

CEPR - FILE COPY

THE AUSTRALIAN NATIONAL UNIVERSITY  
*Centre for Economic Policy Research*

# DISCUSSION PAPERS

THE IMPACT OF UNEMPLOYMENT BENEFIT  
PAYMENTS ON THE LEVEL AND COMPOSITION  
OF UNEMPLOYMENT IN AUSTRALIA

R.G. Gregory and P.R. Paterson

Discussion Paper No. 11

July 1980

P.O. Box 4, Canberra 2600, Australia

The Centre for Economic Policy Research was established in 1980 as one of a number of University initiatives. It was provided with an annual grant for a period of five years and given a mandate to foster policy oriented studies of the Australian economy. The Centre intends to work closely with other economic research groups - both within the Australian National University and in other Australian universities. Within its means, the Centre stands ready to encourage research by academics with an interest in economic policy issues.

The Discussion Papers of the Centre are intended to make available to a wider audience a series of economic research studies. These studies will have either been commissioned by the Centre (for instance in conjunction with a conference held under the Centre's auspices) or undertaken by its research workers.

Discussion Papers will also be published where economic research work with relevance to policy has been undertaken by individual academics within the Australian National University - or where the Centre is able to act as a focal point for such research.

THE CENTRE WILL NOT HAVE ANY VIEWS ON POLICY;  
INDIVIDUALS WILL BE RESPONSIBLE FOR THEIR OWN VIEWS.

ALAN TAYLOR AND PETER PATTERSON

DISCUSSION PAPER NO. 11

JULY 1980

0981 4767

THE IMPACT OF UNEMPLOYMENT BENEFIT  
PAYMENTS ON THE LEVEL AND COMPOSITION  
OF UNEMPLOYMENT IN AUSTRALIA

R.G. Gregory and P.R. Paterson

Discussion Paper No. 11

July 1980

ISBN: 0 949838 10 1

TABLE OF CONTENTS  
Discussion Paper No. 11

	<u>Page</u>
ABSTRACT	1
1. INTRODUCTION AND SUMMARY	2
2. THE EFFECT OF BENEFIT PAYMENTS ON THE NUMBER OF BENEFIT RECIPIENTS	4
2.1 Inflow and Completed Duration Data	4
2.2 The Determinants of Inflows into Unemployment and Completed Duration	8
2.3 Estimation of the Inflow and Expected Duration Models for Unemployment Benefit Recipients	12
3. BENEFIT PAYMENTS AND TOTAL UNEMPLOYMENT	15
3.1 The Composition of Unemployment	16
3.2 Benefit Payments and the Eligible Unemployed	18
3.3 Benefit Payments and the Behaviour of Ineligible Groups	22
4. THE IMPACT OF BENEFIT PAYMENTS ON THE LEVEL AND COMPOSITION OF UNEMPLOYMENT	24
REFERENCES	30
 <u>FIGURES AND TABLES</u>	
Figure 1: Current Duration Data Grid	6
Figure 2: Unemployment Benefits Recipients: Inflow-Vacancies and Duration-Vacancies Relationships	10
Figure 3: Effects of Increases in Benefits Over the 1970s	27
Table 1: Unemployment Benefit Recipients: Inflow and Duration Equations	13
Table 2: Unemployment Categories: Estimates of Numbers Eligible and Receiving Benefit Payment, Eligible and Not Receiving Payment, and Ineligible	18
Table 3: Unemployment Benefit Recipients and ABS Eligible Unemployed: Current Employment Duration	19
Table 4: CES Unemployment: Inflow Equations	21
Table 5: ABS Unemployment: Eligible Unemployed Equations	23
Table 6: Total ABS Unemployment Equations	25
Table 7: Unemployment Response to the Benefit-to-Earnings Ratio	26

THE IMPACT OF UNEMPLOYMENT BENEFIT PAYMENTS ON  
THE LEVEL AND COMPOSITION OF UNEMPLOYMENT  
IN AUSTRALIA

R.G. Gregory\*

P.R. Paterson\*

ABSTRACT

There have been large changes in the unemployment situation in Australia over the 1970s. Between August 1970 and August 1979 the number of unemployed rose from less than 100 000 to almost 400 000, and the proportion of the unemployed receiving benefits increased from 15 per cent to 81 per cent. Coincident with these changes, there have been strong rises in the level of benefit payments. In this paper we examine the relationship between the changes in unemployment and the increases in real benefits. Special insight is gained by using a flow concept of unemployment.

It is found that the number on benefits increases when benefit payments rise, and the response is large. However, almost all of this increase comes from unemployed people who otherwise would not take up benefits. The increase in benefit payments does not have much effect on total unemployment.

It is estimated that the number on benefits would have been about 50 per cent lower if the real level of benefits had not changed over the decade. Total unemployment would have been 14 per cent lower.

(\*) The authors are Senior Fellow at the Australian National University and Officer-in-Charge at the Bureau of Agricultural Economics, Canberra. The views expressed are the authors' own and should not be interpreted as reflecting the views of the Bureau of Agricultural Economics. An earlier version of this paper was delivered to the ANZAAS Jubilee Congress, Adelaide, May 1980.

The observation that higher payments increase the number taking up benefits is no reason to argue that they be reduced. This question should be considered in the context of the total set of government economic and social policies.

#### 1. INTRODUCTION AND SUMMARY

During the 1970s the level of unemployment benefits measured in real terms increased relative to the low levels that prevailed during the sixties. For teenagers, unemployment benefits as a ratio of their average weekly earnings increased from 10 per cent in early 1972 to 40 per cent in mid-1973, a four-fold increase. This ratio remained fairly steady through to 1975 and since then has fallen, but it is still high by historical standards.

There have also been significant, but smaller and steadier, increases in the real level of benefit payments for adult groups. For adult males the ratio of unemployment benefit to average earnings rose from about 10 per cent in early 1972 to 20 per cent in 1978, while for adult females the ratio changed from 15 per cent to almost 30 per cent.

These changes in benefit payments have coincided with large changes in unemployment. The number on benefits has increased from 12 000 in August 1970 to 304 000 in August 1979, a twenty-five-fold increase. At the same time total unemployment<sup>(1)</sup> has risen from 78 000 to 374 000, a five-fold increase. It follows that the proportion of the unemployed on benefits has increased from 0.15 in August 1970 to 0.81 in August 1979.

The coincidence of the increase in benefits and the large increases in the number and proportion of the unemployed receiving benefits might be interpreted as evidence of a strong influence of benefit payments on the level and composition of unemployment. However, other influences affect the number and proportion of the unemployed receiving benefits. The most important of these is likely to be the long and continuing recession in the growth of employment opportunities since

(1) Unemployment as measured by the ABS Labour Force Survey.

