



Institute for Employment Research

**Identifying People at Risk of
Long-Term Unemployment:
A Literature Review**

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1 INTRODUCTION

The purpose of this review

The purpose of this study is to identify and review the available evidence concerning the factors associated with a likelihood of reaching long-term unemployment once a person becomes unemployed. The review attempts to assess the relative significance of these factors and to relate them to the labour market processes that 'lock' certain people into long duration unemployment spells. In the light of this survey of current knowledge, the review seeks an answer to the question: *Is early identification of the potential long-term unemployed possible?* The review is intended to inform debate in the Employment Service (ES) about the development of a policy of early intervention designed to prevent people at risk from reaching long-term unemployment.

Defining long-term unemployment

As the length of a spell of unemployment varies greatly across the register of unemployed people, any definition of long-term unemployment involves the imposition of a threshold between those people experiencing a 'long' spell and those experiencing a 'short' spell. The most common basis for such a distinction is operational practice within welfare and benefit systems and government employment services (Layard, 1989). For instance, in the UK an unemployment spell of six months triggers the *Restart* process and longer durations make unemployed people eligible for places on training and other programmes such as *Project Work* (a pilot scheme involving a mandatory period of work experience) which is targeted on people who have been unemployed for two years or more. With these kinds of criteria in mind, Hasluck and Green (1994) draw distinctions between *the longer-term unemployed* (those unemployed for six months or more), *the long-term unemployed* (those unemployed for a year or more) and *the very long-term unemployed* (those unemployed for two years or more).

While administrative practice is the most usual basis for defining the long-term unemployed, an alternative approach could focus on the effects of unemployment. It is generally accepted that long duration unemployment may reduce the chances of subsequent re-employment and can affect health, personal relationships and so forth. These effects may not be simple linear functions of time spent unemployed. There may be important thresholds; unemployment durations at which a substantial reduction in re-employment prospects becomes apparent or at which health and other problems emerge. Payne, Payne and Connolly (1994) argue that the broad pattern of change in the chances of obtaining full-time employment match the administrative definitions quite closely (with observed chances beginning to fall at six months, sharply declining after twelve months and levelling out at a low level after about two years) However, patterns are different for men and women; the chances of re-employment in full time work fall sharply for men after two years whereas for women, chances begin to decline much earlier, after about six months of unemployment. From this point of view, different definitions of 'long-term' unemployment would apply to men and to women. The issue of the effect of unemployment duration on re-employment chances is discussed at greater length in Section 3.

On whatever basis the classification is made, the essential point is that the definition of long-term unemployment is arbitrary. In this review no specific convention regarding the definition of long-term unemployed is adopted. Rather, researchers' and authors' own definitions are used with a description of the definitions used where appropriate. In the main these definitions tend to be the administrative based conventions.

Early identification and active labour market policy

Long-term unemployed individuals have traditionally been the focus of active labour market policies which seek to make individuals take on greater responsibility for job search, improve the efficiency of the job search process, re-motivate discouraged job seekers and address deficiencies in human capital. Job seekers whose unemployment spell reaches six months are required to attend a Restart interview and become eligible for a number of active measures to assist their return to work. Eligibility for further programmes occurs as unemployment duration increases. Intervention is, therefore, conditional upon a job seeker having experienced long-term unemployment. However, an alternative approach, and the one which forms the background to this literature review, would seek to target programmes on people at risk of long-term unemployment at the start of their spell of unemployment, before they become long-term unemployed.

The gains from early intervention come, first, from the fact that the person at risk may be prevented from becoming long-term unemployed (with the consequent savings in benefits, gains in tax revenues and so on). Moreover, an early intervention may be more cost effective since the action required to facilitate an exit from unemployment may be less (or the chances of its success may be greater) in the early stage of an unemployment spell before any unemployment duration effects reduce re-employment probabilities and create other barriers to exiting from unemployment. There is evidence that interventions by the Employment Service have the effect of shortening the expected duration of unemployment. White and Lakey (1992) found that the expected duration of people receiving a Restart interview was shorter than claimants who were not given such an interview, and this result is confirmed by Dolton and O'Neill (1996). Importantly, the latter study suggests that delay in providing the Restart interview had a permanently detrimental effect on subsequent re-employment probabilities of the individuals involved. The re-employment probabilities of the control group (who did not receive a Restart interview at six months) remained below other unemployed people even after they had received a Restart interview at twelve months. This suggests that the impact of programmes diminish with length of unemployment spell and that interventions are better made at an early point.

Early intervention to avert the risk of long-term unemployment raises two issues. First, is it possible to predict the duration of unemployment spell for a new claimant? Second, is it possible to devise a practical method of prediction that can be implemented at a local office level when an individual first signs on as unemployed? This review will consider these issues.

Data and methodology

Data sources

Data for the analysis of unemployment can be drawn from administrative sources or from surveys. Administrative sources include the records relating to unemployed benefit claimants such as the Joint Unemployment and Vacancy Operating System (JUVOS) and the National Unemployment Benefit System (NUBS) together with other Employment Service management systems relating to *Restart* and other government programmes for the unemployed. Numerous surveys collect information about the unemployed, some are regular and have national coverage (such as the Labour Force Survey) while others are conducted on a more ad hoc basis.

Whatever the original source, there is a general consensus that longitudinal data is superior to cross-sectional data when attempting to analyse determinants of unemployment and, in particular, unemployment durations. In part this is because longitudinal data partially (but not completely) overcomes the problem of 'censoring' of data. Censoring of data is said to occur when some part of an unemployment spell is not observed. When the period of observation is very short, as in a cross-sectional survey conducted at a point in time, all observed spells of unemployment are incomplete and the eventual length of an individual's spell of unemployment is not known. Such observations of unemployment are said to be 'right' censored. 'Left' censoring of data can occur if a survey does not collect information about unemployment spells which commenced before the date of the survey. Censoring of data is important because it can bias the results of analyses. In particular, it can lead to an over-estimation of short duration spells of unemployment; some individuals in the survey will appear to be 'short-term' unemployed when in fact they are in the early stages of a long spell unemployment. On the other hand, very short duration spells of unemployment may be under-represented in the sample. A monthly count of the unemployed, for example, will exclude any unemployed person whose spell of unemployment began and ended within the monthly interval. Only where very short spells commenced immediately before the count will they be captured by the monthly cross-section.

Clearly, if the sample of unemployed people can be observed for a long enough period, then most spells of unemployment will be completed within the period of observation. Some right censoring of data may still exist, but standard methods of analysis, such as hazard rate analysis, can deal with this problem. A much more fundamental reason for using longitudinal data, particularly where such data covers other situations than unemployment, is that it allows causality to be attributed with a greater degree of confidence. Whereas causation is often ambiguous in cross-sectional analysis, an examination of the time sequence of events may enable causality to be unambiguously determined in longitudinal studies (on the proposition that cause always precedes effect). This approach to the analysis of unemployment is referred to by Gershuny and Marsh (1994) as 'recursive modelling'.

A longitudinal aspect may be introduced into analysis of unemployment in a number of different ways. The analysis may be based on a long-term panel study of individuals, such as the *National Child Development Study* which tracks individuals born in the UK in March 1958 (see Payne, Payne and Connolly, 1994). Panel studies of this kind are rare and longitudinal data is more usually gathered by means of collecting retrospective work histories. Examples of this include the *Employment in*

Britain Survey (used by White, Gallie, Tomlinson and Cheng [1994]) and the DSS/OPCS Retirement Survey (see Casey and Payne [1995]). Repeated surveying of a panel of unemployed people will also create a longitudinal dataset. Examples include the *DHSS Cohort Study of the Unemployed 1978/79* (Nickell, Stern, Narendranathan and Garcia 1989), the *DSS Incomes In and Out of Work Survey 1987/88* (Arulampalam and Stewart (1995) and surveys based on panels of unemployed people derived from Restart/JUVOS (Warren, 1992; White and Lakey, 1992; Dalton and O'Neill, 1996).

Methodology

The complexity of the relationships that lie behind the risk of long-term unemployment are such that they can only adequately be disentangled by means of multivariate analysis. A variety of methods have been used to model the risk of being long-term unemployed and the likelihood of leaving the claimant register. These methods and the many technical issues raised are discussed in the seminal literature on the subject, such as Cox and Lewis (1966), Lancaster (1979), Royston (1983), Heckman and Singer (1984), and Kiefer (1988). Standard techniques widely used in the analysis of long-term unemployment include *logistical regression analysis* of outcomes, *survival analysis* and *hazard rate analysis*.

Logistical regression analysis can be used to identify factors associated with the probabilities of various outcomes. This method might be applied to identifying the factors associated with the risk for any individual in the labour force of a spell of unemployment at some future date or it might be used to estimate the risk that an unemployed individual will remain unemployed at the end of some period of time (say, one year).

The 'speed' at which an individual leaves the unemployment register can be modelled using life tables, which can be graphically represented as survivor functions, density functions and transition rates. Life tables can be calculated using event history software packages such as TDA¹, LIMDEP² and SPSS³. These software packages use episode durations, that is the time span a unit of analysis (individual) spend in a specific state (unemployment), and models the length of the episode. Data is organised so that the date an individual enters unemployment equals 0. The ending time will equal the (observed) duration in the episode (i.e. unemployment). The destination state is 0 if right censored (if an individual did not leave unemployment by the end of the period of observation) or 1 if the individual left unemployment. It is possible to consider a single destination state, such as leaving unemployment, or two or more destination states, such as finding employment or moving into inactivity. This is described as a situation of competing risks.

