could otherwise have been. If it were possible to eliminate this cost, the program could encourage even larger increases in labour force participation.

Blundell et al. (2000) examine the effects of the extension of the Family Credit to the more generous WFTC in the United Kingdom. They simulate the effect of the changes and find that 2.2 per cent of sole parents who are out of the labour force under the old system are expected to move into part-time or full-time work after introducing the new system. There is no counteracting flow in the other direction, although 0.2 per cent of sole parents move from full-time to part-time employment. The discrete labour supply model on which this simulation is based (Duncan & MacCrae 1999) accounts for fixed costs of working, costs of childcare, random preferences and the involuntarily unemployed. The discrete labour supply points are 0, 10, 20, 30 and 40 hours. It also takes the benefit payments and taxation rules into account. The model used in this paper identifies discouraged workers, who are defined as people who would like to work but do not participate because of the amount of fixed costs involved. Thus, there are four types of labour market states in the model: non-participants, unemployed seekers, discouraged workers and workers.

Blundell and Hoynes (2000) compare the United States and the United Kingdom, searching for the answer to the differences in labour supply of sole parents and women with unemployed husbands in these two countries. Notwithstanding a similar socio-demographic structure and system of in-work benefits, the United States seems to have been more successful in drawing these two target groups into the labour market. From simulations of the extension of Family Credit to the WFTC, using the Family Resources Survey data source, they find that in the United Kingdom about 2.2 per cent of the sample of sole parents moves into the labour force, without any sole parents moving in the opposite direction. Only about 0.2 per cent of the full-time workers move into part-time work. Examining administrative data before and after the change, such a large positive effect cannot be found. It should be noted however, that only five months of data are available after the change and the simulated effects are long-term effects (where sole parents are expected to take a long time before adjusting to changes), that the analysis was quite crude, and that the simulation did not take the exact reforms into account.

Brewer (2000) also makes a comparison between the United States and the United Kingdom, focusing on the financial incentives of the EITC and the WFTC, but not investigating labour supply effects or longer-term wage and human capital effects. He notes that, although the two tax credit systems are similar in many ways, there are differences which are not visible in the budget constraint graphs. In the United States, the assessment period and the payment based on the actually earned amount are yearly.<sup>11</sup> In contrast, the assessment period in the United Kingdom is seven weeks to four months, when the amount of payment is fixed<sup>12</sup> for the next half-year based on the average weekly earnings during the assessment period. The payment itself is fortnightly. Given that tax credit payments can be a large part of the total income of low-income families, this difference in the time of payout can have a considerable effect on people's behaviour. These differences in the time period of payments are difficult to reflect in budget constraints when estimating labour supply behaviour. There are little data available that allow the researcher to differentiate between money received on a weekly, fortnightly, monthly or yearly basis. Both tax credit systems have a negative financial incentive to form a couple, although the United States system has a positive incentive for very low income couples, who may be eligible combined but not each separately.

Eissa and Liebman (1996) evaluate the 1986 expansion in the United States EITC for sole parents. They construct an artificial control group in this natural experiment by comparing the change in labour supply of women with children with the change in labour supply of women without children before and after the policy change. There is a significant labour force participation increase of 2.8 percentage points amongst all women with children, and of 6.1 percentage points amongst those women with less than high school education. It is also found that the expansion of EITC hardly affects the number of hours worked for those already in work. Blundell and Costa Dias (2000) criticised their choice of control group by pointing out that the participation of women without children is at a much higher level (about 95 per cent) than the participation of sole parents. As a result, the control group cannot be expected to increase its labour force participation by a similar amount as the sole parent group in response to an improved state of the economy. Therefore, the above results are likely to be an overestimation of the true effects.

### 3.5 Summary

The benefit level is found to have a negative impact on the exit rate of men from unemployment and on labour supply, although it is rather small and insignificant for some groups. The level of benefits is also found to have a negative, significant but small effect on female labour supply and on the exit rate from unemployment. Several studies provide evidence that sole parents are quite sensitive to financial incentives, which means they are most likely to respond to policy changes. In Australia, for example, it is predicted that a 10 percentage point decrease in the taper rate results in a 0.1 per cent decrease in labour supply for married men, whereas a similar decrease results in a 0.6 per cent increase of the labour supply of sole parents. It is also found that participation in welfare programs increases with an increase in the maximum benefit level available and decreases when the withdrawal rate increases.

In trying to determine whether there is likely to be a large disincentive effect on labour supply from the level of social security benefits, several papers look at replacement ratios.<sup>13</sup> However, as noted by Chapman et al. (2000), this assumes that people are not forward-looking. They argue that even if at the start of employment the replacement ratio looks rather unfavourable, it is likely to improve over time, given that earnings normally increase with experience. This calls for a model in which longer time periods are used to compare the income flow from benefits with the income flow from earnings. Such a model has not been estimated yet and would require some assumptions about the wage growth and the discounting rate.

Many policy evaluations are related to the changes in the maximum amount of benefits available. However, other determinants can be important for the individual's labour supply decisions as well. For example, increasing the amount of disregarded income is expected to increase the take up of part-time work.

Both the United Kingdom and the United States have introduced and expanded a system of in-work benefits in the past two decades. The EITC in the United States has been evaluated in several articles. It is generally agreed that its success depends on the extent of the positive effect resulting from the increase in labour force participation and the extent of the negative effect which sees people in the phase-out range reduce their labour supply. Most studies on sole parents and married women (with an unemployed partner) find that the positive effect of non-workers being drawn into labour force

participation dominates the negative effect of people working fewer hours. The in-work benefits schemes make working part-time or working for low wages financially more attractive. These schemes were designed with the sole parents in mind. It is no surprise, therefore, that in both the United Kingdom and the United States these schemes seem to work best for sole parents, increasing their labour force participation without decreasing the hours of individuals already in the labour force by too much.