1974.<sup>(2)</sup> A low rate of employment growth increases the duration of unemployment spells and this increases the proportion of the unemployed on benefits.<sup>(3)</sup> Consequently, the analysis should especially take account of the affect of the recession on the duration of unemployment.

In Part 2 we estimate the effect of benefits on the inflows and duration of those who receive benefits. Benefit recipient data are more suitable for flow analysis than other measures of unemployment.<sup>(4)</sup> We find that the inflow and unemployment duration of those on benefits respond positively to increases in benefits. Under conditions that prevailed during the mid-1970s, a 10 per cent increase in benefits relative to average earnings would increase the number receiving unemployment benefits by about 10 per cent. There are differences in this response between males and females and for different age groups.

(2) Between February 1974 and February 1979, for example, employment grew by 116 000 whereas in the five years before February 1974 the comparable figure was 750 000.

(3) An increase in the duration of unemployment is associated with an increase in the proportion of the unemployed who receive benefits via at least three mechanisms. First, when a slump in economic activity occurs some of the unemployed will be 'discouraged' and drop out of the measured labour force. Those receiving benefits, however, will not leave the labour force for to do so will deprive them of income. Consequently, the duration of unemployment for those on benefits will lengthen relative to the groups ineligible for benefits and, as a result, the proportion of the measured unemployed receiving benefits will increase. Second, the longer the duration of unemployment that individuals expect the more likely it is that those eligible will avail themselves of benefits. Third, to receive benefit payments, it is necessary to be unemployed for at least one week. When the duration of unemployment increases, more of those entering unemployment will stay longer than a week and the proportion of the unemployed available for benefits will increase.

(4) There are three measures of unemployment available on a time series basis: the number unemployed as estimated by the Australian Bureau of Statistics on the basis of a household survey, the number registered at the Commonwealth Employment Service and the number on unemployment benefits.

In Part 3 the change in the number on benefits is related to total unemployment. We find no evidence of a greater inflow into total unemployment in response to increased benefits. Rather, all the inflow response to increased benefits occurs within the unemployment pool as a larger proportion of the unemployed exercise their right to benefits when benefits increase. This finding means that total unemployment is less responsive to changes in benefits than the number of benefit recipients. This result is reinforced by our analysis of duration which suggests that in response to an increase in benefits the duration of unemployment of the group ineligible for benefits does not increase proportionately with that of the eligible group.

In Part 4 we draw our results together and make some concluding remarks. Before we begin the analysis, however, we wish to stress that a relationship between benefit payments and the level and composition of unemployment does not provide sufficient grounds for settling benefits at any particular level. The range of issues to be considered in determining an appropriate level of benefits is very wide and includes most importantly the need to support those experiencing unemployment not of their own choice. It should be remembered that the level of unemployment benefits in Australia is still low by international standards (Blaustein and Craig 1977).

## 2. THE EFFECT OF BENEFIT PAYMENTS ON THE NUMBER OF BENEFIT RECIPIENTS

This section is divided into three parts. First, we discuss the concepts of inflows and completed duration of unemployment and their measurement. Second, a general model is developed to explain inflows to unemployment and the average completed unemployment duration. Third, the model is fitted to unemployment benefit data.

### 2.1 Inflow and Completed Duration Data

Inflow to unemployment is the number entering the pool each period. Completed duration is the elapsed time between commencement and

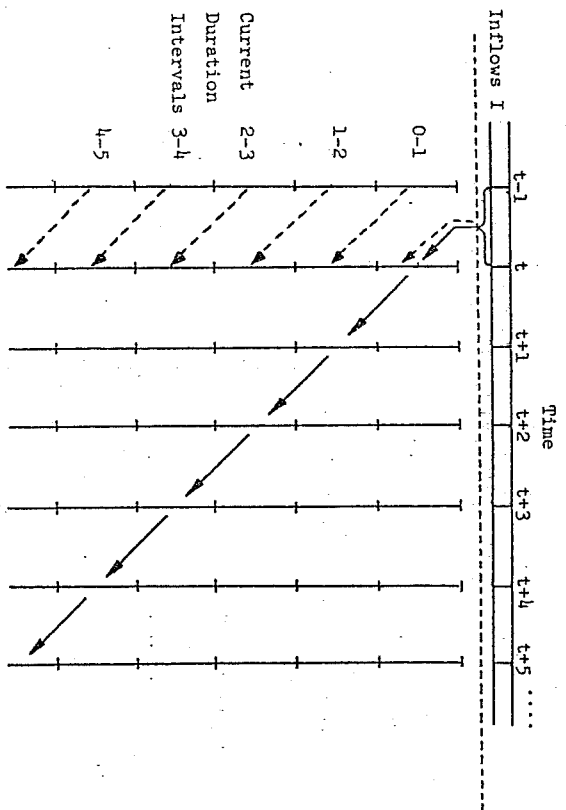
termination of an unemployment spell. Inflow data are directly available for those on benefits, but completed duration data are not. The duration data available are 'snapshot' data on current duration, giving a breakdown of the stock of unemployment at a certain point in time into those who have been in the pool for different lengths of time. Each of the unemployed has not completed their current unemployment spell. But under certain conditions, current duration data can be used to estimate completed duration.

If we have regular snapshot observations on current duration with the width of the duration intervals equal to the length of the accounting period (the time between observations), and we know inflows each period, the completed duration experience of the unemployed can be readily measured. The technique can be inferred from Figure 1. The vertical lines represent the points in time at which unemployment is observed. The sections marked along these lines represent the duration intervals. The number in the  $(0-1, t)$  interval is the number unemployed less than 1 month at time  $t$ , the number in the  $(1-2, t+1)$  interval is the number unemployed 1 to 2 months at time  $t+1$ , etc. The block above the main grid represents inflows each period.

By moving diagonally through the grid (as shown by the heavily marked arrows) we can determine how many individuals leave after different lengths of unemployment. Therefore the number in the  $(0-1, t)$  interval shows the number of the  $t$ th period inflow group still unemployed at the end of the first period. The number in the  $(1-2, t+1)$  interval shows the number left one period later, and so on. In this way we are documenting the unemployment experience through time of the inflow group of period  $t$ .

The information obtained from this procedure can be expressed as duration-specific retention rates. These are the proportions of those unemployed a certain length of time at the end of one period who are still unemployed at the end of the next period. These retention rates can be used to calculate the average duration of completed spells.