The survivor function calculates the conditional probability of having an event in a given time interval. The plot of the survivor function will display estimates of the proportions of unemployed who have not yet left unemployment up to a specific duration. Life table density functions of unemployment durations can be used to give an estimate of the probability per unit time that an unemployed claimant, who survived to the beginning of a given interval, will leave unemployment within that interval. The transition rate applies to those still 'at risk'.

1 Transition Data Analysis.
2 Limited Dependent Variables.
3 Statistical Package for the Social Sciences.

While the techniques for analysing unemployment duration and re-employment probability are well established, some methodological issues remain. The first of these is the problem of multicollinearity. This econometric problem arises when some of the regressors are correlated and it results in a lack of precision in the estimates of the effects of individual factors. A number of key characteristics of individuals are likely to be correlated. Examples include age, qualifications and occupation (especially occupation involving supervisory or managerial duties) or age, marital status and the presence of dependant children. There are also issues of simultaneity. Some characteristics used to explain unemployment duration may be endogenous rather than exogenous. This is particularly likely in respect of household variables such as the presence of a working partner. Such simultaneity will give rise to biased estimates of the effects of individual characteristics.

Other issues focus on the difficulty of distinguishing between the personal characteristics of individuals in different types of labour markets and separately identifying the effect of these personal characteristics on their 'employability'. From a statistical viewpoint, this is known as the problem of 'state dependence' versus 'heterogeneity'. State dependence refers to the possible effects that may arise from belonging to a particular state at one point in time on membership of subsequent states. Heterogeneity refers to both observed and unobserved differences between individuals. Where differences can be observed between individuals, for example in terms of their educational background, these differences can be included in statistical models which test for the effect of prior labour market experience on unemployment. Unfortunately, not all differences between individuals which may be apparent to employers or which influence individual behaviour are readily observable and available within data describing the unemployed, their characteristics and earlier labour market experience. Unobserved differences between individuals may lead to a pattern of labour market experiences which are correlated. In such instances it may be wrongly concluded that the earlier experiences 'cause' later unemployment, whereas both are in fact mediated by the effect of unobserved differences in personal characteristics.

From a policy point of view, distinguishing between state dependence and unobserved heterogeneity is most important. If duration dependence is the dominant factor affecting the overall duration of a spell of unemployment, efforts to assist the unemployed back into jobs should be targeted upon those who have reached a particular duration within an uncompleted spell of unemployment. Alternatively, if heterogeneity is the most important factor, the task facing a public employment service is to screen the newly unemployed and to attempt to identify those with characteristics which most decrease their re-employment probability.

Structure of the literature review

This literature review is organised in the following way. The next section (Section 2) will examine the factors determining unemployment duration. This includes an outline of job search theory - the dominant theoretical perspective in this field - and a discussion of factors which operate at the individual level, including unemployment benefits and the experience of unemployment itself on the risk of long-term unemployment. Section 3 examines the reasons for variations in the incidence of the risk of long-term unemployment. This includes a discussion of spatial labour market mis-match and individual and group characteristics. Section 4 looks at the issue of

early identification of people at risk considering evidence from both the UK and from Australia where a system of early identification has been developed. Finally, Section 5 briefly presents the main conclusions from the literature review and suggestions for further research on early identification.

2 THE DETERMINANTS OF INDIVIDUAL UNEMPLOYMENT DURATIONS

Introduction

An efficient labour market is one which operates in such a way that an effective 'match' is obtained between the skills, knowledge, motivation and commitment of the employee and the labour requirements of the employer. Unemployment arises through the mismatch between labour demand and supply, a process which may relate to changes in labour demand and supply or to the nature of job search and labour 'matching' itself. Job seekers without employment compete for vacant posts alongside those who may apply direct from employment. Job search methods and allocative mechanisms (such as employer interviews, selection panels), together with the nature of remuneration packages attached to jobs, combine to facilitate the match between labour supply and labour demand. In this process of supply/demand matching, some potential labour market participants will experience a spell of unemployment. The majority of such spells are usually of a relatively short duration. Those who remain unemployed for a significant period of time, say a year or more, become the focus of special attention via measures geared to assist the long-term unemployed.

All unemployed persons who regain employment have, by definition, passed through a recruitment process. Most will have subjected themselves to some form of selection via this process. Employers usually screen and discriminate between potential employees in attempts to achieve a match between the competence of the job applicant and the job requirements. These selection processes can act as a kind of filter for the unemployed. Those persons among the unemployed who have 'favourable' characteristics are more likely to find work at a faster rate than those with less favourable characteristics. Observation of the characteristics of the unemployed by duration of their unemployment spell seems to confirm this view. Those who have been unemployed the longest tend to be less well educated and have lower endowments of 'skill' or work experience. Analyses of the duration of unemployment also indicates that the probability of leaving unemployment appears to decline with the increasing duration, an observation which could result from a selective process of re-entry into employment, through which those unemployed persons with the least favourable characteristics become increasingly concentrated among the long-term unemployed as their spell of unemployment progresses.

Apart from the 'filtering' process, the experience of unemployment may itself influence the probability that an unemployed person will regain employment. If employers treat the duration of unemployment as a general signal about the employability of job applicants, those with more favourable characteristics will find themselves subject to this labelling mechanism which may then decrease their chances of regaining employment. Additionally, factors such as demoralisation and loss of work motivation may reduce the intensity of search effort as a spell of unemployment progresses. Like the filtering process, duration effects may act to decrease the probability that an unemployed person will regain employment as the spell of unemployment progresses.

This section considers these two aspects of the process of becoming long-term unemployed.

The job search process and unemployment duration

The job search framework

The literature on unemployment duration is dominated by the job-search theoretical framework. This framework builds on the recognition that the stock of unemployed people is determined by the flows onto and off the register and the time that individuals spend in unemployment. The relationship between unemployment stock and duration is often represented by the following identity:

$$\frac{U}{N} = \frac{R}{N} \times \frac{U}{R} \quad (1)$$

where U is the number of unemployed, N the number of employed and R is the inflow from employment to unemployment (redundancies, layoffs and quits). This simply states that the unemployment rate is the product of the inflow rate and the average unemployment spell (U/R).

When unemployment is constant (and unemployment outflows equal the inflows) the identity (1), above, can be rearranged into the following form:

$$\frac{U}{R} = \frac{1}{H/U} \quad (2)$$

which indicates that the average duration of an unemployment spell (U/R) is equal to the reciprocal of the unemployment outflow rate (H/U - where H measures the number of hires and other exits from unemployment). The higher the outflow rate, the shorter the average spell of unemployment. This simple identity highlights the importance of the determinants of the outflow rate as the determinants of unemployment durations.

The flow out of unemployment (H) will depend on the extent to which unemployed people can be matched with vacant jobs. Such matches come about, according to job-search theory, by means of a process of search in which both employers and job seekers attempt to locate potential matches between individual and job (see McKenna [1990] for a review of job search literature). The unemployed must seek information about potential job opportunities, apply for them and, finally, to decide whether to accept or reject any job offer obtained. As information about job opportunities is not freely and perfectly available, this search process may take some time to reach a successful outcome. The number of successful matches in any period will depend on the number of vacancies available and the proportion matched (the 'efficiency' of the search process). In these circumstances the unemployment outflow rate and hence the average duration of an unemployment spell, will depend on the vacancy-unemployment ratio (which reflects the level of demand for labour) and the effectiveness of search (Layard, Nickell and Jackman: 1991).

The unemployment duration of individuals

Just as the average duration of unemployment across the total stock is determined by the level of labour demand and the effectiveness of search, so too, it can be argued, is the expected unemployment duration of an individual. The probability of leaving

unemployment (the individual equivalent of the unemployment outflow) will be determined by labour market conditions (the vacancy-unemployment ratio and the average effectiveness of the job search process) together with factors that relate to their *individual* effectiveness (which may improve or decrease their job search effectiveness relative to the average). These individual factors could relate to the intensity and form of information gathering by the individual, the rate at which job offers are encountered (which may reflect the individuals relative attractiveness to potential employers) or the likelihood that job offers are accepted. Insofar as individual differences do exist in the efficiency of search, then durations of unemployment spells will vary across individual unemployed job seekers. This will result in a frequency distribution of unemployment durations around the average for all unemployed people.

It is essential to note that the job search process is a stochastic one. It is the *expected* duration which is determined by the labour market context and the decisions of individual job seekers. The *actual* duration of unemployment spell experienced by an individual will contain a random element (of either positive or negative duration). While most will experience a length of spell close to that expected, some job seekers will defy the odds and secure employment sooner than expected while others will be less lucky and remain unemployed for longer than expected. This has important implications for the early identification of the long-term unemployed. It will only ever be possible to identify such job seekers in probabilistic terms, as being highly likely to become long-term unemployed because their expected duration exceeds 12 months. As there is no determinate outcome of the search process (that is, the probability of becoming long-term unemployed is never likely to be exactly equal to 100 per cent and some possibility of an earlier exit, no matter how small, always exists), predictions of actual durations will always contain some errors.

The expected duration of unemployment for all individuals will increase as the overall number of unemployed increases. As the total of unemployed increases (and the vacancy-unemployment ratio decreases) the whole distribution of unemployment durations is likely to be displaced upwards. The average duration will increase, as will the proportion of unemployed who are long-term unemployed. In a detailed analysis of geographical variations in long-term unemployment in Great Britain since World War II, Webster (1996) contends that at all spatial levels - from the ward to the national level - long-term unemployment has been an unchanging simple function of total unemployment. His empirical investigations reveal that at levels of unemployment above about 7 per cent, the relationship between the percentage of the workforce unemployed and the percentage of the workforce that is long-term unemployed is linear; an increase (or decrease) in the former leads to an increase in the latter of about half as much. This relationship reflects the fact that, with the exception of a small minority of seriously disadvantaged people, the duration of unemployment is influenced only by the obvious reality that when there is a scarcity of jobs it tends to take longer to get one.