The effects for married men and married women (with an employed partner) are more ambiguous, but likely to be small. A similar result is found for the Family Credit in the United Kingdom. It is interesting that different effects are found for women married to employed men and women married to unemployed men.

From the above we conclude that women and in particular sole mothers are most sensitive to financial incentives. This is not so surprising, given that most men already work full-time or are looking for full-time employment, regardless of the financial incentives. Women, on the other hand, are more likely to work part-time or not work at all. Wage elasticities are typically high at low hours. As a result, women's labour supply is more responsive to financial incentives.

## 4 The effect of education and training

In the previous section, it is assumed that the unemployed person has the right skills to obtain employment and that he/she only needs the right incentives to search for and accept a job. Unfortunately, unemployment is concentrated amongst those who have low skill and education levels, making them less attractive to employers. They need further education and/or training to become ready for the labour market. Several programs have been set up in different countries trying to provide disadvantaged low-skilled unemployed persons with the right kind of training. Evaluation of these programs is complicated by the fact that these programs are often not randomly applied but targeted at those most in need. Furthermore, participation in these programs often depends on whether or not the unemployed person is willing to participate. In order to measure the effect of a program accurately, these factors need to be taken into account.

The subsections in this section are set up in the same way as in section 3. The results for studies on mixed populations, men, women and sole parents are presented separately in 4.1 to 4.4. A summary of the results is presented in table 3. The main findings are then summarised in section 4.5. In each subsection we first discuss the effect of education followed by the effect of training schemes.

### 4.1 Mixed populations

#### 4.1.1 Education

In 1998, the Australian Bureau of Statistics released a longitudinal data set containing three years of detailed information on labour market experiences and background characteristics, the ‘Survey of Employment and Unemployment Patterns’. This resulted in several studies using the data to analyse the incidence and duration of unemployment. These studies find that higher education levels lead to shorter unemployment spells (Le & Miller 1999b; Stromback & Dockery 2000; Kalb 2000b). Higher education levels also decrease the probability of being unemployed at a point in time (Le & Miller 1999a; Kalb 2000b). Stromback & Dockery (2000) and Kalb (2000b) also include an analysis of the effect of education on the duration of employment (after an unemployment spell). They find that this has no effect on the employment duration. Le and Miller (1999b) study job tenure for all persons in the sample and find that higher education levels (tertiary degree and skilled vocational qualification) increase job tenure.

**Table 3: Education and training**

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
Kalb 2000b	Australia	Effect of higher education on:	
		▶ duration of unemployment	–
		▶ probability of unemployment	–
Le & Miller 1999a	Australia	Effect of higher education on:	
		▶ duration of unemployment	–
		▶ probability of unemployment	–
Stromback & Dockery 2000	Australia	Effect of higher education on:	
		▶ duration of unemployment	–
		▶ duration of first employment after unemployment	none

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
Barrett 2000	Canada	Effect of education on exit rate from unemployment for men: <ul style="list-style-type: none"> <li>▶ having the lowest education level compared to finished high school</li> </ul> Effect of education on exit rate from unemployment for women: <ul style="list-style-type: none"> <li>▶ decreasing education level</li> </ul>	–  –
Fortin & Lacroix 1997	Canada	Effect of an additional year of schooling on unemployment duration	– (largest for youth and for women)
Dolton, Makepeace & Treble 1994	United Kingdom	<ul style="list-style-type: none"> <li>▶ Effect of being in Youth Training Scheme compared to being unemployed on probability of finding a 'good' job for men</li> <li>▶ Effect of being in Youth Training Scheme compared to being unemployed or a non-participant in the scheme on probability of finding a 'good' job for women</li> </ul>	+  + (larger than for men)
Eberwein, Ham & LaLonde 1997	United States	For disadvantaged adult women: <ul style="list-style-type: none"> <li>▶ Effect of training on exit out of unemployment</li> <li>▶ Effect of training on duration of employment</li> </ul>	+  none
Sandefur & Cook 1997	United States	Effect of higher education level on duration of welfare participation of female heads	–
Danziger et al. 1999	United States	Effect of higher education level on probability of finding employment for single mother welfare recipients	+
Hotz, Imbens & Klerman 2000	United States	Effect of training compared to work experience on earnings, employment and welfare receipt of female heads	Low at first but increasing over time (good long-term effects)
Denny & Harmon 2000	Ireland	For young men: <ul style="list-style-type: none"> <li>▶ Effect of vocational training programs on probability of unemployment</li> <li>▶ Effect of educational qualifications on probability of employment</li> </ul> For young women: <ul style="list-style-type: none"> <li>▶ Effect of vocational training programs (taken after completion of senior high school) on probability of unemployment</li> <li>▶ Effect of educational qualifications on probability of employment</li> </ul>	–  +  –  +
Van Montfort et al. 2000	Netherlands	Effect of university education on unemployment duration	+

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
Magnac 2000	France	For youth: <ul style="list-style-type: none"> <li>▶ Effect of a higher level of schooling on future unemployment</li> <li>▶ Effect of being in a training scheme compared to unemployment on access rate to employment</li> </ul>	– none
Bonnal, Fougère & Sérandon 1997	France	Effect of on-the-job training on transition to regular job for young men: <ul style="list-style-type: none"> <li>▶ low education</li> <li>▶ with more education</li> </ul> Effect of workfare on transition to regular job for young men: <ul style="list-style-type: none"> <li>▶ low education</li> <li>▶ with more education</li> </ul>	+ none none –

None of the above studies differentiates between the effects of education for men and women. There is some evidence that the education level matters more for female than for male labour supply (Kalb 2000a) and given the results in some of the overseas studies (Dolton, Makepeace & Treble 1994; Fortin & Lacroix 1997; Barrett 2000), which find substantial differences between men and women, it would be worthwhile to investigate whether such a difference exists in Australia.