Figure 1: CURRENT DURATION DATA GRID



Benefit recipient data allow the construction of a 3-month grid, with consecutive quarterly observations on the duration intervals less than 3 months, 3 to 6 months and 6 months and over. From these data the duration-specific retention rates

$$p_{t'}^1 p_{t+1}^1 p_{t+2}^2$$

can be calculated, showing respectively the proportion of the inflow group over period t that is still unemployed at the end of period t, the proportion of those unemployed three months or less at the end of period t that is still unemployed at the end of period t+1, and the proportion of those unemployed over three months at the end of period t+1 that is still unemployed at the end of period t+2.

The total unemployment experience of the tth period inflow, in terms of three-monthly units, can be approximated as

$$(1) \quad U = I_t \cdot p_{t'}^1 + I_t \cdot p_{t'}^1 p_{t+1}^1 + I_t \cdot p_{t'}^1 p_{t+1}^1 p_{t+2}^2$$

where  $I_t \cdot p_{t'}^1$  is the number experiencing at least some unemployment,  $I_t \cdot p_{t'}^1 p_{t+1}^1$  the number experiencing at least three months unemployment, and

$\frac{p_{t+2}^2}{1 - p_{t+2}^2}$  the number experiencing six months or more unemployment (the  $\frac{1}{1 - p_{t+2}^2}$  term comes about from assuming that in

the three-monthly intervals after six months the probability of leaving unemployment remains constant at  $p_{t+2}^2$ . Grouping terms, (1) can be written as

$$(2) \quad U = I_t (p_{t'}^1 + p_{t'}^1 p_{t+1}^1 + p_{t'}^1 p_{t+1}^1 \frac{p_{t+2}^2}{1 - p_{t+2}^2})$$

or

$$(3) \quad U = I_t D_{ca}$$

where  $D_{ca}$  is the completed actual average duration of unemployment. The total unemployment experienced by the inflow group  $I_t$  is the product of the number in the inflow group and their average completed duration. (5)

In our calculations of average duration of unemployment we utilize a slightly different concept. For the completed actual average duration we substitute the expected average duration of unemployment upon entry into the pool. This is derived from the retention rates calculated from two consecutive periods rather than from retention rates down the diagonal. Therefore in terms of Figure 1, the retention rates are calculated from the dotted arrows between  $t-1$  and  $t$ . If the labour market conditions generating these current retention rates were not to change, the expected and average completed duration would be the same.

## 2.2 The Determinants of Inflows into Unemployment and Completed Duration

Historically, a strong inverse relationship between the number unemployed and the number of job vacancies has been observed. In the early 1970s this relationship began to shift outwards for all measures of unemployment available in Australia - ABS survey unemployment (Hughes 1975), CES unemployment (Hughes 1975; Harper 1980) and benefit recipients (Paterson 1979). (6)

- (5) In general average completed duration is less than average current duration. For example, for 1977-78, the average current duration for males 21 years and over on benefits was 28.8 weeks. Average completed duration was 18.8 weeks. This property arises because the probability of leaving unemployment falls with increased time in the unemployment pool (see Paterson 1979).
- (6) The outward shift in the unemployment-vacancies curve has also been observed in the U.K., Germany, France, Sweden and the Netherlands. See Gruen (1977).

For benefit recipients it is apparent that outward shifts have occurred in both the inflow-vacancies and duration-vacancies relationships (Figure 2). To explain these shifts, Paterson (1979) has developed a theoretical model similar to that of Holt (1970). It will not be formally derived here.

Inflows and completed duration are related to vacancies and five shift variables. The shift variables are:

- Benefit to earnings ratio (B/E)

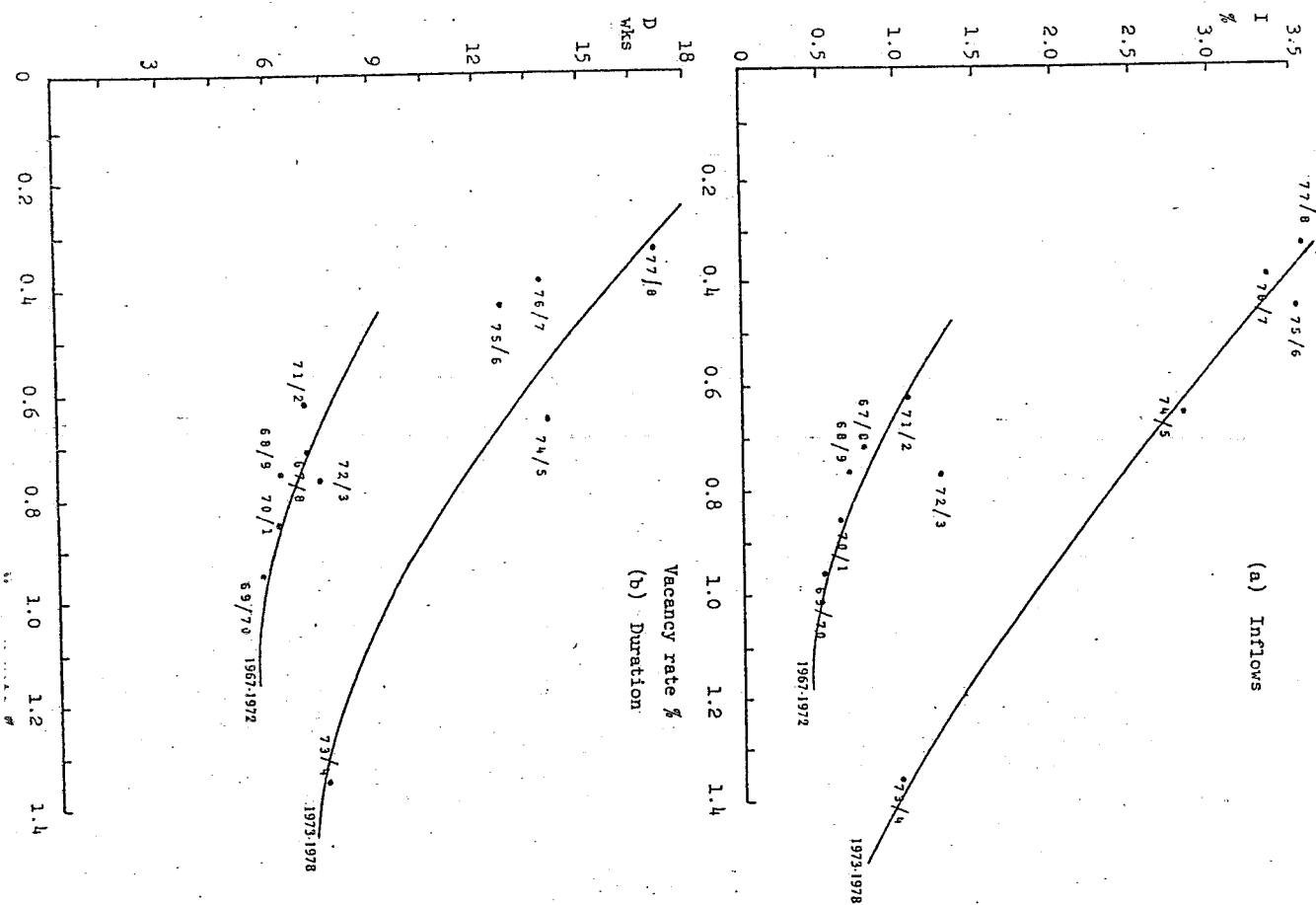
An increase in the level of benefit payments relative to average weekly earnings reduces the cost of being unemployed. Therefore an increase in B/E should increase both inflows and duration.