The reservation wage and duration

The job search framework places great emphasis on the determination of 'optimal' search behaviour by unemployed people. This approach emphasises the role of choice by individuals, especially in respect of their 'reservation wage'. This key concept, which has its base in classical economic theories of labour supply (McLaughlin, *et al*, 1989), is the lowest wage an individual (or household) would consider accepting in

exchange for their labour. The importance of the reservation wage is that for an individual facing a given distribution of job opportunities, the choice of reservation wage conditions the probability of accepting any wage offer encountered during the job-search process. Other things being equal, an individual's reservation wage will be higher and their unemployment duration longer the greater their non-wage income (for many this means welfare benefits), the greater the opportunity cost of their time and the lower the costs of obtaining information about jobs and of making applications. Similarly, for a given reservation wage, unemployment durations will tend to be longer for individuals whose reservation wage is high relative to median earnings in the labour market in which they are operating, the greater the dispersion of wage offers around the average and the lower the frequency with which job offers are encountered.

Individual characteristics enter this picture principally in terms of their effects on the net benefits of search (the urgency of the need for income, benefit entitlements, attitudes and motivation) and the setting of the reservation wage. From this perspective, individual characteristics are not the immediate or direct cause of variations in unemployment durations. Nonetheless, people at risk of long-term unemployment will be those who, because of their personal or household circumstances acting in concert with the distribution of opportunities in the local and occupational labour markets in which they operate, behave in a manner which produces a relatively ineffective job search in which few, if any, acceptable opportunities for re-employment are likely to be encountered.

The job search framework is not without its critics. Some writers have questioned assumptions about the extent to which unemployed people are likely to calculate a 'reservation wage'. In their study of unemployed men, McLaughlin *et al.* (1989) found that job applications behaviour did not demonstrate that the unemployed men were applying for vacancies at or above their reservation wage level... "indeed most men in the ... sample had applied for jobs without knowing what the wage would be" (p100). Moreover, while conventional job-search theories tend to regard the arrival rate of job offers as something outside the control of the individual, it is possible individual characteristics and the distribution of job offers faced by the unemployed person are inter-related. White, Gallie, Tomlinson and Cheng (1994) suggest that individuals may be able to increase the probability of receiving a job offer by intensifying their job-search efforts. If so, the probability of a job offer and the probability of acceptance become simultaneously determined. Moreover, there is evidence (Erens and Hedges 1990) that unemployed job-seekers rarely turn down job offers. In this case the probability of leaving unemployment (and hence duration) is largely determined by the demand-side of the labour market and the frequency at which job offers arrive. Differences in the risk of long-term unemployment will reflect the different labour market circumstances of individuals rather than the direct effect of individual choice.

Unemployment benefits and duration

One of the principal aspects of empirical research into the determinants of unemployment duration has been the question of the effect of benefits (Atkinson and Micklewright, 1991; Nickell, 1979; Schmitt and Wadsworth, 1993). Many econometric models were developed during the late 1970s and 1980s to examine the connections between unemployment duration and social security benefits. Key models were those developed by Nickell (1979) Lancaster (1979), Narendranathan

(1985), Atkinson et al (1984) and Layard and Nickell (1986), all of which are frequently cited in the literature. The reservation wage and its potential influence on job search behaviour is central to much of this research. Commentators such as Minford (1985) claim that unemployment benefits set the reservation wage for unemployed people and thus prevent them from taking jobs at lower wages. However, according to critics such as Micklewright (1986), the evidence from such econometric studies is inconclusive. Some studies discovered significant benefit effects while others found limited benefit effects. The view that there is no clear evidence from such studies to support the thesis that benefit levels alone have an impact on employment duration is shared by authors such as Therborn, (1986), Dilnot and Walker (1989) and McLaughlin *et al.* (1989).

While econometric models have so far failed to produce firm evidence that there is any contingent effect on job search behaviour from benefit levels, there have been other studies from the perspective of disadvantage which point to the unemployment and income support 'traps' in which many people claiming benefits may find themselves. Parker (1995), for example, points to a potential situation in which people are encouraged to stay out of work for longer than is strictly necessary because a return to work in the formal economy would either reduce their spending power or bring a net gain too small to make the effort financially worthwhile. Marsh and McKay (1993) make similar points, adding that not only can there be a minimal difference between income in and out of work, but that a move into work can result in additional expenses such as travelling and childcare, making a household worse off. There may be additional disincentives to taking temporary employment both because of the insecurities involved in such work and the potential problems in getting back on benefit after a spell of temporary work.

The potential relationship between benefits and remaining in unemployment, it seems, cannot be examined in isolation. Other factors need to be taken into account, such as age, household composition and individual circumstances. Parker (1995) for instance, points to the fact that the gap between incomes in and out of work has widened for 16-17 year olds, who are no longer entitled to benefits and for 18-24 year olds who have experienced benefit cuts. For families with children or families where women are the main earners ("or would be if the system made it worthwhile") and for those with mortgages, replacement ratios are much higher..."In real life, the incentives of individual claimants hang precariously on their housing costs and work expenses" (p.31).

The low proportion of partners of married unemployed men alluded to in Parker is also referred to in Garman and Redmond (1990), who found that only around 40 per cent of wives were working, a proportion which was much lower than among married women in general. Although there was a higher likelihood of the families having young children, this only partly explained the difference. Marsh and McKay (1993) also make the point that relatively few wives of unemployed men have paid jobs, because of the low level of earnings they are likely to receive and the low level of the earnings disregard. For similar reasons, receipt of family credit may discourage wives of claimants from taking employment (Marsh & McKay, 1993).

McLaughlin et al (1989) point to the complexities of the relationship between unemployment, job search and benefits, especially for married claimants and those with families. One of the principal needs may be catering for the additional expenses between getting paid for a job and coming off benefits. Factors such as dependants,

lack of savings and credit-worthiness, have a bearing on the type of job which is acceptable. The situation is worse if the male partner gets a job first, as benefits are then lost. Family credit, which provides top-up earnings in work, may act as an incentive to work for individuals who might otherwise have difficulty in affording the extra costs of a job, such as some lone parents and low income families. There are, however, exceptions, such as out of work families who have recently taken out large mortgages and some low-income families whose debts might be reactivated in employment (Marsh and McKay, 1993).

Long-term unemployment and work history

While individual characteristics and the job search process will create variations in the durations of unemployment experienced, the prior labour market history of an individual and their subsequent experience of unemployment, particularly long-term unemployment, may also have a bearing on the risk they face of becoming long-term unemployed. At issue here is the idea that unemployment can 'cause' unemployment - that an individual's record of unemployment can contribute in some way to the probability that they will experience further spells of unemployment at some time in the future, or that the length of time spent in a spell of unemployment can affect the probability of that spell ending. Related to this issue is the notion that particular types of work experience can predispose one towards unemployment, either voluntarily via persons quitting particular types of jobs, or from redundancies associated with the contraction and/or closure of enterprise and organisations in particular occupations and sectors of the economy.

Interest in these mechanisms relates directly to the nature of policy interventions designed to assist the long-term unemployed. If unemployment or certain kinds of employment affect the incidence and duration of an unemployment spell, policies to identify those at risk of long-term unemployment should take account of an individual's work history. However, while the rationale for studying such factors may be clear, the evidence available from empirical investigation is not easily interpreted. If it is the case that persons who have a particular experience of employment and/or unemployment are more likely to experience a long spell of unemployment at some later date, then such persons can be identified as being 'at risk' of long-term unemployment on first entering a spell of unemployment⁴.

The mechanism of state dependence

Before examining the literature on this topic in more detail, it is worthwhile considering the processes through which *state dependence*⁵ may arise and examining the mechanisms which may give rise to differences in unemployment experience resulting from heterogeneity. From a theoretical point of view, state dependence can arise in a number of ways. First, a potential employee may find it more difficult to gain employment as a result of their cumulative 'record' of unemployment. This effect may be observed if an employer uses information on a job applicant's previous record of unemployment as a way of 'filtering out' a queue of job applicants. The process

4 There is a need here to distinguish between the experience of the 'current spell' of unemployment (the spell in which an unemployed person is observed at a particular moment in time) from the experiences of earlier spells. Anybody who enters a spell of unemployment can be considered 'at risk' of entering long-term unemployment. The point is whether or not earlier spells have any direct and lasting effect on subsequent work experience.

5 The meaning of state dependence and its significance was discussed earlier in Section 1.

may interact with age and/or occupation; applicants for particular types of jobs, say managerial occupations, may find that a record of unemployment is interpreted by the potential employer as indicative of poor personal managerial ability, whereas for an unskilled occupation this may not be a consideration. Older workers may find that a cumulative record of unemployment places them at a distinct disadvantage in a job application compared with an equivalent-aged worker with little or no record of unemployment, whereas employers may discount a record of unemployment in the work histories of younger job applicants. These processes may be regarded as forms of statistical discrimination - methods used by employers to reduce a long list of job applicants to a smaller number to which more appropriate selection and job matching techniques will be applied.

An alternative theoretical mechanism is based around the idea that work imbues one with 'human capital'. This theoretical model postulates that work experience, like education, can add to labour productivity and enhance the value of a worker's output. Once a person stops working, their human capital starts to decline, age or 'depreciate'. The resulting 'loss' of human capital through not working means that a potential employee may become progressively less productive as a spell of unemployment continues. Unemployment therefore causes more unemployment in the sense that the probability of escaping from a spell of unemployment decreases as the spell lengthens⁶. A variant of this argument postulates the notion that 'loss of human capital' may be a psychological process through which an individual loses confidence in his/her ability to succeed in job interviews, hold down a steady job, react appropriately under the pressure of work or simply becomes increasingly unsure about their ability to find work and disillusioned as a spell of unemployment progresses.

