* Youth in the Eighties * Research from the ALS * CEPR ANU-DEET *

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Papers from the Australian Longitudinal Survey Research Project

Editors:
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Predicting The Long-Term Unemployed: A Primer For The Commonwealth Employment Service

Bruce J. Chapman and Peter N. Smith*

1. Introduction

In the contemporary Australian labour market long-term unemployment (LTU) is emerging as one of the most important policy issues for macro-economic management. In the last few years important economic research has clarified the causes and consequences of LTU, with the very important point being made that there appear to be considerable and adverse implications for both efficiency and equity from increases in LTU. The current and expected short-term future of the labour market is decidedly weak, implying strongly that the issue of LTU will become even more significant in the medium-term.

It is of particular policy relevance that only a small percentage of those who become unemployed remain out of work for a period of twelve continuous months or more—the usual definition of LTU. For reasons explained later, it may be extremely important to identify those individuals experiencing short-term unemployment who are at most risk of remaining jobless. This is the aim of the paper.

The basic motivation for this research is that LTU has serious consequences for the individual both in income terms and in terms of the decreasing probability of ever returning to mainstream employment. Theoretical and empirical studies indicate that there will also be serious consequences for macro-economic efficiency if the pool of those experiencing LTU continues to increase It is these issues which underlie the current study Their relevance to the contemporary Australian labour market are canvassed in section 2.

Our principal conceptual contribution is that there may be important gains to be made, for both individuals and the macro-economy, from the existence of easy ways for the Commonwealth Employment Service (CES) to identify the potential LTU. This point is stronger the more it is possible to influence the probabilities of particular short-term unemployed individuals gaining jobs, and the greater are the overall benefits of this happening. While these ideas are not difficult to understand, some of the statistical issues are a bit tricky and are explored in a third section.

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* We are very grateful for the superb and committed computing assistance of Margi Wood and the tireless advice of Geoff Parkinson and the word-processing of Eileen Berry. We are indebted to the Department of Employment, Education and Training for financial assistance All errors are ours.

Even though the econometric methodology employed, the hazard function, is probably not standard fare for line managers in the CES, the underlying framework and rationale for its use are easy to explain. If the goal is to test the efficacy of particular readily observable characteristics as predictors of LTU, and we know which persons actually do experience LTU, it is important that the independent role of unemployment duration on the process(so called 'state dependence') is controlled for in the analysis. The hazard function allows us to do just this.

The exercise could be done only poorly, if at all, with cross-sectional data. One reason is that when we observe persons at a particular point in time characterised by different measured periods of unemployment duration, it is not clear what role changes over time in the aggregate state of the labour market have played as influences on the composition of the pool of the unemployed observed. Further, from a cross-section it is difficult to determine what the contribution of (usually unobserved) individual characteristics are to LTU. Consequently we have used panel data, from the Australian Longitudinal Survey (area sample), focussing on persons who were unemployed initially for less than three months in 1985. The strengths and weaknesses of the data are considered in section 4.

Results are presented in section 5. A small number of readily identifiable characteristics are found to be important in understanding unemployment duration. Different samples are used, depending on the final labour market state in which individuals find themselves. The results vary to some degree.

In the concluding section we consider the usefulness of this exercise for policy and the operation of the CES. Caveats and qualifications are noted, as are some suggestions for the use of the techniques employed for future research.

2. Theoretical and Background Issues

Macro-efficiency and equity

The first major reason for a concern with unemployment duration relates to efficiency. During the 1980s there were important developments in this area of economic analysis, most significantly with respect to the concept of 'hysteresis', in which the long-run position of the non-accelerating inflation rate of unemployment (NAIRU) is seen to depend on current and past rates of unemployment. It is of particular relevance to this paper that in the literature LTU is considered to be an integral part of the hysteresis process.

It is argued that as unemployment duration increases, skill depreciation (atrophy) and attitudinal change occur. Such changes markedly increase the differences between the longer-term unemployed (the outsiders), the employed (the insiders), and the short-term unemployed. Given that employers are likely to view the LTU as poor employment prospects, it follows that at any given unemployment rate job vacancies will be filled less quickly and with a poorer match when there is a higher proportion of LTU. From this perspective a reduction in LTU increases the likelihood of there being a more favourable matching between the pool of unemployed and job vacancies.

Budd, Levine and Smith (1987, 1988) have demonstrated empirically for the UK that increases in LTU adversely affect the operation of the aggregate labour market There is similar (although somewhat weaker) evidence that increases in LTU have affected the relationship between unemployment and vacancies in Australia (Hughes 1987, Williams 1989). Macro-economic modelling tends to support these latter findings with respect to estimations of changes in the NAIRU (Simes and Richardson 1987). It would appear that increases in the proportion of unemployment which is long-term and the absolute number of LTU make the filling of vacancies more difficult and the rate of wage inflation higher at any given level of unemployment.