Van Montfort et al. (2000) analyse the effect of education level on unemployment duration for unemployment insurance recipients in the Netherlands. The study includes both men and women who may be married or single. Besides some insignificant unemployment duration reducing effects of medium-level schooling compared to the lowest level of schooling, they find that university educated people take longest to find a job, although they do apply more often than lower educated people. The possible explanations that they provide for this surprising result include that unemployed academics are more critical of job offers (it should be noted that unemployment insurance can be quite high at 70 per cent of the previous income, compared to the Australian unemployment assistance); that academics who are unemployed for a longer period may be looked at with some suspicion by employers; or that academics are too expensive for employers. However, when they examine the effect of actions taken by the social security administration office by education level, they find that increased attention by this office decreases unemployment duration most for the university-educated people. Lower education levels seem to benefit more from increasing their application intensity.

### Training

France has a system of unemployment benefits where people under 25 have no access to a minimum income guarantee, but only have training schemes as a protection against unemployment. Magnac (2000) analyses the effect of these training schemes on subsequent labour market states and finds that compared to being unemployed the training schemes provide no improved access rate to employment. Thus, the training schemes do not seem to provide access to stable employment. He also simulates the effect of abolishing the training schemes and finds that this would result in increased levels of unemployment, employment and longer school attendance for young people. Thus the training schemes seem to work as a refuge against unemployment, which is

one of its aims. Magnac also finds that work experience in a stable job is the best protection against future unemployment for young people, followed by a higher level of schooling. Work experience in temporary jobs seems less significant and effective. It is not explained how to get work experience in a stable job, which is the problem in the first place. Some young people are probably very unlikely to obtain a stable job and need help to obtain such employment.

## 4.2 Men

### Education

Barrett (2000) finds that the unemployment duration of Canadian men (single or married) is largely unaffected by education level. Only the lowest education level has a significant negative effect on the exit rate out of unemployment compared to a finished high school education

Fortin and Lacroix (1997) find that an additional year of schooling considerably decreases the expected unemployment duration for single men in Canada. This effect decreases with age and is even larger for single women.

### Training

Since the late 1970s, a scheme combining training and work experience has been in place for young unemployed school leavers in the United Kingdom. Dolton, Makepeace and Treble (1994) have extended previous studies on the Youth Training Scheme by analysing separately the duration until a job is found and the duration until a 'good' job is found.<sup>14</sup> In addition, they examine these durations net of the time spent on the Youth Training Scheme. The latter duration reflects the training aspect of the scheme. After participation in the scheme, one would hope that human capital has increased, which should increase the probability of finding a job, but during participation one would expect a reduced probability of finding a job. They allow for selectivity in their model as a result of differences in characteristics between participants and non-participants in the scheme, and for varying unemployment rates. They find only limited evidence of effects on young men. When comparing unemployment with the youth training scheme, the scheme did not seem to reduce the time taken to find a job (net of the time spent on the scheme).<sup>15</sup> However, there is some evidence that it helps to obtain a 'good' job. This confirms the importance of the training component of the scheme. Dolton, Makepeace and Treble note that, although there is little evidence of a positive effect when comparing non-participants with participants, there does not seem to be a negative result on the probability of finding a 'good' job either. This means that it is unlikely that participation in the scheme is associated with low potential productivity in the perception of employers.

Analysis of the effect of training and education on the work experience of young Irish adults has found that vocational training programs do improve employment outcomes (that is, decrease the probability of unemployment) (Denny & Harmon 2000). Furthermore, educational qualifications are shown to increase the probability of employment (together with the probability of entering higher education). This shows education and training are important factors in preventing unemployment.

Under the unemployment benefit scheme in France, people under 25 have no access to a minimum income guarantee, but are provided with training schemes as a protection against unemployment. Bonnal, Fougère and Sérandon (1997) studied the effect of

different training components on the labour market histories of young men (between 15 and 26 years old) at the end of the 1980s. They examine the differential effects of workplace programs in the private sector containing on-the-job training and 'workfare' type programs in the public sector on subsequent employment and unemployment spells, for men with different levels of education. They find that programs with a larger proportion of on-the-job training are most beneficial to young men with lower education levels, while they have no effect on more educated men. The 'workfare' type programs seem to have a negative effect on the transition to a regular job for the more educated young worker (with a vocational diploma), while it has no effect on the least educated worker. A possible explanation for this could be that the participation in such a program may signal a low employment performance to prospective employers. In addition, the expected duration of a regular job preceded by a workfare type program is shorter than for those preceded by a workplace program and ends more frequently in unemployment again.

### 4.3 Women

#### Education

Barrett (2000) finds that the unemployment duration of Canadian women (single or married) decreases with an increased education level. All the education dummies are significant with the highest levels most likely to exit from unemployment.

Fortin and Lacroix (1997) also find that an additional year of schooling considerably decreases the expected unemployment duration for single women in Canada. This effect decreases with age and is larger for single women than for single men.

#### Training

Since the late 1970s, a scheme combining training and work experience has been in place for young unemployed school leavers in the United Kingdom. Dolton, Makepeace and Treble (1994) have extended previous studies on the Youth Training Scheme by analysing the duration until a job is found, and the duration until a 'good' job is found.<sup>16</sup> In addition, they examine these durations net of the time spent on the Youth Training Scheme. The latter duration reflects the training aspect of the scheme. After participation, one would hope that human capital has increased, resulting in an increase in the probability of finding a job, but during participation one would expect a reduced probability of finding a job. They allow for selectivity in their model as a result of differences in characteristics between participants and non-participants in the scheme and for varying unemployment rates. They find some strong positive effects for young women, in particular on the probability of finding a 'good' job when time spent on the scheme is not taken into account. This effect is strongest when comparing unemployment with the Youth Training Scheme.<sup>17</sup> This confirms the importance of the training component of the scheme.