In addition to these individual-level theoretical models of state dependence, cross-couple and intra-household models of state dependence have been examined in a few studies. In these models, unemployment duration is linked either to the benefit status of the household or to the asymmetric nature of information about jobs available within households where more than one household member is employed compared with households where no members are employed.

State dependence versus heterogeneity : the evidence

Statistical examination of data on unemployment spells and their duration, designed to explore and elaborate the issue of state dependence versus heterogeneity, did not commence in earnest until the late 1970s and early 1980s. Heckman's (1978) pioneering work and its subsequent elaboration (Heckman and Borjas, 1980) led to a spate of research focused around this issue (see, for example, Ellwood, 1982; Chamberlain, 1985; Lynch, 1985) all of which took advantage of the availability of US panel data and tended to focus upon the early unemployment experiences of young people⁷.

These early results were startling. Following the recessions of 1974 and 1979, it was well established that significant numbers of young people had accumulated a very poor record of employment. Much concern had been expressed about the long-term

6 The probability that a person who has survived within a spell of unemployment up to a particular moment in time will exit from this spell of unemployment in the next time period, is known as the 'hazard rate'. A declining hazard rate is, therefore, consistent with the notion that the intensity of search may decline with spell length, that the unemployed become increasingly discouraged or that employers discriminate against the long-term unemployed.

7 For a review of these studies, see Lancaster (1990), Devine and Kiefer (1991) and Baker and Elias (1991).

effect of this experience (the 'lost generation' argument). However, most of these studies established that there was very little state dependence which characterised the experience among unemployed youths. For the UK, studies which focused upon young people were conducted by Lynch (1989) and Narendranathan and Elias (1993). Although these studies showed some short-term (less than 1 year) state-dependent effects, the results were consistent with US studies in terms of the lack of support for long-term state-dependent influences.

UK studies which have pursued this issue for other groups of workers have focused specifically upon the duration effects of state dependence as opposed to incidence effects. These studies (for instance, Jackman and Layard, 1991; Narendranathan and Stewart, 1989) concluded that there was evidence of negative duration dependence. In other words, the length of the spell of unemployment experienced up to any particular time was negatively correlated with the probability that the spell of unemployment would end.

Work on this important topic continues and is, as yet, unresolved. Two of the most recently published studies (Portugal and Addison, 1995; Berg and Ours, 1996) extend and question the UK research findings on negative duration dependence, again using US data. These studies confirm the importance of heterogeneity between workers as the main source of variation in patterns of unemployment duration. Nevertheless, some evidence of duration dependence remains. The study by Berg and Ours (*op cit*), based upon a time-series analysis of exit flows from unemployment for the period 1967-91, reveals negative duration dependence for white males, with smaller effects for white females and no evidence of duration dependency for black workers. The work by Portugal and Addison elaborates in a most interesting way upon the specification of these econometric models and concludes that there is little evidence of a declining hazard function. This study suggests that the typical 'inverted U' shape to the hazard function is essentially a misspecification obtained by a failure to distinguish between the large number of unemployed persons who experience only a short duration of unemployment and the long-term unemployed. The argument proposed is not that there exist two distinct and identifiable groups, but that certain factors do not have a constant proportional effect on the hazard function. For example, human capital depreciation, 'scarring' effects, progressive exhaustion of assets may all operate in a different manner after one or two years of unemployment than after a few weeks. Portugal and Addison address this problem through the estimation of a model which 'mixes' two distinct hazard functions. From this work they conclude that the estimated baseline hazard does not decline after some critical point in time - a result which is in sharp contrast with most of the unemployment duration literature.

Cross couple state dependence

It is well recognised that the employment rate of women who live in households with men is inversely related to the employment rate of the men. This effect arises because of the lower rate of female labour force participation in households where the male partner is unemployed. Most of the analytical work on this subject has focused upon the nature of the mechanisms which may give rise to this relationship⁸. Essentially, these mechanisms suggest either a state-dependent process which operates via the rules and regulations for payment of unemployment or related social security benefits or a process of 'matched heterogeneity' (through which those workers who have

8 For a review of these mechanisms, see Davies, Elias and Penn, (1992).

characteristics which predispose them to experiences of unemployment tend to marry/live with partners with similar characteristics).

Prior to the availability of longitudinal information which provided details of the joint work histories of persons living in a partnership, this relationship was viewed essentially as a by-product of the social security system. For persons in receipt of means-tested benefit, income earned by the spouse can reduce the benefit payable on account of unemployment on a pound-for-pound basis. This, it was argued⁹, caused some married women to give up their jobs when their husbands were in receipt of income support. The empirical evidence again revealed how important it is to control for both observed and unobserved differences between individuals in the estimation of these interactions. Strikingly, the major part of the difference between the employment rate of women married to unemployed men, compared with that for women married to employed men, is shown to be related to selection effects in the formation of these partnerships. In other words, women who marry men who are likely to experience unemployment are themselves more likely to work in less stable forms of employment.

These findings are relevant insofar as they fail to provide support for the idea that long-term unemployment is a consequence of the paucity of labour market information in so-called 'work-poor' households. The evidence points to some interaction between the benefit system and household economic dependency and to a selective partnership process. The result is a lower overall employment rate in households which experience long-term (greater than one year) unemployment. It cannot be inferred, however, that the higher long-term unemployment rate is a consequence of the lower household employment rate.

3 THE RISK OF LONG-TERM UNEMPLOYMENT

Introduction

Whatever the processes which generate long duration unemployment spells, even a cursory glance at the evidence suggests that the resulting 'risk' of long-term unemployment is unequally distributed across the working age population. Certain groups and particular individuals are disproportionately represented amongst the long-term unemployed; men, older people, the poorly qualified and unskilled, members of ethnic minority groups to name only the more obvious. The risk of long-term unemployment appears very much to depend on who you are and where you live. Such differences are very important from a policy perspective since those at risk of long-term unemployment form an important client group for active labour market policy. The crucial question, however, is whether the 'at risk' group can only be identified *ex post*, that is after they have become long-term unemployed, or whether they can be identified at the start of their unemployment spell. This section considers the evidence relating to a range of individual and group characteristics of unemployed job seekers which might form potential indicators of the risk of long-term unemployment.

Spatial variations in long-term unemployment

There are substantial variations between areas in the incidence of unemployment and long-term unemployment. In the 1980s in Britain much of the debate about spatial patterns of unemployment and long-term unemployment was centred around the "North-South divide" (Green, 1988; Martin, 1988, Lewis and Townsend, 1989) and the declining economy of urban and metropolitan areas (Hasluck, 1987). Whereas the traditional depressed areas - the Northern region, Scotland, Wales, the North West, Yorkshire and Humberside, and also the West Midlands - suffered higher than average unemployment rates, most parts of the South East, East Anglia, the South West and the East Midlands were characterised by lower than average unemployment rates. In the early 1990s there was a narrowing of regional unemployment differentials (Hasluck and Green, 1994; Martin, 1993). Despite this, Labour Force Survey data and unemployment claimant data continued to reflect a North-South dimension in the underlying age and duration composition of unemployed males aged 18-64 (Forsythe, 1995), and at the ward level a marked concentration of long-term unemployment in northern Britain and Wales remained - alongside an increase in the long-term unemployment rate in London (Dorling and Tomaney, 1995). Other research adopting a geographical perspective has highlighted differences between local areas in on-flows and out-flows from unemployment, and associated variations in the likelihood of becoming and remaining unemployed (Green, 1986; Green, Hasluck, Pitcher and Winnett, 1996).

Unemployment (and subsequently long-term unemployment) is only one possible response to imbalance in the interactions between labour supply and labour demand (Owen *et al.*, 1984). Recent research suggests that the boundaries between economic activity and inactivity, are becoming increasingly blurred (Bryson and McKay, 1994; Beatty and Fothergill, 1994; Green, 1995a). As such it is increasingly apparent that there are various different ingredients and constellations of labour market disadvantage; a classification of wards suffering severe labour market disadvantage

developed by Green and Owen (1996) emphasises this point. Molho (1995a) also highlights the importance of spillovers in adjustments to local demand shocks - commuting at the more localised level and migration over a wider spatial scale. In remoter areas distance deterrence and cumulative inertia (i.e. the tendency for migration probabilities to fall with distance and length of residence, respectively), support a prediction of higher levels of unemployment (and also longer durations of unemployment spells) in remote areas (Molho, 1995b).

A number of different theories have been advanced to explain spatial variations in the distribution of unemployment and long-term unemployment.¹⁰ The majority of these theories emphasise supply-side characteristics, and take no account explicitly of spatial factors. The exception is the "spatial mismatch" hypothesis - which emphasises demand-side changes and, as the title suggests, highlights the spatial mismatch between residences of the unemployed/long-term unemployed and potential workplaces.

The "spatial mismatch" hypothesis

According to this hypothesis, high concentrations of unemployment and long-term unemployment are due to shifts in the structure of labour demand, in particular the loss of manual jobs from particular local areas with large manual workforces. Such job loss may be explained in terms of the decline in the number of manual jobs due to technological change, the spatial restructuring of industry - notably the urban-rural shift in employment - and public policy encouraging development in new locations.