From the perspective of long-term macro-economic efficiency there would thus seem to be compelling reasons for minimising the incidence of LTU Since it is also clear that in a labour market characterised by increasingly high levels of LTU, *ceteris paribus*, there will also be increasing inequalities in income distribution. Equity issues are therefore of great importance and provide a further rationale for our research.

There is little doubt that those with high unemployment duration are some of the most disadvantaged members of the labour force (Junankar, 1988) Not only does this group have low current incomes, but they also seem to have few skills and low education levels, generally making them poor employment prospects Thus particular issue—the dynamic side of distribution—warrants some attention

Employed persons become, over time, increasingly different to unemployed persons The incomes of the former group typically increase, through real wage gains that average around 2 or 3 per cent a year, because of increasing labour market experience. The dynamics are such that being employed leads not only to increased labour market experience, skill acquisition, and increases in current income, but also to higher potential earnings. In other words, the life-time job opportunities and acquired human capital levels of the employed systematically become significantly greater than those of the unemployed, the longer their relative labour market states remain unchanged.

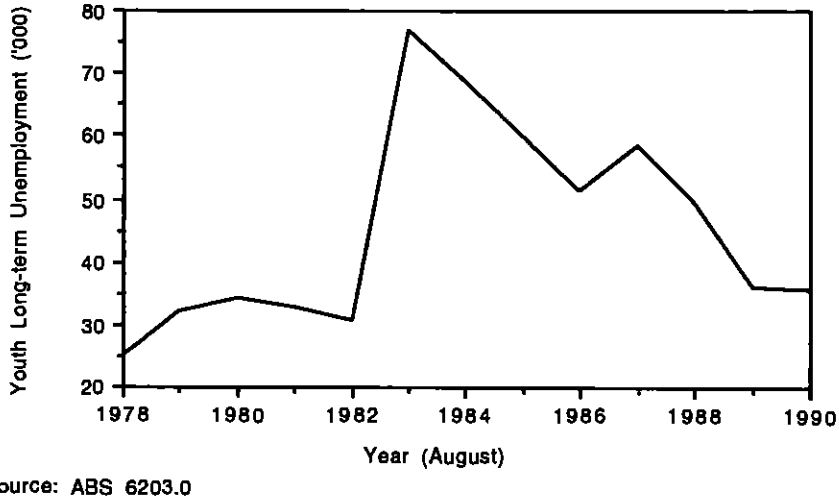
LTU and the Contemporary Australian Youth Labour Market

Conditions in the Australian labour market in 1990 are clearly different to those prevailing in the previous seven years. In stark contrast to the period 1983-89, job growth is now stagnant. As a consequence, the unemployment rate, which had steadily fallen from the post-war high of 10.3 per cent recorded in August 1983, has recently increased significantly.

During 1983-89 (on an August to August basis) employment grew by an annual average of 3.6 per cent, with the lowest change being 2.7 per cent (in 1986-87), yet for 1989-90 the figure was 0.8 per cent. While the unemployment rate fell by about four and a half percentage points after 1983, from the end of 1989 to mid-1991 it increased from 5.9 per cent to about 9.5 per cent. In the last short period, and at least in the next year or so, the aggregate labour market has been and is expected to remain distinctly unhealthy.

The important point for our purposes is that after a short period of economic stagnation LTU increases in absolute numbers. Because the data used later are focused on youth, we present in Figure 1 the LTU experience (unemployed longer than 12 months) of young people (defined as those aged between 15-24 years) over the last decade or so. The extraordinary expansion of the numbers in 1983-84, following with a lag the severe recession of 1982-83, is immediately obvious.

It should also be noted from Figure 1 that although the level of LTU can increase extremely quickly (as it did in 1983-84), it takes a long period of sustained, rapid employment growth (such as that experienced in 1984-89) to decrease it. This asymmetry is likely to be a consequence of two things One, when an economy grows quickly the active labour force also expands, implying that some proportion (possibly as high as 40 per cent, see Dowrick 1988) of new jobs are filled by persons previously outside the labour force. Two, that the LTU are continually pushed to the back of the hiring queue, implying that it takes very rapid economic growth before the size of the group starts to fall substantially. In the context of the contemporary Australian labour market the point is clear: once unemployment starts to increase, the probability of the LTU obtaining jobs diminishes substantially, which highlights the relevance of investigations into the factors allowing early identification of potential LTU.