An experiment where disadvantaged adult women receive classroom training or other training under the United States Job Training Partnership Act has been carefully analysed by Eberwein, Ham and LaLonde (1997). Most of the disadvantaged women were unemployed and in receipt of Assistance to Families with Dependent Children or other support like Food Stamps, but in principle everyone who had a family income near or below the poverty line for at least six months prior to application would be eligible for the training. The paper shows the importance of identifying the difference between the

effect of being in the treatment group and the effect of actually receiving the training. The first effect is a watered-down version of the latter effect. In addition, they show that in this case it is important to account for the endogeneity of the selection into training, with the training courses targeted to those most in need of them. Not accounting for this endogeneity would underestimate the effect of the training. They find that training increases the hazard out of unemployment. As a result, it raises the employment rates but not the duration of employment spells.

Analysis of the effect of training and education on the work experience of young Irish women has found that vocational training programs do improve employment outcomes if they are taken after completion of the senior cycle of high school (Denny & Harmon 2000). However, vocational training does not seem to compensate for leaving high school early. Educational qualifications unambiguously increase the probability of employment (together with the probability of entering higher education). This shows education and training are important factors in preventing unemployment.

## 4.4 Sole parents

### Education

Sandefur and Cook (1997) have looked at the characteristics that determine the length of stay on welfare of female heads of households in the United States. Education is, not surprisingly, an important factor in the duration of welfare participation, although several other factors are influential as well, such as race, location, number of children, marital status, previous work experience and county unemployment rate. Danziger et al. (1999) also examine the effect of several barriers to employment of single mother welfare recipients. Amongst these barriers are 'having less than a high school education' and 'previously used less than 4 of 9 job skills'. Both barriers are found to have a large effect on the probability of finding employment. Surprisingly, a low level of work experience does not seem to be relevant. These studies show that the labour market skills of sole parents do need improvement in many cases.

### Training

In the early 1990s, several counties in California introduced a program called the Greater Avenues to Independence (GAIN) programs for people on welfare (mostly female heads). Each county had relative freedom in deciding on the mix of education/training and work experience these programs should provide. In six counties an experiment was set up where welfare recipients were randomly assigned to the GAIN program. The approach to GAIN showed considerable differences between these counties, which led to a comparison of the different approaches. In the earlier evaluations it was found that the programs focusing on getting recipients back in employment as quickly as possible (even to low-paid jobs) were more effective (in terms of earnings, employment and welfare receipt) than programs that focussed on increasing the human capital of recipients before encouraging them to find employment. However, because the treatments were not randomised over the sites, the results in the different counties should not be compared without adjusting for differences between counties, such as the differences in the characteristics of people who are eligible for the programs in the different counties or local unemployment rates. Hotz, Imbens and Klerman (2000) revisit this experiment to perform a proper comparison between counties and to examine the long-term effects (nine years) of the programs. Their analyses show that the long-term effects (controlling for differences between counties) are different. The

effects of job search assistance taper off, which is consistent with the expectation that the effect of job search assistance is shorter lived than basic skills training. The lack of individual-level training information prevents the authors from undertaking a more in-depth investigation of this expectation.

## 4.5 Summary

From recent Australian evidence we conclude that education generally seems to reduce the time in unemployment, but the subsequent duration of employment is not affected. However, education seems to increase job tenure in the general population. Overall (from overseas evidence), schooling and vocational training seem beneficial to men's employment prospects, but compared to men, women benefit even more from a higher education level.

The effects of training are more ambiguous. In the United Kingdom, the effects on men in the Youth Training Scheme seem small and the scheme only helps in obtaining a 'good' job more quickly. For women, this training seems more effective. The training given to young people in France who receive social security benefits does not seem to be helpful in obtaining a stable job nor in preventing future unemployment. However, a higher level of schooling is to some extent helpful, which means it would be a better policy to keep young people in school longer rather than provide training once they are out of school. Further evidence on the French youth training identifies the different effects of training on different groups of people. Not unexpectedly, on-the-job training is found to be most effective for young men with lower education levels, whereas there is no effect on more educated men. Workfare programs do not seem to help any of the young men. On the contrary, these programs negatively affect the probability of finding a regular job for the more educated.

An international review of training and employment programs (discussed in section 5.1) finds that disadvantaged adult women in the United States benefited most from the programs. Similar to the results from the United Kingdom and France, young adults seemed to benefit little from training and employment programs. However, contrary to the French results, the least skilled participants in the low-skilled group seemed to gain least from training programs and more from work experience programs.

This review further emphasises the importance of using longer-term longitudinal data to examine the effect of programs. This is also illustrated by a study on the effect of training and workfare programs for sole parents in California, where it became evident that caution is needed when evaluating programs using short-term longitudinal data. Revisiting the Californian experiment using longer-term data and using an improved comparison of the programs in the different counties, it was discovered that training—not workfare—appeared to be most effective in the long run.

From the above we learn that in order to evaluate training programs properly, long-term longitudinal data is needed. In addition, because the effect of training differs for the different types of training available and depends on the characteristics of the person who receives the training, it would be helpful to have detailed information on the type of training provided and on the individual characteristics of participants and non-participants in the program. This would assist in identifying which types of training are most effective for the different groups of unemployed people and sole parents.