- Change of eligibility requirements (ER)

Since January 1976 those quitting their previous job have been required to wait 6 weeks before being eligible for benefits, rather than the previous one week. This change could reduce benefit inflows through at least three mechanisms. First, employed people will be less willing to quit their job if they have to wait 6 weeks to receive benefits. Second, some of those who quit will find a job before the required 6 week period elapses. Finally, people on benefits will be less willing to take up a job for a week or two if they face 6 weeks without income when they quit. These three factors would shift the inflow-vacancies relationship to the left.

The duration of unemployment might also be affected by a change in eligibility requirements. If the probability of leaving unemployment declines with increased duration, then those unemployed 6 weeks would take longer additional time to find a job than those unemployed only one week. The average completed unemployment duration of those receiving benefits would increase. In addition, if people tend to stay in the benefit pool continuously rather than accept jobs from which they soon quit, the average duration should increase. These factors would shift the duration-vacancies relationship to the right.

12.  
 Figure 2: UNEMPLOYMENT BENEFITS RECIPIENTS:  
 INFLOW-VACANCIES AND DURATION-VACANCIES RELATIONSHIPS



Real wage deviation from trend (RW)

During the mid-1970s the Australian economy experienced an explosion of real wages, which may have induced firms to change their policies regarding retention of workers when faced with a fall in demand. With real wages rising faster than productivity and the cost of holding workers rising relative to recruiting costs and firm-specific human capital investment costs, firms may have been less willing than before to maintain employment when the economy slumped. This would cause inflows to unemployment, and perhaps duration, to increase relative to vacancies. In addition, higher real wages relative to past trends may increase the supply of labour.

Immigration (IM)

Hughes (1975) has suggested that a sharply reduced migration intake led to the 1972-73 upward displacement of the unemployment-vacancies pattern. He argues that a reduced migration intake will hinder the efficiency of the labour market. It will interfere with the traditional recruitment activity of firms that usually employ large amounts of migrant labour; it will reduce average worker mobility; and it will reduce the supply of those willing to accept the less socially acceptable jobs. Each of these factors increases the mismatching in the labour market and vacancies will increase relative to unemployment.

Proportion of employment in manufacturing (MP)

Since early 1974 the proportion of civilian wage and salary earners employed in the manufacturing sector has contracted sharply. The share of manufacturing employment accounted for by certain industries, for example footwear, clothing and textiles, has also fallen. These large and rapid changes are likely to worsen the match between unemployment and vacancies across occupational and regional compartments in the economy. This implies an increase in inflows and unemployment duration relative to vacancies.

### 2.3 Estimation of the Inflow and Expected Duration Models for Unemployment Benefit Recipients

Inflow (divided by the labour force) and expected completed duration variables have been regressed on vacancies and the five shift variables for junior and adult males and females. (7) For all but the proportion of employment in manufacturing variable, age- and sex-specific measures are used for the explanatory variables (here separate variables for males and females only are used). All equations are estimated using quarterly data covering the period I.1967 to II.1978. Dummy variables are included to capture regular seasonal movements. The equations are estimated in double logarithm form, using Ordinary Least Squares.

Both the inflow and duration equations fit the data reasonably well (Table 1). For the inflow equations the lowest coefficient of determination (adjusted for degrees of freedom) is .95 and the highest is .98, while for duration the lowest and highest are .81 and .87, respectively.

Serial correlation in the residuals was evident for some equations, in particular the original inflow equations for juniors. There appears to be two sources of the problem. First, the residuals of the period 1968-71 tend to be negative. To allow for this we included in the regression vacancies for the I.1967 to I.1971 period as a separate variable. This variable proved to be statistically significant and reduced the serial correlation considerably. (8) Second, there also appears to be a changing seasonal pattern. To allow for this an additional seasonal dummy was included for the second quarter of the early years of the data series when unemployment inflows

(7) Department of Social Security and CES define juniors as those less than 21 years of age.

(8) This adjustment suggests that not all the shift of the inflow-vacancy relationship has been explained by the original set of variables.

Table 1: UNEMPLOYMENT BENEFIT RECIPIENTS: INFLOW AND DURATION EQUATIONS

(i) INFLOWS(a)										
	V	V <sub>-1</sub>	VD	B/E <sub>-1</sub>	ER	RW	IMM	MP	R <sup>2</sup>	DW
Male	-0.52		-0.12	0.23	-0.20	0.88	-0.09	-4.56	0.97	2.03
> 21	(-3.88)		(-4.37)	(1.78)	(-1.78)	(1.08)	(-0.75)	(3.60)		
Male	-1.04	0.23		0.74	-0.38	1.72	-0.28	-3.39	0.95	2.11
> 21	(-4.55)	(1.00)		(2.93)	(-2.91)	(1.69)	(-1.84)	(-2.51)		
Female	-0.39		-0.09	0.28	-0.07	0.89	-0.07	-1.80	0.98	1.25
> 21	(-3.83)		(-4.80)	(3.91)	(-0.80)	(2.09)	(-0.52)	(-4.56)		
Female	-1.25	0.60		0.74	-0.32	1.96	-0.57	-0.01	0.96	2.41
> 21	(-4.40)	(2.19)		(2.57)	(-2.37)	(2.73)	(-2.90)	(-0.01)		

(ii) DURATION(b)										
	V	V <sub>-1</sub>	B/E	RW <sub>-1</sub>	IMM	MP	R <sup>2</sup>	DW		
Male	-0.35	0.18	0.14	2.63	0.23	-3.04	0.86	1.83		
> 21	(-2.14)	(1.31)	(1.25)	(2.55)	(1.92)	(-2.28)				
Male	-0.58	0.42	0.67	1.51	0.28	-3.02	0.87	2.44		
> 21	(-2.56)	(1.92)	(3.06)	(1.35)	(2.09)	(-2.75)				
Female	-0.63	0.44	0.27	0.76	0.30	-1.01	0.83	1.84		
> 21	(-2.84)	(2.65)	(2.61)	(1.04)	(1.82)	(-2.10)				
Female	-0.61	0.39	0.63	0.26	0.24	-1.12	0.81	2.19		
> 21	(-2.05)	(1.48)	(2.40)	(0.33)	(1.33)	(-1.70)				

(a) Dependent variable is the number commencing benefit receipt each quarter divided by the labour force.