Source: ABS 6203.0

Figure 1: Youth Long Term Unemployment

In order to illustrate how important these issues are likely to become for policy makers in Australia in the near future, we need to have some idea of the likely extent of overall levels of LTU. It is possible to make such an estimate by virtue of there being a positive relationship between the unemployment rate and the proportion of the unemployed who are LTU This information can be used in conjunction with unemployment rate projections to estimate the likely future aggregate LTU situation

Econometric work in this area is reported in Chapman, Dowrick and Junankar (1990) Their analysis suggests that a one percentage point increase in the unemployment rate is associated with an increase in the proportion of unemployment which is LTU of around 3 percentage points, after about a year. Given this, and in combination with expected future unemployment rates, it is uncontroversial to suggest that LTU levels in 1992 will be the highest ever recorded (Stretton and Chapman, 1990).

Conclusion

Several points emerge from the above discussion Firstly, the greater the proportion of all unemployment that is of long duration, the less efficient is the functioning of the macro-economy. This is manifested in both the unemployment-vacancies relationships and in the positioning of the NAIRU. Secondly, there is an obvious equity side to the unemployment issue, with the dynamic dimension being of most importance: as individuals' unemployment duration increases, their relative human capital endowments and life-time employment opportunities diminish. Finally, research which aids the identification of those recently unemployed who are at greatest risk of experiencing continuing joblessness is particularly relevant for Australian economic policy in the early part of the 1990s. There is little doubt that in the next short period the labour market will deliver very high (the highest ever) levels of LTU.

3. Modelling Issues

There are two distinct approaches taken to modelling the reasons why individuals remain jobless and searching for unemployment. A brief overview of these perspectives will set the scene for the conceptual discussion.

The most rigorous and, in its purest form, the least helpful approach seeks to understand continuing unemployment as being the result of individuals' preferring not to take offered jobs because the valuation they put on their search and/or leisure time exceeds the wage rate offered by employers. In this perspective the unemployed have a 'reservation wage', which serves as a benchmark for the decision of whether or not to accept employment: if the wage offered is lower than the reservation wage, individuals will choose to remain jobless If offered wages continue to be lower than the reservation wage, the unemployed will eventually lower their reservation wages (seeing them as unrealistic) with employment ensuing once it falls below the offered wage

A quite different way of looking at the underlying factors of continuing joblessness gives a greater weight to quantity aspects of labour demand and

employer discretion than does search theory. In this view employers make judgements about the desirability of particular applicants for vacancies, making job offers to those considered suitable. The major difference between this and the search theory perspective is that here the principal variable is the number of job offers made, rather than the associated wage. If employers consider that some applicants will never reach a necessary standard, those applicants will receive no offers. For reasons that will become clear from the following discussion, it is plausible that there are specific reasons why the LTU have a higher probability of being in a group that is offered few jobs.

It is not necessary for our empirical work to specify which theoretical model is in operation although, given the results, it may be important to sort out the policy implications in this context. Our brief rather is to determine which readily observable or quantifiable characteristics, including measures of individuals' reservation wages, are useful predictors of continuing unemployment. The major conceptual issues are as follows.

The most obvious quantity to examine in order to explain whether someone newly unemployed becomes LTU is the probability of leaving unemployment. In general, this probability falls as the length of spell increases since the LTU find it increasingly difficult to find a job. There are two reasons for this: there may be a reduction in the intensity of job search, and there is a reluctance on the part of employers to hire those who have been unemployed for an extended period. These effects could be caused by demoralisation as the length of the unemployment spell increases, and/or through employers regarding length of unemployment spell as an indicator of poor labour market qualities

There is a further distinction in the causes of increased duration which should be emphasised. The analogy with a flower shop introduced by Budd, Levine and Smith (1988) is useful in describing the processes at work. In the florists' stock of flowers there are blooms of varying age and brightness, with customers operating a double process of discrimination between blooms. The newest flowers will be bought first and, if any are bought among the older flowers, for those of any particular age, they will be the brightest. So for every passing day, each cohort of remaining flowers both appears older and loses the relatively bright blooms.

In a labour market context these processes may apply to the duration of current unemployment spell and a bundle of skills related to experience, education and so forth. It is likely then an employer will unfavourably compare someone unemployed for twelve months, against someone unemployed for only three months, for any given common bundle of attributes. This is known as the state, or duration, dependence effect.

The other effect can be explained by noting that the cohort which has been unemployed for twelve months is different from a very recently unemployed cohort, since for the long-term group those with the better bundle of attributes will have already found jobs. This is known as the heterogeneity effect The two effects work in the same direction and imply

that the probability of leaving unemployment falls as the duration of the spell increases.

In order to examine these effects, and in common with most of the literature in this area, we use the relationship known as the hazard function (Kiefer 1988). In the context of unemployment duration this relationship describes the probability of an event occurring depending on how long an individual has been currently unemployed. This is known as the conditional probability of leaving unemployment. The hazard function thus provides a method for readily interpreting the unemployment duration data.