Studies of employment change (Fothergill and Gudgin, 1982; Townsend, 1993) covering the 1970s and 1980s have highlighted the important regional and urban-rural distinctions in employment change. In particular, the loss of employment (particularly in manufacturing and goods-handling industries) in the largest urban centres and old industrial regions has been highlighted. As noted above, in general, the spatial pattern of unemployment accords with these changes. Hasluck (1987) and Green, Gregg and Wadsworth (1994) highlight the significance of the rise in unemployment in the largest cities as the major feature of unemployment change over the post war period, while in a study of long-term unemployment at local labour market area, household and individual scales, Green and Owen (1990) emphasised the contraction of demand, particularly for less skilled workers, as a key factor in geographical concentrations of long-term unemployment. In North America Hughes (1989) and Wilson (1991) have studied the spatial isolation of the long-term unemployed/non-employed "underclass", relating the geographical dimension to the economic decline of the 'frostbelt' cities, the interplay of structural change and metropolitan deconcentration, and the differential mobility of different social groups.

Analysis of travel-to-work data highlights not only the tendency for less skilled workers (those most vulnerable to long-term unemployment) to work closer to home (Coombes *et al.*, 1988; Green, 1995b), but a modelling approach shows that despite the long-term trend for increasing journey-to-work lengths, it is implausible to suggest that the unemployed (particularly those previously employed in declining industries and occupations) displaced by employment loss in inner city areas and outer estates can reach and compete in large numbers for jobs in areas of employment growth (Webster, 1994; Holzer, 1991).

10 This section draws upon and supplements a review reported in Webster (1996)

The policy implication arising from this analysis is that demand constraints have an important impact on the length of time an individual is unemployed. The importance of such demand constraints has also been highlighted in recent econometric studies. Using the local unemployment rate (at the Travel-To-Work Area scale) as an indicator of local demand constraints in an analysis for two cohorts of males entering unemployment - the first in Autumn 1978 and the second in Spring 1987 - Arulampalan and Stewart (1995) found that such constraints had a stronger negative effect on exit probability for the 1987 than for the 1978 cohort. Overall, the analysis highlights the increased importance of demand constraints in a time of high unemployment.

Similarly, in an analysis in the Netherlands, Gorter *et al.* (1992) found that regional labour market conditions had an important influence on unemployment duration. They interpreted the significant negative relationship between the vacancy-unemployment ratio and the probability of leaving unemployment as implying that labour market policy should not exclusively focus on labour supply, but should also pay attention to policies of increasing regional demand or stimulating migration.

Individual characteristics and long-term unemployment

While the "spatial mismatch" hypothesis highlights demand-side and spatial factors, other explanations of long-term unemployment emphasise supply-side constraints. These alternative explanations suggest that the spatial distribution of unemployment and long-term unemployment can be understood in terms of variations in the spatial distribution of individuals in the labour force with characteristics conducive to unemployment. This viewpoint serves to draw attention to the need to examine the association between the risk of long-term unemployment and individual characteristics.

Prior expectations of the pattern of risk of long-term unemployment across individuals is conditioned by the explanatory framework used. Some explanations link individual characteristics directly to labour market behaviour and the risk of long-term unemployment. The more conservative versions of theories of social exclusion and the 'underclass' are of this type (Murray, 1990; Willetts, 1992). These theories suggest that long-term unemployment tends to result from poor motivation or inappropriate attitudes to work. Such attitudes may also result in under-investment in human capital at school or later in life. Such individuals will, so the story goes, face limited job opportunities in the labour market and be at risk in times of depressed labour demand. In recession such individuals will be crowded out of employment; the effects of recession will affect all but unemployment will tend to be concentrated amongst particular groups of people. This can give rise to a pattern of job changing interspersed by periods living on benefits in which the individual is more and more cut off from the world of work. This account has something in common with more neo-classical explanations of the incidence of long-term unemployment which, although from an entirely different theoretical tradition, place an emphasis on the role of welfare benefits as a deterrent to employment (Minford 1985; Layard, Nickell and Jackman 1994).

Other explanations link long-term unemployment to developments in the organisation of work which have little to do with individual behaviour. The link between unemployment and individual characteristics is that of disadvantage. Particular types

of person are at a disadvantage in the jobs market and tend to be at the end of the jobs queue (Thurow 1975). Notions of the segmented labour market, the core and the periphery, and the 'flexible firm' (Atkinson and Meager, 1986; Rubery, 1993; Dawes 1993) all point to the exclusion of certain groups from the 'best' jobs. Members of disadvantaged groups will tend to be locked into poor jobs, jobs which may be temporary or casual (Hasluck 1996) and suffer from reduced employment prospects and periodic and sometimes prolonged spells of unemployment.

Finally, the major changes in the level of economic activity in the UK and its structure should not be underestimated. Reduced levels of labour demand have played a very important role in raising levels of unemployment in the UK (see Section 5 for further discussion). Moreover, recent recession has accompanied significant longer term sectoral trends, most notably the decline of manufacturing, manual and full-time jobs while service sector employment, skilled non-manual and part-time jobs have increased in importance (Wilson and Webb, 1995). Such sectoral change may well generate unequal risks of long-term unemployment as it creates mismatches between the skills, experience and expectations of the unemployed and the requirements of employers (Evans 1993). Individuals would be relatively powerless to deal with such labour market failures.

It is beyond the scope of this literature review to resolve this theoretical debate. Indeed, at a pragmatic level it does not matter what the causes actually are, so long as the characteristics associated with a high risk of prolonged unemployment can be distinguished. If this is feasible then individuals at risk can be identified. However, to suggest remedies for those at risk does require a view about causation.

Individual characteristics

An examination of the literature on unemployment duration and transitions out of unemployment provides a very long list of characteristics used in the analyses. The following is a list of the characteristics appearing to be significantly associated with variations in unemployment duration and differences in the chances of leaving unemployment:

- Gender
- Age
- Ethnicity
- Household composition/marital status
- Educational attainment
- Skills and work experience
- Work history
- Occupation and social class
- Local labour market conditions
- Motivation
- Job search techniques
- Level of income while unemployed
- Commitment to work
- Housing tenure
- Area of residence
- Homelessness
- Health
- Disability

- Drug abuse
- Criminal record
- Previous spells of unemployment
- Multiple barriers

The evidence relating to each of these characteristics is now considered identifying some key sources on each.

Gender

The most fundamental distinction to make amongst unemployed people is that of gender. All the evidence points to the experience of unemployment by men and women being somewhat different. There are many possible reasons for this, including the segregation of work on gender lines, the different social roles and expectations of men and women as well as the greatly different effects of sectoral change upon job prospects. Females also tend to have more exit routes out of unemployment (part-time work and non-participation as well as training and employment). Dolton and O'Neill (1996) show that the probabilities of leaving unemployment for employment or training are significantly higher for men than women while the probability of 'signing off' to some other non-employment state is proportionately greater for women.

The gender difference permeates all other factors linked to the risk of long-term unemployment. For this reason it is wise to consider most other individual characteristics separately for each sex. In methodological terms, this suggests that it is necessary to estimate models of unemployment duration and transitions for men and women separately rather than relying on a single gender variable to capture the full difference between the factors affecting men and women. Similarly, for the purposes of early identification of the long-term unemployed, separate weights for men and for women need to be associated with each factor used in the identification process.

Age

Age is positively associated with longer durations of unemployment (White, Gallie, Tomlinson and Cheng, 1994). This is especially true of males. The exception is males in their late 50s who tend to have shorter durations, presumably reflecting the influence of pension schemes and movement from unemployment to inactivity. This is supported by Dolton and O'Neill's (*op. cit.*) findings that the probability of leaving unemployment for a job or for training decreases with age while the probability of 'signing off' tends to increase with age. In general, although much unemployment is evident amongst young people (Ashton and Maguire, 1991) the experience of youth unemployment has tended to be of repeated, short spells of unemployment. Older workers are much less likely to become unemployed but their durations tend to be prolonged (White, Gallie, Tomlinson and Cheng, 1994). The relationship between age and the risk of long-term unemployment is, however, not fixed. White and McRae (1989) observe that reduced job opportunities for young people during the 1980s was accompanied by an increasing risk of entering long-term unemployment among that age group. More recently, Arulampalam and Stewart (1995), compared the probability of exiting unemployment amongst men in 1978 with that in 1987 and concluded that the probability of leaving unemployment fell for all age groups but was most marked reductions amongst young males.

Striking evidence relating to the effects of age on unemployment duration is contained in Elias (1996). Using work history data from the 1995 *Family and Working Lives Survey*, a random sample of individuals of all ages (16-70 years), Elias demonstrates a strong relationship between the aging process and movement into long-term unemployment. For young males (16-34 years), long-term unemployment accounted for approximately 50-60 per cent of total unemployment. For older males, long-term unemployment is a much more significant component of all spells of unemployment, particularly in the ten years preceding the survey. For the oldest group (55+) their experience of unemployment increases dramatically in the preceding five years, the great majority of which leads to long-term unemployment. The extent and duration of unemployment reported by women is remarkably similar to that of men.

Household composition

Living with a partner (married or living as married) is generally found to be associated with shorter durations of unemployment. This is usually rationalised in terms of a number of (largely untested) explanations such as the use of marital status as an employer-screening device (to identify 'responsible' recruits) or as an indicator of high costs of search to the married individual (because of a greater need for income). The interpretation of marital status is made more complex by the fact that it is strongly related to household composition. Arulampalam and Stewart (*op. cit.*) find, for example, that marital status was not a significant determinant of male unemployment durations in 1987 until account is taken of the economic activity of partners. Men with working partners had shorter unemployment spells than men who were single or who had non-working partners. This was a finding confirmed by Dolton and O'Neill (*op. cit.*).