## 5 The effect of workfare or work experience programs

Some of the workfare or work experience programs have training components in them, such as on-the-job training. In the literature evaluating labour market programs, a comparison is often made between the effectiveness of work experience as opposed to additional training, to decide how the money can be most wisely spent to help unemployed people back to work. Therefore, this section and the previous section partly overlap in that this section also contains some evaluations of training programs or training components in programs.

One would expect that people who benefit from workfare or work experience programs are one step ahead of people who benefit from training or education, in that they have the necessary work skills, but just lack (recent) work experience. The question is whether compulsory work programs will help these unemployed to get a job in the private labour market after obtaining some work experience.

The effect of workfare programs on unemployed people in general is discussed in Section 5.1, and Section 5.2 discusses some particular considerations for sole parents. Table 4 presents a summary of the studies.

### 5.1 Mixed populations

Stromback and Dockery (2000) analyse Australian longitudinal data from 1994 to 1997 to assess the effect of labour market programs on unemployment duration and consequent employment duration. They find large decreasing effects on unemployment duration for program participation and increasing effects on employment duration. The largest effects are estimated for wage subsidy programs and brokered employment programs, followed by job search assistance and training programs. However, as noted by the authors, the estimated models are not corrected for selection bias so part of the effect may be caused by the fact that the unemployed persons participating in programs are already more likely to leave unemployment. Hotchkiss (1999) and Dolton, Makepeace and Treble (1994) have used a relatively simple approach to incorporate selection correction into a hazard rate model, which could be followed here. Alternatively, modelling the time up to program participation and unemployment duration simultaneously could deal with this problem. This approach allows for correlation between program participation and exit from unemployment to address the selectivity problem. Furthermore, the time up to multiple programs could be included in such a simultaneous model, although there is a limit to the number of simultaneous hazard rates that can be estimated.

**Table 4 Workfare and work experience**

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
Stromback & Dockery 2000	Australia	Effect of program participation on unemployment duration (largest effects for wage subsidy programs and brokered employment programs, smaller effects for job search assistance and training programs)	–
		Effect of program participation on duration of first employment (Note: neither effect is corrected for selectivity)	+

STUDY	COUNTRY	ANALYSIS	SIGNIFICANT EFFECT
White, Lissenburgh & Bryson 1997	United Kingdom	Effect of Work Trials on:	
		▶ the probability of employment	+
		▶ wage rate	none
		Effect of Jobclubs and Job Interview Guarantee Matching and Screening on women:	
		▶ the probability of employment	+
		▶ wage rate	none
		Effect of Jobclubs on men (without vocational qualifications):	
		▶ the probability of employment	+
		▶ wage rate	-
		Effect of Job Interview Guarantee Matching and Screening on men (without vocational qualifications):	
▶ the probability of employment	+		
▶ wage rate	none		
Heckman, LaLonde & Smith 1999	United States and Europe	Review of the effect of training and workfare programs on	
		▶ Employment rate	+
		▶ Wage rate	none
		Largest effects for:	economically disadvantaged women
		Small effects for:	young people
Riccio & Haasenfeld 1996	United States	Effect of emphasising personalised attention compared to emphasising penalty process in making clients comply with welfare-to-work programs	none
Hotz, Imbens & Klerman 2000	United States	Effect of work experience compared to training on earnings, employment and welfare receipt of female heads	High at first but decreasing over time (decreasing long-term effects)
Bonnal, Fougère & Sérandon 1997	France	Effect of on-the-job training on transition to regular job for young men:	
		▶ low education	+
		▶ with more education	none
		Effect of workfare on transition to regular job for young men:	
		▶ low education	none
▶ with more education	-		

Stromback and Dockery treat program participation as a characteristic of the whole search spell, although it normally starts well into the unemployment spell. Treating program participation as a time-varying covariate would allow exit rates to differ before, during and after program participation. Finally, in the approach taken by Stromback and Dockery the effect of only one program at the time can be estimated. The inclusion of program participation as a time varying covariate would also allow the effect of a sequence of programs to be estimated, where combinations of programs may perhaps reinforce each other's effects.

Stromback and Dockery compare their analysis with previous research by the Department of Employment, Education, Training and Youth Affairs (DEETYA 1997), which, in contrast to their research, found that brokered employment did not have much effect.

In their analysis, DEETYA constructed a control group using similar unemployed non-participants. They compare the labour market states of participants three months after the end of the labour market program with the labour market states of non-participants at an appropriate point in time. Stromback and Dockery replicate the analysis by DEETYA using their own data and find that the results are now quite similar to DEETYA's results. They also conclude that adding further explanatory variables does not change the outcomes using DEETYA's approach and therefore that the different outcomes must largely reflect the use of longitudinal data versus point-in-time data. The information included in the Stromback and Dockery analysis allows for considerably longer-term effects than three months.

The above reflects the importance of long-term longitudinal data to measure the effects of training and labour market programs on unemployment duration. In addition, the longitudinal data facilitated the analysis of the employment duration following the unemployment episode. In many studies, only exit from unemployment is considered, but the duration of the consequent employment episode is just as important to include in the evaluation of labour market programs.

White, Lissenburgh and Bryson (1997) have analysed the effect of three programs in the United Kingdom in 1994, using a matched comparison group design and taking into account self-selection into each of the programs. The first program involved Work Trials, where the employment service employers took on employees for a three-week work trial with no obligation to continue after that period on either side. This gives long-term unemployed people in particular a chance to show they are able to cope with the job. People participating in this program should be ready to start in a job without need for training.

The second program is the Jobclub, where unemployed people are provided with instructions, resources, and personal support to increase the level and effectiveness of their job search. The third program, Job Interview Guarantee Matching and Screening (JIG), brings together employers (who are in principle prepared to hire long-term unemployed) and suitable job-ready unemployed with the desired qualifications. Employers have agreed to give a selection interview to the unemployed brought forward by JIG officers.