We begin the analysis with a population of unemployed people who appear to have a reasonably homogeneous experience of unemployment as defined by the length of spell at the time of their interview in 1985 (less than three months) Essentially this implies that there is some left censoring, a point which needs to be kept in mind in an interpretation of the results (particularly with respect to the existence, or otherwise, of state dependence).

The hazard function describes the conditional probability that an individual will end a spell of unemployment in any particular week x, given that the person has been unemployed for x weeks. This seems a natural way to model the probability that an individual will leave unemployment.

The sequence of conditional probabilities in the hazard function that we use applies from the initial spell length of one week up to the end of the longest spell, which in our data is 170 weeks Unlike most of the literature in this area all of our data consist of completed spells, which means in essence that we were able to follow every person from the beginning to the end of this particular unemployment experience. While multiple spells are likely to be an important aspect of some individuals' labour market experience, to keep the problem tractable we have chosen in this first instance to focus on a single unemployment event.

The hazard function approach is also a convenient way of representing the process of sorting of the unemployed that was described above. In particular we expect state or duration dependence to be negative, meaning that the probability of an individual exiting from unemployment falls with the duration of the spell In technical parlance, the hazard function l(t) is such that $dl(t)/dt < 0$ at any $t=x$, ie that there is decreasing hazard over the range of spell lengths.

In the discussion above emphasis was put on the distinction between the outcomes for two groups, namely the short and long-term unemployed. In the specification of the hazard function we will be more general and allow for duration dependence over the whole range of spell lengths.

In the estimation below we use two specifications of the proportional hazard model originally proposed by Cox (1972). These allow the roles of state dependence and heterogeneity to be laid out clearly. The first form is the most general. There are two parts, one which allows for heterogeneity and the other which allows for state dependence. It is written as:

$$l(t,x/\beta,\alpha) = h(x/\beta).s(t/\alpha)$$

where the hazard function l(.) is a function of a set of explanatory variables x with parameters β and duration dependence α. The function is made up of the proportional factor h, which represents the heterogeneity effect, and s, which captures the state dependency effect. The so-called Weibull form for this function is:

$$h(.) = \exp(\beta 0+\beta 1x)$$

$$s(.) = t^{**}(\alpha-1)$$

$$\text{ie} \quad l(.) = \exp(\beta 0+\beta 1x)t^{**}(\alpha-1)$$

where we assume that the explanatory variables x are included linearly. There will be negative state or duration dependence in this formulation when $\alpha<1$. We also examine a special case of this specification known as the exponential model where no state dependence is allowed (ie $\alpha=1$). In that case the function becomes :

$$l(.) = \exp(\beta 0+\beta 1x)$$

and duration dependence is zero Below we test for the restriction $\alpha=1$ and for the appropriateness of this choice of functional form.

4. The Data and Estimation Approach

The Australian Longitudinal Survey (ALS) is a panel survey of around 9000 individuals. Commenced in 1985, data from annual interviews is now available up to 1988. The sample is of young people, the age range in 1985 being 15 to 26 years There are a rich set of personal and labour market variables, which make the ALS close to ideal for our purposes

Most importantly, because of the longitudinal nature of the panel we were able to concentrate on a group that had all only recently become unemployed, and from there construct actual completed unemployment histories of individuals. Consequently, the exercise may not suffer unduly from the usual problems inherent in cross-sectional work of not knowing the characteristics of persons who have already left the sample, or how much longer the currently unemployed will remain in that state.

There are several unusual and valuable aspects of the ALS for our purposes. First, there is information concerning respondents' complete job histories, which allows us the opportunity to include a rich set of controls for respondents' labour market experiences and inherent attitudes to work Second, questions were asked concerning the lowest wage rate that individuals would be prepared to work for, so some insights are forthcoming as to the role of initial reservation wages as an influence on unemployment duration. Third, the data include many individual characteristics that are readily and easily observable by, for example, CES officers interested in identifying those at most risk of remaining jobless; these characteristics include sex, age, education, location, ethnicity, industry, occupation, and other characteristics of last job.

An issue of some importance for the exercise is that a fairly large proportion of the original sample—around 35 per cent—ended their spell of unemployment not by finding jobs, but by ceasing employment search. There are many reasons why individuals cease searching for work even though they have not found a job. Given that the CES is concerned with finding employment for its clients, it matters for our analysis that a distinction is made between those that successfully find work and those that leave the labour force, for example to pursue alternative activities (such as child-rearing or returning to formal education).

Because of the above-noted issue, we have chosen to estimate the models separately depending on the labour market state individuals entered after the completion of their unemployment spell Sample A refers to the subset of respondents who left unemployment for a job, and Sample B refers to the full set of respondents, regardless of the labour market state experienced after unemployment. A histogram illustrating the spells of unemployment that we model below is given in Figure 2. It shows that almost half of the spells finish within three months.