Somewhat counter-intuitively, the presence of children in a household increases the probability of entering long-term unemployment. Each additional child appears to have a similar effect (Narendranathan and Elias, 1993). Dolton and O'Neill distinguish between dependent children and those less than 5 years old. The presence of the former appears to reduce durations whereas the latter reduce the probabilities of leaving unemployment for a job or for training but increase the probability of signing off the unemployment register. Males with large numbers of children and female single parents are particularly likely to face persistent unemployment (Pissarides and Wadsworth, 1992).

Ethnic origin

Ethnic origin is frequently cited as a factor in long-term unemployment. However, while members of ethnic minority groups are represented disproportionately amongst the unemployed population as a whole, they are no more likely to be amongst the long-term unemployed than their presence in the unemployed stock would suggest (White, 1983; Pissarides and Wadsworth, 1992). Moreover, it is important to recognise the considerable differences that exist across ethnic minority groups. Ward and Cross (1991) suggest that the risks of long-term unemployment are most severe for Pakistanis and Bangladeshis, somewhat greater than the risk amongst West Indians and considerably worse than Indians. Race and gender also interact; South Asian men tend to face lower risk of long-term unemployment than women while the situation is reversed amongst the unemployed of West Indian (Ward and Cross, *op cit.*).

Housing tenure and place of residence

There are undoubtedly marked differences in the incidence of unemployment and long-term unemployment at the local (ward) level (Green, 1994); and it has been contended that the spatial segregation of the long-term unemployed (and other disadvantaged groups) may be explained by the geography and operation of public sector housing policies (Lee, 1994) - as residence in council housing becomes an increasingly significant 'carrier' of other types of disadvantage - including labour market disadvantage. While there is some evidence that some of the long-term unemployed become discouraged from job search and increasingly 'removed' from the labour market - with social networks consisting disproportionately of other unemployed people (so "isolating" them and potentially reducing the number of employment opportunities available to them) (Griffin *et al.*, 1992; Morris, 1993), there is also contradictory evidence that job search activity remains high amongst the long-term unemployed (Robinson, 1994; Dawes, 1993). Nevertheless, ecological (i.e. area-based) effects have been implicated in the growth of an "underclass" in various parts of the urban and regional system - notably in inner cities (Boorah and Hart, 1995; Smith, 1992). The argument also has links with the "spatial mismatch" hypothesis along the following lines. If long-term unemployment/non-employment is concentrated in 'pockets' of cumulative disadvantage, where the chances of obtaining employment may be compounded by localised job losses, these areas may come to be seen as undesirable places in which to live. As those able to move out of such areas do so, there is a danger that these neighbourhoods will become even more 'trapped in disadvantage', such that location becomes a determinant not only of present position, but also of future prospects. In this way, the concept of 'space' becomes central to long-term unemployment/non-employment, as those without jobs are increasingly insulated from those with jobs in other parts of the same city and other local areas. Gaffikin and Morrisey (1994) use the phrase "social containment" to describe this condition.

Generally, owner occupation tends to be associated with shorter durations while unemployed people in public housing tend to experience longer duration. White (1983) showed that around two thirds of the long-term unemployed lived in rented council housing. The association between council housing and long-term unemployment is likely to be an indirect one. Public sector housing has been shown to be a strong indicator of social deprivation and disadvantage (Green and Owen, 1996). Pissarides and Wadsworth (1992) identified the low level of educational attainment and manual occupations of council tenants as the explanation of the association. Somewhat surprisingly in the light of the considerable evidence to the contrary, Dolton and O'Neill (1996) find that living in public sector housing is associated with a higher chance of leaving unemployment for a job.

Homelessness is strongly related to long-term unemployment. This is most likely because of the interdependence between homelessness and other factors such as physical and mental illness, drug and alcohol abuse and other symptoms of social disfunction (see Anderson, Kemp and Quilgars, 1993 and Metcalf, 1994).

Education and training

Unemployed people will be at a relative disadvantage in the jobs market if they do not possess the skills that employers require. There is strong evidence to suggest that low literacy and low mathematical ability leads to long-term unemployment (Elias and Blanchflower, 1989; Narendranathan and Elias, 1993). Similarly, no qualifications and poor or low level qualifications are associated with an increased risk of long-term unemployment. Possessing any academic or vocational qualification has been shown to raise the chance of leaving unemployment for a job or for training and reduce the risk of 'signing off' (Dolton and O'Neill, 1996). The importance of qualifications appears on some evidence to be increasing over time, raising exits from unemployment to a greater extent in 1987 than in 1978 (Arulampalam and Stewart, *op. cit.*).

Previous occupation and socio-economic class

Socio-economic status and previous occupation are important co-variables with both the risk of becoming unemployed and the risk of experiencing a spell of prolonged unemployment. This is especially for the case for men, although also evident amongst women as well (White, Gallie, Tomlinson and Cheng, 1994; Payne, Payne and Connelly, 1994). Since these characteristics relate to jobs in the past, the importance of such variables must largely be an indicator of the level of demand in the local labour market for people with the skills and experience associated with occupations. The common finding that the risk of long-term unemployment is increased if a jobseeker was previously employed in a manual job is consistent with the evidence that the number of such jobs in the UK economy is declining.

Health and disability

In his study of the long-term unemployed, White (1983) found that 18 per cent of male and 9 per cent of female long-term unemployed were disabled. This confirmed an earlier finding from the 1979 DHSS Cohort Study of unemployed men which pointed to the strong association between poor health and long-duration unemployment (Nickell, Narendranathan, Stern and Garcia, 1989). While it is possible to debate the direction of causation, the association between disability and health has been noted in most studies of unemployment duration and re-employment probabilities.

Attitude, motivation and commitment

Obtaining employment in the face of changing economic and labour market conditions may require individuals to be flexible and adaptive and a preparedness to accept work that might not have been considered previously. Where this is so, a range of obstacles - including an unwillingness to work part-time, to vary employment conditions, or the type of job considered - exist in matching the unemployed to vacancies. The risk of prolonged unemployment may be increased where such entrenched attitudes reduce the range of job offers considered. Such barriers to re-employment are likely to be strongly related to other characteristics, such as gender, as they often relate to the social stereotyping of men, women and age groups (such stereotyped attitudes are also to be found amongst employers).

Other explanations of persistent unemployment rely on the attitudes of individuals who may be described variously as not actively seeking work, benefit dependent or

having a lack of commitment to work. Clearly the measurement of 'commitment' is difficult. Nonetheless, where such measurements have been attempted, the results are fairly consistent. Unemployed people tend to be more committed to work even than people in employment (Gallie, Cheng, Tomlinson and White, 1994). Commitment does vary amongst unemployed people. The evidence suggests that such differences reflect the effect of both recent labour market experience and more deep-rooted influences from the past. Gallie *et al.* (*op. cit.*) cite factors such as the employment status of mothers, the financial situation of the parental household, as well as people's current household circumstances and access to social networks as significant influences on commitment to work.

The nature and form of job search process itself may vary from individual to individual. White, Gallie, Cheng and Tomlinson (1994) explore the determinants of job search in some detail and show that variation in the hours of job search and number of applications made are related to a number of factors of which commitment to employment and attitudes to unemployment are just part, along with financial and household circumstances. Other empirical studies show that the majority of the long-term unemployed keep up a high job search intensity (McGregor and Heafey, 1991; Dawes, 1993).

The interdependence of 'risk' factors

It is widely accepted that there is a considerable degree of interdependence between the factors which are associated with the risk of long-term unemployment. This is both a methodological issue (affecting the estimation of the scale of risk associated with each factor) and an issue which affecting the understanding of the processes which create prolonged unemployment spells. Gender, socio-economic class or ethnic origin can in isolation explain the risk of long-term unemployment. Women tend to be less well qualified than men at the higher qualification levels and to be employed in lower skilled and lower status work. However, women also tend to be employed in the kind of jobs which have grown most rapidly during the past decade: jobs in the service sector, especially part-time jobs. Members of ethnic minorities, too, are predominantly employed in less skilled, often manual occupation but also have the added disadvantage of poor or unrecognised qualifications and problems relating to literacy and language. These risk factors have all been discussed above. However, it is the cumulative impact of risk factors that is important and this may well be greater than the simple sum of separate risk factors. The combined effect of single risk factors may act in a multiplicative fashion on the overall risk rather than in an additive fashion.

4 PREDICTING THE RISK OF LONG-TERM UNEMPLOYMENT AT THE INDIVIDUAL LEVEL

Introduction

The assessment of risk is commonplace in the insurance industry. Motor insurance policies, for instance, are adjusted to take account of the risk of a claim by using information about the type of vehicle, the age and occupation of the driver, convictions on motoring offences as well as place of residence. Risk assessment is also used as part of the decision process when assessing applications by prisoners for parole (see Copas 1992; Copas, Ditchfield and Marshall, 1994). Assessing the risk of remaining unemployed for some interval of time (say, for twelve months) is, in principle no different, although in practice is more difficult because of the complex economic and social processes involved.

A system for predicting people at risk of long-term unemployment at the outset of their unemployment spell would consist of a number of elements. These elements are:

- a model of the risk of long-term unemployment;
- a set of data on each new unemployed client from which an individual risk score can be calculated;
- a decision rule (or set of rules) for converting a risk score into a recommendation for action.

Assessing the risk

Creating a model of the risk of long-term unemployment is a technical task requiring the modelling of individual unemployment durations. This, in turn, requires that a suitable dataset be assembled containing data on variables which are associated with unemployment duration. Modelling individual unemployment duration from this data, using a suitable method such as logistical regression or probit analysis, will then yield estimates of the relationship between the risk of long-term unemployment and the factors which determine this risk in terms of parameters which can then be used to calculate the risk faced by any given individual.