All these programs are targeted at those who have been unemployed for at least six months. White and colleagues found that the chances of employment have substantially increased for participants in Work Trials (the employment rate went up by 35 to 40 percentage points), without increasing (or decreasing) their wages. Participants in Jobclubs had a higher level of search activity and used Jobcentres more intensively. Female participants were employed in full-time work at twice the rate of non-participants and their total employment rate increased by 25 percentage points. The program helped women in both temporary and permanent jobs. Women's wages were unaffected. For men, only the group without vocational qualifications seemed to be helped by the program. Their employment rates were increased by about nine percentage points. This, however, seemed to have come at a price, as their wages were negatively affected by the program. The JIG program had similar effects to the Jobclubs. The differences were that for women re-employment seemed to be mostly in temporary or fixed-term jobs; there was no effect on wages for men; and the level of search activity did not seem to be affected for either men or women. The researchers could not fully explain the reason why only men without vocational training would benefit from JIG or Jobclubs.

The researchers conclude with three caveats: first, the study was only looking at short-term effects; second, the study had a particular context, so that if the set of policies, services and/or labour market conditions changed, the impact of the program would be unknown; and third, the effects on the individual participants cannot be extrapolated directly to the wider labour market, because what happens to the other jobseekers outside the program is unknown.

In their international review of several evaluation studies on training and other active labour market programs, Heckman, LaLonde and Smith (1999) also identify the importance of using long-term data in evaluations. Furthermore, they find that when doing a cost-benefit analysis of a program, the assumptions regarding the duration of earnings impacts, the discount rate used and whether the study takes the deadweight losses associated with the taxes needed to finance the program into account, all affect the outcome. Reviewing the results from the different studies in the United States and Europe they find that positive effects from programs are most likely to be the result of increased employment rates rather than from increased hourly wages. There is also considerable heterogeneity in the effect of programs between different groups. In the United States, training and employment programs seem to have been particularly useful to economically disadvantaged adult women, whereas the results are lower and less consistent for men. The literature suggests smaller returns of programs (in particular training programs) for the least skilled participants amongst the low-skilled group. This group benefits more from work experience programs, which in turn do little for more skilled participants. A less disadvantaged group are displaced workers, who gain little from training, but benefit from receiving Job Search Assistance, because they find a job more quickly as a result. Finally, young people seem to benefit little from the training and employment programs available to them.

European studies have focused more on young people than studies in the United States, reflecting a concern about youth unemployment. European studies also provide more information on hourly wage changes as a result of programs than the United States studies (who mostly have annual earnings as the only measure of success), giving an insight in the human capital accumulation as a result of participation in the program.

Many European studies report positive effects on the employment rate (although no or negative results are found as well), but very few studies report significant effects on the wage rates. Heckman, LaLonde and Smith point out that, given an effect of about a 10 per cent increase in wage rate for each additional year of schooling, not much should be expected from a few weeks of training. Substantial amounts of training are needed before a serious wage increase can be expected.

The positive effect on the employment rate raises an important question that has received little attention (and is difficult to address): Do the programs displace non-participants in the program thereby just shifting the problem? However, even if displacement takes place this may mean that unemployment is more evenly spread over the population rather than being concentrated amongst a small disadvantaged group. Short spells of unemployment are likely to have less impact, from a poverty perspective, than long-term spells or frequently recurring unemployment spells.

Finally, Riccio and Hasenfeld (1996) have compared the effectiveness of emphasising personalised attention with the effectiveness of emphasising the penalty process to make clients comply with mandatory participation in welfare-to-work programs. Their data come from a six county evaluation in the United States of welfare-to-work programs

for recipients of Assistance to Families with Dependent Children. They could not find any strong evidence that one of the approaches was better than the other. There was no difference in relationships between staff and recipients nor any evidence of increased earnings gains of the recipients nor of increased welfare savings.

## 5.2 Sole parents

The reform of the United States welfare system in 1996—when Aid to Families with Dependent Children (AFDC) was replaced with Temporary Assistance to Needy Families (TANF)—was prompted by the idea that time limits on benefit receipts and sanctions for non-compliance would increase employment by recipients. In the new welfare scheme, employment is the goal even if at first it is a low-pay job without any other benefits. Increased employment is expected to increase the wage that recipients can earn, which in the longer term will make them less dependent on welfare. This latter assumption is based on an increase of wages with an increase of work experience even for recipients with few skills. Loeb and Corcoran (2001) test this assumption by analysing the wage growth of women between 1978 and 1992. Comparing the rate at which wages grow with experience between women who never received welfare payments and women who have been on welfare for shorter and longer periods shows that the differences in wage growth are very small for full-time experience. For part-time experience, a difference is found between recipients and non-recipients. Recipients only have very small (and sometimes negative) returns to experience. However, this difference disappears after correcting for educational level and region of residence. The study further found that percentage wage growth increases with the level of education, but even for high school dropouts a 6 per cent yearly wage growth was still found.