Ten per cent of the spells last for more than a year, with half of these lasting for more than eighteen months, which is broadly true for data sets A and B

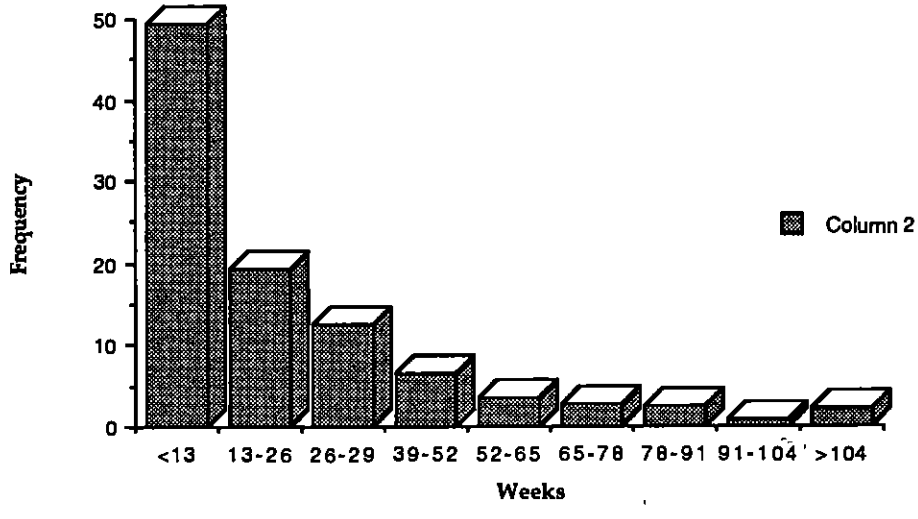


Figure 2: Relative Frequency of Spell Lengths

Table 1: Statistical Characteristics of the Data

Variable	Sample A		Sample B	
	Mean	Standard Deviation	Mean	Standard Deviation
VED	.399	.491	.394	.489
VCAPC	.508	.501	.530	.499
VOTHC	.260	439	251	.434
VCTOWN	.186	.390	.173	379
VAGEYR	20.08	2.66	20.12	2.62
VHEALTH	.139	.347	.147	.355
AUSBORN	.824	.382	811	.392
ESMBORN	.099	.299	106	308
MALE	598	491	.540	499
VMARRY	195	397	.199	.399
VMARSIN	.0124	.111	0179	.133
RW ($/hour)	4.43	2.55	4.17	2.65
RWM	102	302	.141	349
VJTPAY ($/week)	128.31	102.74	116 10	103.46
NPREVJ	.254	.436	303	.460
NCURRINC ($/week)	92.20	99.02	89 97	94 11
NCURRM	.0960	.295	.0956	294
DOLE ($/week)	48.20	39 34	46.12	39 78

Table 1 presents the main statistical characteristics of the data Apart from the completed period of unemployment duration, UPER, measured in weeks, all the data apply to the survey week in 1985. The continuous variables are. VAGEYR, age in years; RW, the after-tax hourly reservation wage, adjusted using the tax scales for the 1984-85 financial year; DOLE, an estimation in 1985 dollars of the amount of unemployment benefits received, calculated on the condition of receiving some unemployment benefits and on the basis of individual characteristics; VJTPAY, the after-tax weekly wage of the previous job in 1985 dollars; and VCURRINC, weekly current after-tax income from all sources in 1985 dollars.

The dummy variables used are: VED, for having formal education to year 12 and beyond; VCAPC, VOTHC and VCTOWN for living respectively in a capital city, non-capital city and country town (the omitted dummy being living in a rural area); AUSBORN and ESMBORN, respectively for having been born in Australia or in another English-speaking country (the omitted dummy is having been born in a non English-speaking country); VMARRY and VMARSIN, respectively are being married, and having been married but now single (the omitted dummy is never married); MALE, being male;

VHEALTH, for having a health problem which limits work; VJTM, for not having had a previous job; RWM, for there being no information on reservation wage; and NCURRM, for there being no information on current income.

5. The Results

Before considering the estimates it should be noted that we employed the method of censoring, at 52 weeks of unemployment duration. This technique fully utilises the information on spells greater than 52 weeks except that it constrains the slope of the hazard function estimated for the data up to one year to continue beyond this, so as to avoid the slope of the hazard being unduly affected by a few unusual observations at the extreme of the duration data.

The first set of results applies to the sample of respondents who ended their spell of unemployment by gaining employment. We estimated the model in the two ways motivated by the conceptual discussion, with and without allowance being made for state dependence. The procedure was to test down from a relatively general model (the results of which are available in the Appendix), to a parsimonious specification presented in Table 2, with equations (i) and (ii) respectively allowing, and not allowing, for state dependence.