Discussion of the factors associated with long-duration unemployment in earlier sections suggest that a wide range of influences bear on the individual's experience of unemployment. This review suggests that the following variables are likely to play the most important role in a predictive model of long-term unemployment:

- measures of local labour demand - vacancies or vacancy/unemployment ratios;
- personal characteristics reflecting labour market strengths - educational attainment, skills and work experience, occupation and social class;
- gender and age

- household characteristics - marital status, dependents, tenure, place of residence;
- barriers to re-employment - health, disability, drug abuse, criminal record

The final selection and precise definition of these variables is an operational one. A predictive system must use data that is available at the start of the unemployment spell. For obvious practical reasons this may be restricted to very basic indicators which can be obtained in a simple and unobtrusive manner. The potential cost of such ease of operation is that the accuracy of prediction may be less than might be achieved by a more sophisticated model of risk.

The remaining issue to be addressed is that of an appropriate decision rule. Individual risk scores will range from zero (certain to leave the register before reaching long-term status) to 100 per cent (long-term unemployment is certain). Such extreme outcomes are very improbable and it is necessary, therefore, to have a decision rule which determines a threshold level of risk at which action should be taken. This might take the form, for instance, of taking action in the case of any individual whose risk score exceeds 50 per cent (that is where long-term unemployed is more likely than not). However, it must be borne in mind that risk scores measure probable outcomes and not actual outcomes. Thus, in the case of an individual with a risk score of 75 per cent, there is still a one in four chance that this person will leave the register before long-term status is attained. Incorrect predictions of outcomes will be made even if the risk of long-term unemployment is correctly assessed.

Two kinds of errors in prediction can be distinguished. These are:

- false 'positives' where the decision rule selects a person as 'at risk of long-term unemployment' when the person would actually leave the unemployment register before long-term status is attained;
- false 'negatives' where the decision rule indicates that a person is not at risk but the individual actually goes on to become long-term unemployed.

False positive predictions will result in action being taken in regard to individuals who do not need it. This is a waste of resources and could have a detrimental effect on the job search of the individual concerned if the action taken is inappropriate. False positive predictions also give a false impression of the success of the labour market programme since some early exits from unemployment will be attributed to policy even though they would have taken place in the absence of the programme.

False negative predictions result in people in need of assistance with job search not receiving it and eventually becoming long-term unemployed. While this is the situation which would prevail in the absence of a programme to target potential long-term unemployed (so arguably the individuals are no worse off) it does have implications for the effectiveness of the policy programme.

The balance of false positive and false negative predictions will depend on the level of risk which is set as the trigger for intervention. The higher the level of risk the lower the number of false positives but the greater the number of false negatives. Clearly a

trade-off exists between resources available and the effective coverage of the 'at risk' population. An optimal level of risk for triggering intervention needs to be determined, but this can only be done when the distribution of risks is known and the costs of intervention (including wrong interventions) have been quantified.

Predicting long-term unemployment

Payne, Payne and Connolly (1994) explored the possibility of producing a system for scoring the risk of long-term unemployment. Using data from the National Child Development Study, they develop a predictive model of being unemployed after twelve months based on just five variables. These variables are:

- level of local unemployment rate (high unemployment/low unemployment);
- educational attainment (5 O-Levels or more/less than 5 O-Levels);
- driving license (holds license/does not hold license);
- source of income before spell of unemployment (on benefits/not on benefits);
- left last job because of pregnancy (applies only to female unemployed).

Scoring individuals in the NCDS suggests that the risk of unemployment of at least twelve months amongst men ranged from 8 per cent for a well qualified male holding a driving license, whose previous source of income was not means-tested benefits and who lived in a low unemployment region to 68 per cent for a poorly qualified male without a driving license, living in a high unemployment area and whose previous source of income was benefits. Risks between 8 and 68 per cent were found for other combinations of factors amongst men. A similar pattern was found amongst women except that the risk of long-term unemployment amongst women whose reason for unemployment was pregnancy was consistently lower than the corresponding group whose reason for unemployment was not related to pregnancy.

The major criticism of this model is that being based on the NCDS the data from which the model is estimated applies to people of *exactly* the same age (born in the same week). Thus the very important effects of age on unemployment duration are excluded. While this has the methodological advantage of allowing the effects of other personal characteristics to be estimated in the absence of age effects, the relevance of the resulting predictive model to situations where age cannot be held constant (such as new registrations) is unclear.

Casey and Payne (1995) applied a similar methodology to Payne, Payne and Connolly (*op cit*) for predicting of risk of long-term unemployment amongst older workers. They estimated their predictive model using data from the DSS/OPCS Retirement Survey which collected information on people aged 55 to 69 years of age. The model predicts unemployment spells commencing after the age of 50 using six predictors. The predictors were as follows:

- being aged under 55
- being married
- being in poor health at the start of the spell
- having had a part-time job immediately before being unemployed
- having a manual job prior to unemployment
- becoming unemployed in a period of low unemployment.

Four different versions of the model were estimated.

The main problem with the Casey and Payne model is that it is estimated from a relatively small sample (only 460 observations) and relates to an atypical (although important) group of unemployed. It is also estimated from the whole sample with no attempt to model males and females separately. Perhaps not surprisingly, the predictive power of the model is poor. Setting a fairly high risk threshold of 75 per cent, up to half of those 'at risk' of long-term unemployment were incorrectly identified by the model although only around 15 per cent of those identified as at risk eventually became long-term unemployed. Moreover, this test of predictive power relates to 'in sample' prediction (where the predictions are tested on the same data that was used to estimate the model) rather than the more testing 'out of sample' prediction procedure (in which different data are used for estimation and prediction testing). The reason that out of sample prediction could not be used as a test is that the sample size is too small to allow it to be divided into a sample for estimation purposes and a sample for testing predictions.

Both the predictive models of Payne, Payne and Connelly and Casey and Payne can be criticised as being based on small and atypical samples and of ignoring individual characteristics which are known from other research to be particularly important influences on unemployment duration. These criticisms are less applicable to research being undertaken by the Employment Service to develop its own early identification model (Gibbins, 1996). This model is based on a sample of new clients taken during a two week period in August 1994 at seven ES local offices. After tracking clients for 12 months, models were estimated which predicted the length of an unemployment claim and which predicted which clients would be on the register after 12 months. On the basis of these models, clients were 'scored' on the basis of the following:

- basic client characteristics
- characteristics associated with successful job search
- the quality of the client's Back to Work Plan and their availability for work.

Those 'at risk' were selected by taking the ten per cent of clients with the highest likelihood of reaching 12 months of unemployment. Of this 'at risk' group, 35 per cent were still unemployed 12 months after registration. This compares with around 19 per cent of those not identified as at risk. This is a lower rate of positive identification than achieved in the studies by Payne *et al* (1994) and Casey and Payne (1995) and

this perhaps explains why ES has concluded that this is not 'a robust early identification tool' (Gibbins 1996). However, the ES model is at least twice as likely to correctly identify a long-term unemployed person as a simple random selection from newly registered unemployed. Moreover, the ES model is providing true *ex ante* predictions which are then tested against actual outcomes. This is a more demanding test than the '*within sample*' testing of predictions of Payne *et al* (*op cit*) while Connely and Payne were unable to carry out even this test because of the small size of their sample.

There are other criticisms to be made of the ES early identification experiment. First, the model fails to include any indicators of local labour market demand or of variation in job opportunities by occupation. It has been argued throughout this review that there is strong evidence to support the view that individual re-employment probabilities are strongly influenced by local labour demand. Second, the early identification procedure defines those at risk in an inappropriate way. It is important not to define those at risk as some pre-determined proportion of the unemployed but to identify those at risk in terms of their risk score. Not to do so is, potentially, to force some low risk people into the risk category.

The timing of the assessment of risk may also be important. An assessment made at three months would significantly reduce the numbers of people to be screened (approximately 50 per cent of the unemployed have left the register at this stage) while the associations between the risk of long-term unemployment and indicators might be more clear at this stage.

Jobseeker screening in Australia

Australia provides a concrete example of the way in which a system for the early identification and assistance of people at risk of long-term unemployment might be implemented. This 'preventative' strategy to assist, early in their period of unemployment, those at high risk of becoming long-term unemployed forms part of a broader strategy called the *Job Compact*. This policy was set out in the Federal Government's 1994 White Paper on Employment and Growth: *Working Nation*. The principal feature of the *Job Compact* is the increasing active assistance offered to the unemployed as the duration of unemployment increases, including a guaranteed job placement after 18 months unemployment (see Kenyon, 1994 and Piggot and Chapman, 1995 for descriptions and assessment of the *Job Compact*).

The system for assisting those at risk of prolonged unemployment was developed by the Department of Employment, Education and Training for use by the Commonwealth Employment Service (CES) and is referred to as 'active case management'. Case management consists of two key elements. These are:

1. the identification of job seekers 'at high risk' and in need of early assistance;
2. an assessment process leading to an agreement with each job seeker on activities and assistance required.

The first stage, in the form of the *Jobseeker Screening Instrument* (JSI), was introduced operationally in October 1994. The second stage, the *Jobseeker Assessment Instrument* (JAI), is to be introduced in mid 1996.

The Jobseeker Screening Instrument

People at 'notionally high risk' of long-term unemployment (defined in Australia as a continuous spell of unemployment of 12 months or more) are identified by means of the JSI. On first registering as unemployed, each job seeker is allocated a risk score based on a number of individual characteristics. Job seekers who score above a critical cut-off score are regarded as 'at risk' and referred for assessment of their needs and, if appropriate, access to training and other programmes. The characteristics on which the JSI score is based (and the 'point score' associated with each one) are shown in Table 6.1.