The above result suggests that encouraging women into employment will improve the probability of them becoming independent of welfare payments. This would be achieved by their increasing wages over time, provided that they can find and keep continuous full-time employment. However, promoting this approach assumes that the main issue is to get sole parents off welfare as quickly as possible rather than to assist children from disadvantaged backgrounds. Baratz and White (1996) argued that ‘the central AFDC problem is not that too few AFDC parents work; it is that too few of them adequately fulfil the responsibilities of parenthood and, as a consequence, too few of their children grow up to become productive adults’ (p. 1936). Therefore, they propose a new system with a different set of obligations centred on improving the parenting skills of sole parents as the first objective. If necessary, sole parents can be required to participate in parenting and child development programs to increase their parenting skills. Some of the activities would involve participation with their children. The authors further recommend integrating such a system in the community by providing community-wide access to the program, which should be affordable by involving trained welfare recipients in the programs. After completing the parenting training, other training programs would be available to them. Workfare can play a role in this but it should not be the keystone of a reformed system, according to Baratz and White. They argue that pushing sole parents into full-time employment could make it more difficult for sole parents to fulfil their parenting responsibilities, no matter how competent they are. The alternative of working in the programs could be attractive for those who can only expect a low-paid job, since at least they would be working to improve the chances of their own children and other children in the community. In addition, the schedules of the programs can be arranged so that child-rearing responsibilities can be fulfilled.

Although this approach is purely theoretical and has not been tried out in practice, which means no information is available on how well such a scheme would work, it deals with an important point of consideration, also for Australia. Should sole parents be expected to work if they have young children and, furthermore, is it in the best interest of the children in these households and the society as a whole to 'push' sole parents into work if it means parenting responsibilities will suffer under such a policy? The answer of this question of course depends on the availability, quality and cost of child care provisions. Provided that there are adequate child care facilities available, one might argue that it is in the best interest of the sole parent themselves to keep at least part-time involvement in the labour market. In keeping involved, skills are kept up to date, and it is less likely that they will become dependent on social security benefits for the long-term.

### 5.3 Summary

Tentative results from Australian programs indicate that they seem effective in reducing unemployment duration and increasing employment duration, with the wage subsidies and brokered employment programs the most effective. It should be noted that in the evaluation of the programs some improvements could be made regarding selectivity issues, dealing with the effect of multiple programs and distinguishing exit rates before and after the start of the program.

United States research shows that even low-skilled women experience wage growth of on average 6 per cent per year of work experience. This means that from a financial point of view, women will benefit from taking up employment (even if it is low-paid at the start). However, the question is, how compatible is the childrearing responsibility with full-time (low-paid) work?

An international review of United States and European studies concludes that most positive effects from training and employment programs operate through increased employment rates instead of increased wage rates. It is argued that given the fact that one extra year of schooling results in about 10 per cent higher wage rates, not much should be expected from a few weeks of training. However, an increased employment rate might indicate that for the lowest-skilled job searchers the training increased their productivity so that employers are now willing to pay the minimum wage rate for their labour.

The review further finds that in the United States disadvantaged adult women benefited most from the programs, whereas young adults seemed to benefit little from training and employment programs. The least skilled participants in the low-skilled group seemed to gain least from training programs and more from work experience programs. These latter programs are not so effective for more skilled participants. The less disadvantaged group of displaced workers (who probably have higher skill levels and more work experience) benefit most from Job Search Assistance.

Research on the effect of training schemes provided to young people in France (discussed in sections 4.1 and 4.2) who receive social security benefits found that the workfare type programs do not seem to help any of the young men. On the contrary, these programs negatively affect the probability of finding a regular job for the more educated.

Furthermore, in a study on the effect of training and workfare programs for sole parents in California it became evident that caution is needed when evaluating workfare

programs using short-term longitudinal data. Revisiting the Californian experiment using longer-term data and using an improved comparison of the programs in the different counties, researchers found that instead of workfare being most effective, it was training that seemed most effective in the long run. The effects of workfare had decreased over time. This result cautions against relying too much on the Australian finding that training programs were least effective, given that the data were relatively short term and the evaluation methodology needed some improvement. Dockery and Webster (2001) note that the evaluation effort of labour market programs in Australia lacks rigorous research designs and access to data for independent researchers.

The evaluation of workfare and work experience programs requires the use of similar methodology and data as in the evaluation of training programs. It would enable researchers to identify groups of unemployed people who benefit more or less from these workfare programs.



## 6 Conclusion and recommendations

This paper gives an overview of the work incentive effects of social policies and gives an up-to-date description of the methodologies used in this literature. The methodologies are divided into three streams. Which method is appropriate to use depends on the question and data at hand. Thus, the three streams of analysis methods should be seen as complements rather than substitutes. It would be particularly useful if the outcomes using one approach to answer a policy question could be compared with the outcomes using an alternative approach, checking for the consistency of answers. For example, it would reinforce the outcomes with regard to the effect of financial incentives obtained from a structural model of labour supply, if similar effects could be found using an evaluation method, and vice versa.

This review has examined three issues regarding the work incentive effects of social policies. First, the effect of financial incentives is discussed. For men, the effects are mostly rather small and not always significant. Given that many men are already in the labour force and prefer to work full-time, this is not surprising. For women in general, the effects are mostly significant but still quite small. Sole parents seem to be the group who are most responsive to financial incentives. In particular, research in the United Kingdom and the United States indicates that in-work benefits seem effective in increasing their labour force participation.

The Australian benefit system does not allow the effects of financial incentives to be studied because, in principle, everyone receives the same payment. There is some scope to study financial incentives through penalties resulting from breaches, as has been done in two Dutch studies described in section 3.1. However, the selection process into sanctions needs to be taken into account and detailed information on individual characteristics, the duration of unemployment, the timing of sanctions, and the reduction involved in the sanction are required. Alternatively, financial incentives can be studied through changes in payments over time. For example, in July 1995 the maximum withdrawal rate on unemployment-related benefits decreased from 100 to 70 per cent. However, these changes in taper rates were universal and thus difficult to evaluate (after the change no control group is available), even with quasi-experimental approaches. The same is true for changes in benefit levels, which have been introduced universally as well. In addition, the problem with changes over time is that at the same time that benefit levels or withdrawal rates change (often only by relatively small amounts) many other influencing factors change at the same time, which can make it difficult and sometimes impossible to assess the effect of individual changes. As a result, financial incentives are probably best studied by building behavioural models and simulating changes, although some assumptions are needed to do this (such as unchanged preferences over time, for example).