One way of examining the behaviour of outflows from unemployment implied by these estimates is to consider the survival curve, shown in Figure 3 This is a plot of the probability that the spell is longer than each given duration As the curve is given for the exponential functional form its shape is unsurprising, with the low probability of spells exceeding a year mimicking the histogram of actual spell lengths given in Figure 2.

These results also allow us to examine the issue of state dependence. It is clear from the estimate of α given in column (i) that it is not significantly different from one. Thus we cannot reject the hypothesis that there is no state dependence in the outflow probabilities. This result conflicts with that found by Lynch (1985) on a sample of young men in the UK, and Brooks and Volker (1986) using gross flows data for Australia, both of which found evidence of significant negative duration dependence (that is, the chances of leaving unemployment decrease as duration goes up)

One explanation for the differences between our study and that of Brooks and Volker is that the latter make no allowance for heterogeneity, ie the presence of x variables in the estimated equation Indeed, if we exclude all of the explanatory variables from the model above we get an estimate of α of 0 956 with a standard error of 0.05367. This suggests that ignoring heterogeneity biases down the estimate of the degree of state dependence. This is not a surprising result

Evaluated at the sample means, the implied hazard rate from the estimates in Table 2(ii) is 3.5 per cent per week This appears to be a little smaller than that obtained by Brooks and Volker on a roughly comparable basis, which means that the chances of leaving the unemployment pool

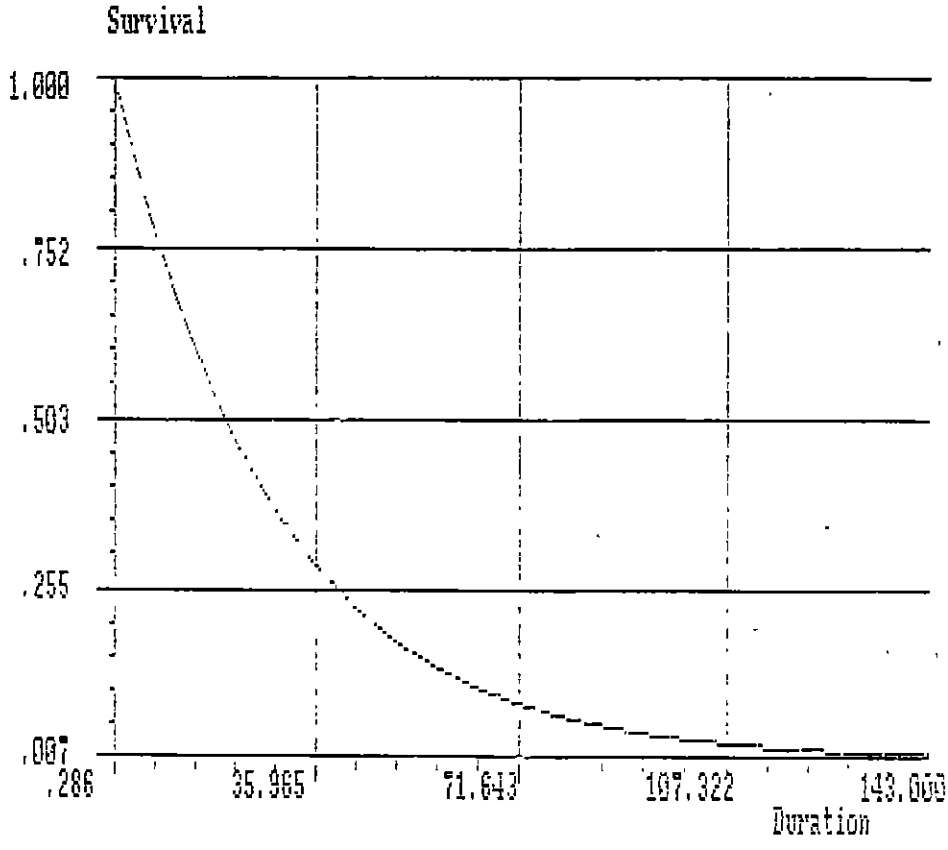


Figure 3

were higher for this group. Given that the aggregate unemployment rate was much lower for their study than for ours, this is as expected.

In terms of statistical significance the most important variables are. education to at least year 12; location in a capital city or in a country town; age; the reservation wage at the start of the spell, and sex. There is no evidence of duration dependence as the parameter α is not significantly different from 1.

The variables which apparently had no effect on unemployment duration are also of interest: ethnicity; the amount of unemployment benefits received; the initial level of income; and marital status. We tested but have not reported other specifications related to previous job characteristics, such as any aspects of previous employment -occupation, industry, former pay and the receipt of training- none of which was significant.