The JSI point system was derived from an probit analysis of a sample of over 17,000 Commonwealth Employment Service clients registered as unemployed in May 1994. In order to ensure that the JSI is readily understood by CES officers and by clients, the estimated coefficients were converted into a simple point score, the sum of which corresponds to the individual's overall 'risk' (scaled so that they range from 0 to 100). The cut-off score is not fixed but can be varied by programme managers in order to match the proportion of unemployed identified as 'at risk' to the resources available for the subsequent assessment process. Moreover, CES staff can override the JSI score if a judgement is made that a job seeker faces significant employment barriers. In practice, around 5 per cent of initial registrations were identified as 'notionally at high risk'. Of these, around 70 per cent were identified by the JSI and 30 per cent from supplementary factors.

Table 6.1
The Jobseeker Screening Instrument : Scoring System

Characteristic	Point Score
Age	
15-24 years	0
25-44 years	3
45+ years	12
Educational Attainment	
Primary school only	27
Did not finish secondary school	19
Finished secondary school	16
Certificate or Diploma	9
Degree and post-graduate degree	0
Country of Birth	
English speaking country	0
Non-English speaking country	8
English Speaking Ability	
Good	0
Survival	5
Very poor	20
Disability	
No	0
Yes	7
Aboriginal and Torres Strait Islander Status	
Non-Aboriginal	0
Aboriginal	19
State/Territory	
New South Wales and Australian Capital Territory	11
Victoria	13
Queensland	0
South Australia	8
Western Australia	0
Tasmania	14
Northern Territory	0
Location	
Capital City (within 2 hours)	0
Other	1

Unemployed people identified as 'at risk' on the basis of their risk scores are referred for 'case management' which involves a more detailed examination of the jobseekers re-employment prospects and the development of a back-to-work plan.

At the start of case management further information about the job seeker is collected for the purpose of classifying the individual according to difficulty of placement. The additional information is collected by means of a 16 question questionnaire relating to the following:

- 1 Major employment strengths**
 - Labour market attachment
 - Job-search motivation
 - Educational attainment
 - Vocational qualifications

- 2 Other employment strengths**
 - Contactable by phone
 - Own transport
 - Proximity to a labour market

- 3 Personal barriers**
 - Ethnicity
 - Absence from employment
 - Age
 - Insecure accommodation
 - Health
 - Ex-offender
 - Pre-vocational skill deficit

- 4 Severe personal barrier**

- 5 History of failure to obtain employment**

This refinement of the indicators of risk allows the classification of clients at risk into four *Client Classification Levels* (CCL) ranging from CCL1 which contains job seekers who are expected to be easy to place into work (having no personal barriers and many employment strengths), through graduated intermediate levels (CCL 2 and CCL 3) to CCL4 which contains job seekers who are expected to be very difficult to place in employment because of severe personal barriers, a lack of employment strengths or a history of failure to obtain employment.

Further details of the *Jobseeker Assessment Instrument* are provided in Athanasou and Pithers (1995).

A number of general observations can be made relating to the Australian system. First, the JSI is based on indicators which this review has already indicated as being significantly related to the risk of long-term unemployment- age, educational attainment, basic literacy, disability, ethnicity and place of residence - although the form in which they have been implemented is particularly Australian. Notable by its absence is gender, but this may be explained by equal opportunities considerations. Clearly the 'ethnic' indicator has no direct equivalent in Britain. The instruments used in the client classification stage of case management further align with the factors

identified in this review: labour market strengths, personal barriers and unemployment history. No account appears to be taken of labour market conditions at this stage but place of residence and proximity to job opportunities is considered.

While it remains to be seen how successful the Australian early identification system will be, it does provide a practical example of such a mechanism. While such a mechanism could be developed for the early identification of the long-term unemployed in the UK, it would need to be implemented in a manner appropriate to the UK labour market. This is likely not only to involve the use of different weights for indicators but also some variation in the range and definition of indicators used. However, one important feature of the Australian system which is important to replicate is its progressive refinement. By screening the newly unemployed, using broad indicators of risk, the numbers of people who are eligible for an intensive examination of their re-employment prospects is drastically reduced (to just five per cent of registrations). This facilitates the kind of detailed scrutiny of individuals that is necessary given the heterogeneity that exists amongst the unemployed.

5 CONCLUSIONS

The purpose of this literature review is to examine the evidence concerning the factors associated with the likelihood of reaching long-term unemployment once a person has become unemployed. More particularly, the review has sought to establish whether it is feasible to identify at an early stage people at risk of long-term unemployment. This section reflects on some of the key conclusions and issues which have emerged in the course of the review.

Long-term unemployment is a consequence of the confluence of two sets of forces. A general lack of work leading to unemployment is, obviously, a precondition of long-term unemployment. While this is altogether obvious and seemingly trivial, many investigators of long-term unemployment appear to discount the state of the labour market as irrelevant to the situation of the unemployed. Yet low labour demand, or proximity to a locality with higher quality labour, can exclude people from access to the labour market more effectively than any combination of adverse personal characteristics. Thus, a key indicator of the risk of long-term unemployment is residence in an area suffering large localised job losses - particularly in declining occupations and declining industries (notably manual and less skilled occupations in manufacturing) - especially if these areas are geographically remote from suitable new/available employment opportunities.

On the 'supply' side, personal characteristics and family situation are clearly important in determining how long a spell of unemployment will last or how frequently spells of unemployment will be encountered. Gender, age, ethnicity, marital status and household composition are particularly significant. Other characteristics reflecting the employment strengths of individuals in the labour market - such as basic skills (literacy and numeracy), qualifications and previous occupation - and barriers to employment - poor health and disability - are also important while a generally disadvantaged position in the labour market appears to be closely associated with housing tenure (public sector tenant). Such personal characteristics are strong indicators of the risk of long-term unemployment. Place of residence is also an indicator of risk where localities become associated with a high risk of long-term unemployment because of 'stigmatisation' (the residents of the area are perceived by employers to have unattractive characteristics, whether or not these perceptions concur with realities).

The role of unemployment and income support in promoting long duration spells of unemployment is less clear. It would be foolhardy to deny all connection between unemployment duration and benefit entitlement and benefits have been shown to affect job search behaviour. However, much of the effect of benefits works indirectly through the impact of the social security system on the household as a whole and is therefore closely linked to issues of marital status and the presence of children. Therefore benefit considerations probably have little to directly contribute to the issue of early identification, although such considerations may explain many of the associations observed with long-term unemployment.

While the evidence linking characteristics to the risk of prolonged unemployment durations is strong, it is important to recognise that such associations can be interpreted in a number of different ways depending upon the theoretical perspective employed. This suggests that even if individual characteristics are good 'predictors' of

the risk of long-term unemployment, thus enabling people at risk to be identified, such associations may be less helpful as a guide to the appropriate measures to help 'at risk' people avoid long-term unemployment.

The evidence that human capital 'depreciates', or that progressive disillusionment sets in, or that employers discriminate according to the length of time a person has been unemployed, does not seem convincing. Some studies find limited support for such forms of state dependency in the unemployment relationship, but the evidence is becoming progressively weaker as data and statistical estimation techniques improve. One important conclusion to be derived from this review is that it would be unwise to base any test of 'proneness' of an individual to long-term unemployment on their prior experience of unemployment. The outcome of such a test would be that it would needlessly capture many individuals who were not at risk of long-term unemployment.

The corollary of this finding presents an interesting challenge. If heterogeneity is the main reason which distinguishes those who experience only short spells of unemployment from those who become long-term unemployed, what is the nature of this heterogeneity? A clue may lie in the observation that the term 'individual' characteristics may be something of a misnomer as the associations identified in the literature are essentially associations between long-term unemployment and 'group' characteristics. Individuals are immensely complex social beings and while characteristics such as age and gender are guides to characterising an individual there is probably far greater diversity of (unobserved) characteristics within these groups than there is between them. The associations identified in this review offer the prospect of a start to the process of identifying individuals at risk of prolonged unemployment but the most accurate prediction would require detailed scrutiny of individual cases.

While most empirical models of unemployment duration (or unemployment transitions) are capable of being used for prediction, few have explicitly been used for this purpose. The small number of UK examples have significant limitations, being based upon rather atypical sub-populations (the young and the old) and ignoring the important effects of age or gender on the risk of long-term unemployment. The Employment Service has also developed an experimental 'early identification' model, although ES regards this as having poor predictive power. This may be the result of a failure to include any local labour demand indicators or it may stem from the decision rules adopted by ES to identify people at risk rather than the modelling process itself. The Jobseeker Screening Instrument developed in Australia provides an interesting example of an early identification system in practice. While account would need to be taken of the specific UK labour market context, the Australian model does provide some useful lessons, especially in terms of its progressive refinement which narrows down the focus of active case management onto about five per cent of registrants who can then receive the detailed scrutiny required to deal with individual heterogeneity.

Whatever the success or otherwise of early identification modelling so far, it is clear that prediction of people at risk of long-term unemployment is possible in principle. The strong statistical associations between individual characteristics, indicators of labour market demand and the incidence of prolonged unemployment are such that quite a high level of predictive power can be expected from suitably specified models based on appropriate data. Two steps are now required. These are:

- to undertake a study which explores in detail the case for and against early identification in terms of the costs, benefits, gainers and losers;
- in the light of a positive outcome from (i) above, to establish a research design of a project aimed at early identification, in terms of identification of suitable data, choice of indicators variates.

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