(b) Dependent variable is expected completed duration of benefit receipt of quarterly inflow groups.

V CES vacancy rate (Source: Dept. of Employment and Youth Affairs 1979)

VD CES vacancy rate I.1967 to I.1971

B/E Ratio of benefit payments to average weekly earnings (Source: Department of Social Security 1979; ABS 1979a)

ER Eligibility requirement dummy - zero before I.1976 and unity afterwards

RW Deviation of minimum real wages from trend (Source: ABS 1979c)

IMM Settler arrivals (Source: Dept. of Immigration and Ethnic Affairs 1979)

MP Proportion of employment in the manufacturing sector (Source: ABS 1979b)

R<sup>2</sup> Coefficient of determination adjusted for degrees of freedom

DW Durbin-Watson statistic

Constant and seasonal dummies not reported.

were low. (9) To a large extent these two adjustments account for the serial correlation, but in the junior female equation the Durbin-Watson statistic is in the indeterminate range at the 5 per cent significance level. (10)

Variables in general enter with the expected sign. The coefficients attached to the current vacancies variable are statistically significant at the 5 per cent level for all equations. The estimated coefficients for the benefit to earnings ratio and the share of manufacturing in employment are significant in six of the eight cases. The other variables do not fare quite so well. Eligibility requirements appear not to affect the duration of unemployment, and this variable has been dropped from these equations.

These regression results contain a large amount of information about the relationships between inflows, duration and the various cyclical and shift variables. This is considered in detail elsewhere (Peterson 1979). Here we are primarily interested in the effect of the benefit-to-earnings ratio. This variable has a significant positive coefficient in the inflow and duration equations for all but junior males. For this group the coefficients on the benefit variable in both the inflow and duration equations are positive, but not significant at the 5 per cent level.

(9) We suggest that the seasonal pattern of inflows can be thought of as the outcome of a normal seasonal rate of inflows for those teenagers who have been in the Labour force for some time - this seasonal pattern is similar to that of adults - and in addition a seasonal rate of inflows for school leavers which exaggerates the normal seasonal pattern. So when the unemployment level is low school leavers are a more important component of inflows and this changes the aggregate seasonal pattern.

(10) We experimented with a wide range of possibilities to remove the serial correlation, including the introduction of lag structures on the independent variables. However, there is a good reason why we should not be completely successful at eradicating the problem. Over the data period the ease with which unemployment benefits have been granted has varied. These changes will tend to introduce serial correlation into the regressions and it is to be expected that teenagers would be most affected.

The elasticity of both inflows and duration with respect to the benefit to earnings ratio is considerably less for juniors than adults. The inflow elasticity is .23 and .28 for junior males and females respectively, and .74 for both adult groups. The duration elasticity is .14 and .27 for junior males and females, and .67 and .63 for adults. For junior males the inflow elasticity is considerably higher than the duration elasticity, but for the other groups the estimated inflow and duration elasticities are of similar size.

The total elasticity of benefit recipients can be approximated by the sum of the inflow and duration elasticities, as under stationary condition the stock of unemployment is equal to the product of inflows and expected duration. The stock level elasticities are 0.37 and 0.55 for junior males and females respectively, and 1.41 and 1.37 for adult males and females (see Table 7). With large changes in the benefit to earnings ratio over time, these substantial elasticities imply a strong impact of benefit payments on the number on benefits.

### 3. BENEFIT PAYMENTS AND TOTAL UNEMPLOYMENT

Not all the unemployed are eligible for benefit payments, and not all those eligible are on benefits. Therefore the total unemployment pool,  $U$ , consists of three groups of people - those eligible for unemployment benefits and receiving payment,  $U_{ER}$ ; those eligible for unemployment benefits and not receiving payment,  $U_{ENR}$ ; and those not eligible for benefits,  $U_{NE}$ :

$$(4) \quad U = U_{ER} + U_{ENR} + U_{NE} .$$

The effect of benefits on total unemployment will depend on the response of each of these three groups, and not just the impact on those receiving payments.

Data are not available to enable an analysis of the two non-benefit groups in terms of inflows and duration. Furthermore, there is no comprehensive total unemployment series that enables a consistent

division into the three groups. Rather, there are a number of overlapping data series from different agencies: the unemployment benefit recipient data from the Department of Social Security, the number registered at the Commonwealth Employment Service and the number of unemployed as estimated by the Australian Bureau of Statistics. Analysis of what data there are, however, shows that the response of total unemployment to benefit payments is overstated if it is assumed that non-benefit groups are unaffected.

The remainder of Part 3 is broken into three sections. In the first section the numbers in the different groups U<sub>1</sub>, U<sub>2</sub> and U<sub>3</sub> are estimated. The second section examines changes between the eligible groups and how these relate to benefit payments. Finally in the third section the impact of benefit payments on the ineligible groups is examined.

### 3.1 The Composition of Unemployment

Total unemployment is taken from the ABS estimate. The group eligible for benefits is measured as all males and single females seeking full time work and unemployed 2 weeks or more. The ineligible group is the remainder - all males and females seeking part time work, all married females and any job seekers unemployed less than two weeks. The number in the eligible group receiving benefits is taken from Department of Social Security data. It should be noted, however, that the ABS definition of unemployed will exclude some benefit recipients and will also be subject to sampling error so there will not be a true equality between the right and left hand side of equation (4). The residual group, U<sub>4</sub>, is particularly affected towards the end of the period. However we believe that the approximations involved are adequate for analysing broad changes in the numbers of unemployed in each group over the decade.

Estimates of the number of people in each of the three categories of unemployment are given in Table 2. At August 1970, 15 per cent of the unemployed received benefits, 29 per cent were eligible for benefit

payments but were not paid, and 56 per cent were ineligible for benefits. The smallest group of unemployed were those eligible for benefits and receiving payment. This holds for males and females.

By August 1973 the proportion of the unemployed eligible for unemployment benefits had not changed but the proportion eligible and receiving benefits had doubled. This large shift towards receiving benefits within the eligible group coincided with the increase in benefit payments and is apparent for both males and females.