It is interesting at this juncture to illustrate the sizes of the coefficients of the variables that seem to matter for unemployment duration. The expected unemployment duration is given for three standardised individuals, who might be described as having good, poor, and average characteristics.
An individual with 'good' characteristics, in terms of having low expected unemployment duration, lives in a capital city, is female, and has completed education at least to year 12 With these characteristics, and giving her one standard deviation above the average age (to age 23), and one standard deviation below the average reservation wage (to $1.88 per hour, after tax), her expected unemployment duration is 12 14 weeks, compared to the average of 28 76 weeks predicted by the model.

An individual with 'poor' characteristics has not completed high school, is male, and lives in a rural area. Giving him one standard deviation below the average age (to age 17), and one standard deviation above the average reservation wage (to $6 98 per hour, after tax), his expected unemployment duration is 92.59 weeks, which is about fifteen months higher than the mean, and almost eight times higher than the expected unemployment duration of a person with 'good' characteristics These are profound differences, but it should be remembered that an important contribution to the result is the effect of living in a rural area, where less than five per cent of the data fell

A second way of demonstrating the effect of individual variables on unemployment duration is to ask. by how much do particular characteristics alter the length of the unemployment spell? This is shown in Table 3, using the results from the exponential model in column (ii) of Table 2, for one unit changes in the dummy variables and a one standard deviation increase and decrease respectively in the reservation wage and age. These calculations are based on someone with 'good' characteristics, varying these characteristics one at a time

Some limited testing of the adequacy of the model has been carried out. First, we determined whether the parameters estimated were the same for males and females. The likelihood ratio test of this hypothesis gives a value of 7 74 which is clearly less than the 95 per cent critical value of the X^2 (7) distribution of 14.1 Secondly, we examined whether the functional form was sensitive to adding RW^2, $VAGEYR^2$ and RW* VAGEYR. The likelihood ratio test of their exclusion was 2 38 which is clearly less than the X^2 (3) 95 per cent critical value of 7.81

Among other things it is clear from Table 3 that location plays an important role in determining spell length We might expect this to be related to local unemployment rates, although the pattern of coefficient estimates on various locations makes interpretation a little difficult. Education and gender also have important effects

Another way of illustrating the results is to ask how well the models fare in a predictive sense. This is shown in Table 4, which compares the numbers of observations predicted to be still unemployed at various points durations with the actual data.

Table 2: Estimated Proportional Hazard Functions*

Independent Variables	(i)	(ii)
CONSTANT	-4.520 (-9 10)	-4.524 (-8.88)
VED	0.2939 (2.56)	0.2946 (2 51)
VCAPC	0.8477 (3.33)	0.8521 (3.27)
VOTHC	0.3042 (1 14)	0.3045 (1.11)
VCTOWN	0 9071 (3.25)	0.9096 (3.19)
MALE	-.2892 (-2.47)	-.2903 (-2.42)
VAGEYR	0 04329 (1.80)	0.04365 (1.77)
RW	-.06459 (-2.07)	-.06485 (-2.04)
RWM	-.4736 (-2.14)	-.4748 (-2.09)
α	1.0170 (18 13)	1 000 (Fixed Parameter)

* t-statistics in parentheses.

Table 3: Mean Unemployment Spells by Selected Characteristics

	Weeks
Education beyond Year 12	24.09
Education to Year 12 or less	32.32
Locality:	
Capital City.	24.21
Other City	41.86
Country Town	22.86
Rural	56.76
Male	32.30
Female	24.16
Age:	
17 yrs	32 66
23 yrs	25.32
Reservation Wage:	
$2 00 per hour	24.57
$7 00 per hour	33.67
Average Characteristics	**28.76**

Table 4: Predicted Continuing Unemployment by Duration

	≥ 13	≤ 26	≥ 52
Actual	205	76	42
Table 2 (ii)	206	78	53
Weibull, no x variables	218	78	73
Exponential, no x variables	209	78	57

It is apparent that the model corresponds to (predicts) the unemployment numbers quite closely up to at least six months, but over-predicts somewhat after a year. The form is apparently superior to the Weibull with no variables, but may not be a great improvement over the exponential with no explanatory variables.

In selecting the individuals in data set A we only included spells of unemployment which resulted in a new job within four weeks We are not entirely convinced that this method necessarily selects all of the appropriate spells, because some individuals may have taken working holidays travelling abroad or otherwise ended their spell with activities close to formal employment.

To allow for the possibility that the individuals leaving unemployment for employment are different to the whole sample leaving unemployment, and as a test for the robustness of our results, we examined data set B. Not surprisingly these data had more women and married people, who *a priori* were expected to be more likely to have concluded their unemployment spell with a period out of the labour force.

The results of estimating both the Weibull and exponential models on data set B are given in Table 5. Again, we present parsimonious results with the more general specification from which it is derived being shown in the Appendix.

There is some evidence of negative state dependence, but it is rather weak The main differences with the earlier results are that gender is not now important, but ethnicity is. The results imply that women, and individuals born outside Australia in English-speaking countries, are both more prone to leave the workforce after a spell of unemployment.