Second, the effect of education and training on labour market status was reviewed. People with higher levels of education have a lower probability of becoming unemployed, and if they become unemployed, they have shorter unemployment spells. Overseas research has found that this effect is stronger for women than for men. Australian researchers have not yet looked at the effect of education on labour market status for men and women separately, although the education level seems a more important determinant of married women's labour supply than of married men's labour supply.

Findings from studies of the effect of training programs are more ambiguous. However, most effects of these programs seem to result from increased employment rates rather than increased wage rates. The results are different for different groups and depend on the type of training provided. In evaluating these programs, it is therefore important to have detailed information on the type of training given to different individuals.

Furthermore, evaluation of such programs requires long-term longitudinal data and the methodology used should properly account for selectivity into the different programs.

The results from workfare and work experience programs are ambiguous as well. The methodology and data required to evaluate these are similar to the methods and data used in the evaluation of training programs. A start with the evaluation of Australian labour market programs (which include training and work experience components) has been made, but the methodology used could be improved by accounting for selectivity into programs and distinguishing different groups of participants. In addition, exit rates from unemployment should be allowed to change with the start of the program and after the program is finished. The discussion on the effect of labour market programs in Australia would be aided by the release of relevant data to independent researchers so this issue can be more fully and more openly explored.

When looking at enforcing an increase in the employment rates of sole parents, it would be worthwhile to consider the effect that part-time and full-time employment have on the sole parent's childrearing responsibility. An aspect that we have not looked at here and which has had little attention in Australia is research into intergenerational effects, such as the effect of childhood welfare dependence, childhood poverty and the time parents have available for their children on the future labour market success of these children. Such research could be helpful to shed some light on the costs and benefits associated with achieving higher employment rates for sole parents.

From the above, I conclude that the most important issue in furthering policy analysis in Australia is the availability of reliable and up-to-date data covering the general population at regular time intervals and preferably following respondents through time. There is a need for longitudinal data so that longer-term effects and life-cycle patterns can be determined.

To facilitate the evaluation of targeted programs, special data need to be made available following the group affected by such programs. In overseas research, it is found to be particularly important to set up a control group, which can be used as a benchmark for observed changes in the experimental group.

Social experiments, properly set up with a control group, can be particularly important in the case of universal programs. The evaluation of such programs after nationwide introduction is extremely difficult (and in some cases perhaps even impossible). Thus, if evaluation of a new policy is deemed important, the careful construction of a social experiment before the universal implementation of such a policy can be worthwhile.

A wider availability of data on experiments and newly introduced policies will help to cross-check and validate results found by others and will allow a wider variety of methods to be used in the analysis. This would mean a more rigorous analysis of the effects of policy changes.

## Endnotes

- 1 The wage elasticity represents the percentage change in labour supply as a result of a one per cent change in the wage level.
- 2 15 to 30 per cent was deemed unworthy, that is, there was no potential worthiness in this group according to the caseworkers. They were the ‘hopelessly shiftless’ and the ‘hopelessly vicious’, who would end up in the workhouses and prisons.
- 3 See Kalb (1998) for a review of earlier work. In this report, we focus on the literature from 1995 onwards.
- 4 This is different from the above paragraph, where multiple spells of one type are discussed.
- 5 This is similar to imposing quasi-concavity on the preferences.
- 6 See Blundell and Costa Dias (2000, p. 429).
- 7 Part of the sanction is a temporary reduction in the benefit level and the threat of further more severe reductions in case of recidivism.
- 8 Other income is defined consistently with intertemporal two-stage budgeting, where income can be transferred from one period to the other by saving or borrowing.
- 9 These policy differences are the level of benefits associated with Food Stamps and AFDC; the method of dispensing Food Stamps, either through electronic benefit transfers or paper coupons; the percentage of unemployed able-bodied adults without dependants for whom ineligibility for Food Stamps is waived per state; and waivers obtained to make changes to AFDC requirements.
- 10 This Act restricted eligibility and reduced the earnings disregards of recipients.
- 11 Part of the EITC payments could be received in advance on a monthly basis with the pay packet, after an estimate of annual earnings is made. However, this involves the risk of having to pay back tax credits if too much has been received and the need to inform the employer to enable receipt of monthly payments. Perhaps as a result of these factors, little use is made of this provision in the United States
- 12 Even in case of changes in circumstances the amount paid out is not changed. This is important because studies have shown that predictability of income is important in managing on a low income. This means earned income does not immediately affect the credit, so the withdrawal rate in the WFTC scheme is not applicable in short-term considerations.
- 13 The replacement ratio is equal to the amount of social security income when not working divided by the amount of income when working full-time. The replacement ratio can be quite high for people on low wages.
- 14 In the analyses reported here, a ‘good’ job is defined as a job that involves an apprenticeship or off-the-job training.
- 15 Here, participants are compared to those who were in unemployment at the start of the survey. Those in unemployment are more disadvantaged on average than the non-participants in general. It is assumed that the most likely alternative labour market state for those on the Youth Training Scheme would be unemployment.
- 16 In the analyses reported here, a ‘good’ job is defined as a job that involves an apprenticeship or off-the-job training.
- 17 Here, participants are compared to those who were in unemployment at the start of the survey. Those in unemployment are more disadvantaged on average than the non-participants in general. It is assumed that the most likely alternative labour market state for those on the Youth Training Scheme would be unemployment.
- 18 See for example, Lubyova and Van Ours (1999), Van den Berg, Van der Klaauw and Van Ours (1999), Van Ours (2000) or Van den Berg, Holm and Van Ours (1999).



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