By August 1979 the proportion of the unemployed eligible and receiving benefits had increased to 81 per cent and was by far the largest group. For males the number receiving unemployment benefits exceeded the estimate of total unemployed, including those ineligible for benefits, as measured by the ABS labour force survey. Therefore the eligible group who were not receiving benefits as calculated in this study become a negative proportion. This occurred because the definition of unemployment used by the Labour Force Survey excludes some of the unemployed receiving benefits, either because they worked for one hour or more as well as receiving benefits, or did not meet the stringent definition of actively seeking work that is employed by the ABS. (11)

Obvious problems exist with these numbers, but they do give a broad picture of unemployment changes during the 1970s. They show that over the decade the largest changes have occurred within the groups eligible for benefit payments. Those taking up benefit payments have increased from the smallest to the largest group of unemployed. By August 1979 apparently almost all those eligible for unemployment benefits exercised their right to receive payment.

(11) There is also the possibility of fraud and sampling error.

Table 2: UNEMPLOYMENT CATEGORIES: ESTIMATES OF NUMBERS ELIGIBLE AND RECEIVING BENEFIT PAYMENT, ELIGIBLE AND NOT RECEIVING PAYMENT, AND INELIGIBLE

	Number			Proportion of total unemployment		
	UER	UENR	UNE	UER	UENR	UNE
	'000	'000	'000			
<b>Males</b>						
Aug 1970	8.1	16.9	11.7	0.22	0.46	0.32
Aug 1973	20.4	10.6	20.3	0.40	0.21	0.39
Aug 1979	208.4	-37.0(a)	24.7	1.06	-0.19	0.13
<b>Females</b>						
Aug 1970	3.9	5.8	31.8	0.09	0.14	0.77
Aug 1973	11.3	2.7	40.5	0.21	0.05	0.74
Aug 1979	95.4	-10.9	93.2	0.54	-0.06	0.52
<b>Total</b>						
Aug 1970	12.0	22.7	43.5	0.15	0.29	0.56
Aug 1973	31.7	13.3	60.8	0.30	0.13	0.57
Aug 1979	303.8	-47.9	117.9	0.81	-0.13	0.32

(a) Proportions less than zero and greater than one are due to mismatching of unemployment definitions.

UER - eligible receiving benefits; UENR - eligible not receiving benefits; UNE - not eligible.

Source: Estimated from data supplied by the Department of Social Security and the Australian Bureau of Statistics.

This change cannot be explained only by the changing duration of unemployment of those eligible for benefits. In all duration categories the propensity to take up benefits has increased (Table 3).

### 3.2 Benefit Payments and the Eligible Unemployed

#### Inflows

The increased inflow to benefit receipt in response to increased benefit payments could come about from two different mechanisms. Increases in benefits could attract more people into the benefit

Table 3: UNEMPLOYMENT BENEFIT RECIPIENTS AND ABS ELIGIBLE UNEMPLOYED: CURRENT UNEMPLOYMENT DURATION

Duration intervals	March 1970 UB/ABS	March 1974 UB/ABS	March 1979 UB/ABS
<b>Males</b>			
<4	0.13	0.22	0.62
>4 and <13	0.17	0.50	0.92
>13	0.62	1.26	1.16
<b>Females</b>			
<4	0.17	0.29	0.55
>4 and <13	0.22	0.51	0.99
>13	0.90	1.52	1.30
<b>Total</b>			
<4	0.14	0.24	0.59
>4 and <13	0.19	0.50	0.95
>13	0.71	1.34	1.19

Source: See Table 2.

recipient pool from outside the unemployment pool. This would increase total unemployment. Alternatively, the increased inflows may come from the unemployed eligible for benefits but not exercising that right. This would not increase total unemployment. What is the relative influence of these two mechanisms?

Although there are no data on inflows into total unemployment, as measured by the ABS, some progress may be made in providing an answer to this question by analysing the inflow data for unemployment registrations at the Commonwealth Employment Service. To receive unemployment benefits an unemployed person must register with the Commonwealth Employment Service. Hence, if increased benefits increase the inflow from outside the unemployment pool, this must be detectable in the CES inflow data.

CES inflows for the four labour market groups are regressed on the same set of explanatory variables as for benefit inflows, using the same

functional form and over the same data period. (12) Again we are primarily interested in the coefficients attached to the benefit to earnings variable. The striking result is that for all groups the coefficient on the benefit to earnings variable is not significantly different from zero (Table 4).

This result implies that inflows from outside the unemployment pool are not affected by changes in benefit payments. The large increases in inflows into the benefit pool apparently come from the unemployed exercising their right to take up benefits. This is consistent with the large switching between the stocks of unemployed that was observed in Table 2. The number receiving benefits increased from 34 per cent of the eligible group in August 1970 to 70 per cent in August 1973, and 119 per cent in August 1979. Much of the switching takes place after the large benefit changes in early 1973 but before the onset of the current recession.

#### Duration

The positive duration response of those on benefits to rises in benefit payments will increase total unemployment, provided the unemployment duration of the other groups does not respond in an offsetting manner. (13) We cannot directly test for this as we do not have a measure of expected completed duration for the eligible group not receiving benefits. However, some indirect evidence can be brought to bear. The ABS unemployment stock of all eligible

(12) For ABS measures of unemployment, juniors are those less than 20 years old.

(13) The expected completed duration of the eligible not receiving group might fall when benefit payments increase for at least two reasons. First, those eligible unemployed who switch to benefits when payments increase might be those who would experience longer-than-average unemployment spells. Second, if those receiving benefits have a tendency to stay unemployed longer when payments rise, employment prospects for other job seekers will improve and therefore lower their duration of unemployment.

Table 4: CES UNEMPLOYMENT : INFLOW EQUATIONS (a)

	V	V <sub>-1</sub>	VD	B/E <sub>-1</sub>	ER	RW	IMM	MP	R <sup>2</sup>	DW
Male v 21	-0.06 (-0.90)		-0.07 (-5.52)	0.09 (1.36)	-0.07 (-1.16)	-0.17 (-0.42)	-0.01 (-0.22)	-1.69 (-2.71)	0.95	1.82
Male v 21	-0.23 (-3.54)	-0.02 (-0.33)		0.07 (1.01)	-0.20 (-5.72)	0.54 (1.90)	-0.05 (-1.26)	-1.67 (-4.42)	0.95	2.30
Female v 21	-0.05 (-1.11)		-0.05 (-6.06)	-0.02 (-0.54)	0.06 (1.45)	0.94 (4.60)	-0.06 (-0.89)	-1.01 (-5.33)	0.98	2.43
Female v 21	-0.50 (-5.35)	0.08 (0.83)		0.002 (0.02)	-0.24 (-5.33)	1.05 (4.41)	0.22 (3.43)	0.27 (1.05)	0.84	1.67

(a) Dependent variable is the number registering as unemployed with the CES each quarter divided by the labour force.