Carrying out similar calculations to those with sample A above shows that the mean spell length is 26 53 weeks. An individual with 'good' characteristics has an expected spell length of 11.14 weeks, and an individual with 'bad' characteristics 63.40 weeks. In these estimates location and ethnicity provide the most important quantitative effects, both increasing spell length by over five weeks at the less desirable settings of non-English-speaking origin and rural resident. Absence of education to year 12 increases spell length by over three weeks, but initial reservation wage is somewhat less important.

Table 5: Proportional Hazards - Whole sample Equations

Independent Variables	(i)	(ii)
CONSTANT	-4.677 (-10.81)	-4.671 (-12 92)
VED	0.2780 (2.71)	0.2715 (3.22)
VCAPC	0.3932 (4.08)	0.3798 (4.76)
VAGEYR	0.05739 (2.78)	0 05652 (3.28)
AUSBORN	0.3066 (1.74)	0.2983 (2 03)
ESMBORN	0.4223 (1.92)	0.4065 (2.22)
RW	0 06423 (-2.37)	-.06448 (-2.84)
RWM	-.4787 (-2 54)	-.4781 (-3 05)
α	0.9022 (23.33)	1.000 (Fixed Parameter)

*t-statistics in parentheses.

6. Policy Assessment and Conclusion

Reducing unemployment duration has important potential benefits, both for the individuals involved and for the macroeconomy. The redistribution of income and job opportunities, and the possibility of affecting the long-run positioning of the NAIRU, are two obvious reasons for government to be interested in the issue.

Our contribution has been to ask whether or not it is possible to use easily obtainable or observable individual characteristics to ascertain expected unemployment duration. Given that we were able to focus on a group of individuals at the start of an unemployment spell and to follow their unemployment experience to its completion, we are confident that the data are able to inform us of what characteristics might matter in this context. The question was complicated by the fact that about a third of the sample left unemployment without going to a job, but even given this some decision rules for CES officers can be suggested.

The variables that are generally statistically significant predictors of high expected unemployment duration are: living in a rural area; having education that is less than graduating from high school; being young; and having a high reservation wage. Considering just those people who find jobs we can add to the list of those most at risk males, and for the group that

leave unemployment for whatever reason, those born in countries where the language is not English have high expected unemployment duration.

It was interesting to find little evidence of state dependence, which suggests that focussing on heterogeneity, or the role of individual characteristics, is a useful way to proceed in terms of predicting the potential LTU. The econometric modelling is fairly restrictive however, so the results should not be seen as a definitive rejection of state dependence. As well, the sample could be generating the result: some of those not observed in the initial stages of unemployment, if they were included, could give rise to more state dependence. But the estimates in general do suggest that some of the observable characteristics of the short-term unemployed might be useful indicators of the likelihood of continuing joblessness.

The policy importance of our results depends in part on how much CES officers and others are able to change the employment prospects of the group seemingly at risk of continuing joblessness, and at what cost. Establishing who they are, at least in an observable sense, at the beginning of their unemployment experience, should provide some indication of where placement and/or training resources might usefully be directed.

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Appendix

Full Models

Independent Variables	Coefficient (i)	t-statistic (i)	Coefficient (ii)	t-statistic (ii)
CONSTANT	-4 107	-5.46	-4 718	-9.87
VED	0.3421	2.08	0.293	2.85
VCAPC	0.8030	2 65	0 637	3 24
VOTHC	0.1633	0.50	0.217	1.00
VCTOWN	0.7510	2.23	0.362	1.58
MALE	-0 3155	-2 28	-0 142	1.43
VHEALTH	-0 02038	-0.10	0.0440	0 36
VAGEYR	0.01994	0.60	0.0413	2 10
AUSBORN	0.2267	0.91	0.3326	2.03
ESMBORN	0 2384	0.82	0.3969	1.97
VMARRY	0 1339	0.57	0.1011	0.63
VMARSIN	-0 03721	-0.3	-0.4911	-1.19
VICTRN	0 3865	1.28	0.1088	0.68
VOCTRN	0 1726	0.62	0.2060	1.01
VUJI	-0.1169	-0.49	0.0626	0.41
VJTPAY	0 001013	0.89	0.00116	1.66
VJTM	-0 005977	-0.23	0.1515	0.96
DOLE	-0.002201	-1.24	-0.001647	-0.138
VMASS	-0.1321	-0.70	0.01784	0.12
VSASS	0 026179	0.121	0.02758	-0 16
VASSM	-0.1602	-0 79	-0.04677	-0 31
NCURRINC	0.0001212	0.18	0.0001782	0.33
NCURRM	-0 1975	-0 82	-0.04732	-0 27
RW	-0.07352	-1 98	-0.06413	-2 32
RWM	-0.4116	-1 44	-0.472239	-2 46