Independent variables defined in Table 1.

workers can be tested for responsiveness to changes in benefit payments. Given that the inflow response to benefits does not affect total unemployment (Table 4), any positive response of the stock must work through duration. If the stock of eligible unemployment rises with benefit payments, the duration response of those on benefits must be outweighing any duration response in the opposite direction from the eligible group not receiving benefits. If, however, the total eligible stock does not rise when benefit payments increase, then completed duration of the eligible not receiving group must fall to offset the increase in benefit recipient duration.

The estimated equations for the stock of eligible unemployment are presented in Table 5. The benefit to earnings coefficient is not significantly different from zero for the junior groups, suggesting an offsetting fall in the duration of the eligible not receiving group when benefit payments rise. The positive coefficient for adults is significant but small, suggesting considerable offsetting but some net duration effect still operating. Therefore it would appear that for juniors the duration response of those on benefits to increased benefit payments does not lead to higher unemployment of the group eligible for benefits although it does to some extent for adults.

### 3.3 Benefit Payments and the Behaviour of the Ineligible Groups

Are those ineligible for benefits affected by benefit payments? We have suggested that increased benefit payments cause an increase in the average unemployment duration of those receiving benefits. To the extent that the labour markets for the eligible and ineligible groups intersect, the increased duration response to benefits will improve the job prospects for others and perhaps lead to reduced unemployment for the ineligible groups. Therefore inflows into the ineligible unemployment pool, and duration in the pool, may fall with increased benefit payments.

It would be of interest to test this improved job opportunity proposition directly. However, inflow and completed duration measures

Table 5: ABS UNEMPLOYMENT : ELIGIBLE UNEMPLOYED EQUATIONS(a)

	V	V <sub>-1</sub>	VD	B/E-1	ER	RW	IMM	MP	R <sup>2</sup>	DW
Male < 20	-0.16 (-1.65)		-0.04 (-2.28)	0.09 (1.00)	0.07 (0.80)	-1.44 (-2.50)	-0.04 (-0.57)	-7.33 (-8.12)	0.97	1.50
Male ≥ 20	-0.59 (-3.73)	0.11 (0.68)		0.38 (2.20)	-0.13 (-1.40)	-0.17 (-0.25)	-0.11 (-1.09)	-4.19 (-4.49)	0.96	1.53
Female < 20	-0.30 (-2.64)		-0.01 (-0.27)	0.12 (1.25)	-0.07 (-0.81)	0.36 (0.74)	-0.04 (-0.23)	-2.59 (-5.77)	0.96	1.25
Female ≥ 20	-0.61 (-2.74)	-0.35 (-1.61)		0.60 (2.66)	-0.25 (-2.37)	0.89 (1.59)	0.08 (0.50)	-0.66 (-1.08)	0.95	1.58

(a) Dependent variable is the eligible unemployment rate.

Independent variables defined in Table 1.

for the ineligible groups are not available. Instead we look at the stock - the combined effect of inflows and duration. The stocks of unemployment for the ineligible groups are often very small, especially for juniors, where for the first half of the data period the estimated numbers are less than 4000 and therefore not published by the ABS. Consequently we regress the stock of total unemployment on the same set of variables as used in the benefit recipient equations and derive implied behaviour for the ineligible groups. These results are shown in Table 6.

The estimated equations fit the data well. For adults, total unemployment exhibits a significant positive relationship with benefit payments at the 5 per cent level. For adult males the estimated benefit elasticity of total unemployment is similar to the benefit elasticity of eligible unemployment. This probably arises because the ineligible group is so small. For adult females the benefit elasticity of total unemployment is half the elasticity of eligible unemployment, suggesting that ineligible unemployment does not respond to benefits. For juniors the unemployment benefit coefficients for total unemployment are statistically insignificant, as they were for the eligible group. This suggests that for juniors all the response to benefits takes place within the unemployment pool and within the group of eligible unemployed. (14) All the unemployment benefit elasticities are presented in Table 7.

#### 4. THE IMPACT OF BENEFIT PAYMENTS ON THE LEVEL AND COMPOSITION OF UNEMPLOYMENT

We are now in a position to combine our results and use the elasticities of Table 7. The effect of benefit payments on the level of total unemployment is illustrated by calculating the level of unemployment that would have occurred if benefit payments relative to

(14) This result does not accord with Gregory and Duncan (1979) who have suggested that the number of unemployed juniors may increase as benefits increase. However, their results were based on participation rates and a different data period.

Table 6: TOTAL ABS UNEMPLOYMENT EQUATIONS(a)

	V	V <sub>-1</sub>	VD	B/E <sub>-1</sub>	ER	RW	IMM	MP	R <sup>2</sup>	DW
Male <20	-0.19 (-1.99)		-0.06 (-3.12)	0.06 (0.72)	0.07 (0.85)	-0.87 (-1.54)	-0.04 (-0.44)	-5.33 (-6.05)	0.97	1.41
Male ≥20	-0.47 (-3.22)	0.02 (0.14)		0.37 (2.28)	-0.15 (-1.85)	-0.15 (-0.23)	-0.10 (-1.06)	-4.20 (-4.90)	0.96	1.63
Female <20	-0.20 (-2.42)		-0.01 (-0.70)	-0.05 (-0.68)	-0.11 (-1.59)	0.81 (2.30)	-0.11 (-0.98)	-2.54 (-7.76)	0.98	1.38
Female ≥20	-0.31 (-2.55)	-0.12 (-0.99)		0.29 (2.35)	-0.27 (-4.67)	0.48 (1.54)	0.05 (0.63)	-0.81 (-2.38)	0.95	1.79

(a) Dependent variable is the total ABS unemployment rate.  
Independent variables defined in Table 1.

Table 7: UNEMPLOYMENT RESPONSE TO THE BENEFIT-TO-EARNINGS RATIO

	Benefit Recipient Elasticities		CES Inflows elasticity	Eligible stock elasticity		Total stock elasticity
	Inflows	Duration		stock	elasticity	
Male < 21	0.23**	0.14	0.09	Male < 20	-0.09	0.06
Male ≥ 21	0.74*	0.67*	0.07	Male ≥ 20	0.38*	0.37*
Female < 21	0.28*	0.27*	-0.02	Female < 20	0.12	-0.05
Female ≥ 21	0.74*	0.63*	0.002	Female ≥ 20	0.60*	-0.29*

\* Statistically significant at the 5 per cent level.  
 \*\* Statistically significant at the 10 per cent level.

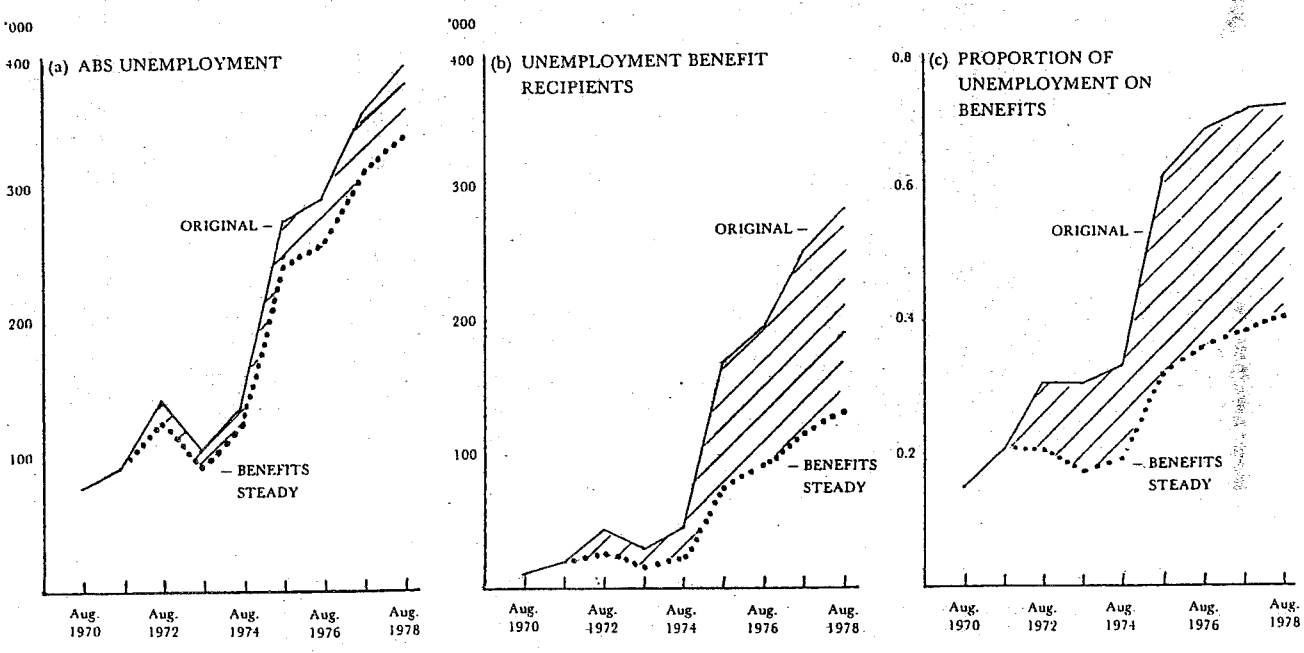
earnings had not increased over the 1970s. This is then compared to actual total unemployment. (15) We calculate that if benefit payments relative to earnings had not changed over the 1970s, then in May 1978 unemployment would have been 14 per cent lower than it actually was (Figure 3(a)).

We can perform a similar exercise for unemployment benefit recipients (Figure 3(b)). It appears that the beneficiary stock would have been about half its actual size over the latter part of the decade if benefit payments relative to earnings had not risen.

It is obvious from a comparison of Figures 3(a) and 3(b) that the largest effect of unemployment benefits is on the stock of benefit

(15) The tentative nature of our results must be kept in mind at all times. The numbers calculated below are to be interpreted as indicative of broad movements only of the effects of benefits on unemployment. All variables except the benefit to earnings ratio are assumed to follow their historical path, with no interactions.

Figure 3: EFFECTS OF INCREASES IN BENEFITS OVER THE 1970s



recipients. The primary influence of changes in benefit payments therefore is on flows within the unemployment pool rather than flows in and out of total unemployment.

The results of the two simulations are combined in Figure 3(c). At August 1978, 72 per cent of the unemployed were receiving benefit payments. If benefit payments relative to earnings had not risen over the decade then 40 per cent of the unemployed would have been on benefits. (16)

In conclusion, it appears to us that the broad outline of our story as summarised in Figure 3 is probably correct - the main changes in response to benefit payments occur within the total unemployment pool. However, it is obvious from a close examination of the regressions that there is a great deal of further work required to understand better the flows through the unemployment pool and there are many reasons why the actual estimates provided in the paper should be regarded as a first step. We make two points to emphasise this.

First, regressions describe historical experience and do not necessarily describe the response to future variations. High unemployment, long durations and large numbers taking up benefits may change social attitudes towards unemployment benefits and hence change the relationships. Future changes in benefit payments may not have the same effect as in the past.

(16) In our earlier work we regressed the proportion of the unemployed receiving benefits on the benefit to earnings ratio and expected duration of benefit receipt. This type of analysis gives similar results. The following are typical regressions:

	B/E	D	$\bar{R}^2$	D.W.
males	0.028 (6.06)	0.027 (4.82)	0.88	1.96
females	0.017 (8.67)	0.009 (3.38)	0.86	1.79

Second, the large changes in unemployment benefits and in the proportion of the unemployed receiving benefits occurred during the 1972-75 period when so many other significant and unusual changes were occurring in the Australian economy. Under such circumstances we cannot feel fully confident that all the possible influences on unemployment are sorted out. Multicollinearity in its broadest sense will always remain a problem for time series analysis of this period.

## REFERENCES

- ABS (1979a), Earnings and Hours, Canberra.
- (1979b), Employment and Unemployment, Canberra.
- (1979c), Wage Rates, Canberra.
- Blaustein, S.J. and Craig, I. (1977), An International Review of Unemployment Insurance Schemes, The W.F. Upjohn Institute for Employment Research, Kalamazoo, Michigan.
- Department of Employment and Youth Affairs (1979), Monthly Review of the Employment Situation, Melbourne.
- Department of Immigration and Ethnic Affairs (1979), Australian Immigration: Quarterly Summary, Canberra.
- Department of Social Security (1979), Annual Report, AGPS, Canberra.
- Gregory, R.G. and Duncan, R.C. (1980), 'High teenage unemployment: the result of atypical labour supply behaviour', Economic Record (forthcoming).
- Gruen, F.H. (1977), 'Structural unemployment as a rival explanation - a survey of an inconclusive argument', Paper presented to the Kiel Conference on Unemployment and Capital Shortage in the World Economy, June 1977.
- Harper, I.R. (1980), 'The relationship between unemployment and unfilled vacancies in Australia: 1952-1978', Economic Record (forthcoming).
- Holt, C.C. (1970), 'How can the Phillips curve be moved to reduce both inflation and unemployment?', Microeconomic Foundations of Employment and Inflation Theory, Norton, New York, pp. 224-56.

- Hughes, B. (1975), 'The UV displacement', Australian Bulletin of Labour 1(3), 39-76.
- Paterson, P.R. (1979), 'Turnover analysis of unemployment in Australia', Ph.D. thesis, Australian National University.