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STRUCTURAL UNEMPLOYMENT IN AUSTRALIA

Asraul Hoque and Brett A. Inder

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## STRUCTURAL UNEMPLOYMENT IN AUSTRALIA

by

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**ABSTRACT:** This paper examines whether structural unemployment increased in Australia over the last two decades. A simple regression model has been considered for testing the hypothesis of an increase in unemployment in several segments of the labour force over time. Six dimensions of the labour force namely, age, sex, region, duration of unemployment, occupation and industry have been taken into account. Analysis of the regression results reveals that the structural unemployment problem is substantial with respect to age, sex, duration of unemployment, occupation and industry. Regarding region the evidence for structural unemployment is not very strong.

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## II. INTRODUCTION

Two important macroeconomic relationships were developed during the latter half of this century explaining unemployment in terms of inflation and output. The first one, which relates unemployment to inflation, was published in the late 1950's and popularly known as the Phillips curve. The second one, known as Okun's law, relates unemployment to output and was published in the early 1970's. These two relationships have one common element: they both relate unemployment to business fluctuations, one to price fluctuations and the other to output fluctuations. Thus, the unemployment referred to here is basically cyclical unemployment. The problem of structural unemployment has not had much attention in the literature until recently. With gradual loss of confidence in those two relationships, many economists find the structural unemployment hypothesis quite interesting in explaining realities of the 1970's and 80's of positive relationship between inflation and unemployment. The structural factors are receiving increasing attention in the diagnosis of unemployment as reported in Casson (1983), Hughes and Perlman (1984) and Hart (1990).

On the basis of the history of the mass of unemployed, increasing during times of slump and decreasing during boom, the causes of unemployment are seen by many as lying in the cyclical nature of production (see, for example, Nickell (1982)). By all means, this can be a cause, but not the sole cause of unemployment. If it is the only cause, we could not understand unemployment existing during times of and even at the peak of a boom. And it would be totally incomprehensible for us if the number of unemployed increased rather than decreased following a slump (as indeed happened in leading western countries after the 1974-75 recession with the exception of U.S.A. and West Germany).



These facts point to a different set of reasons and unemployment should be analysed partly within and partly without the framework of the cycle of production.

It is well known that the aggregate of the labour force and the aggregate of jobs are not homogeneous. Labour force is represented by individuals differentiated by qualifications, age, sex, locality and so on; and employers have different kinds of jobs as well. Certain posts can only be filled by certain groups of the labour force owing to the specific nature of the required qualifications or formal/informal training. Thus, at any moment of time there will be a qualitative mismatch between demand and supply in the labour market.

The problem will be further complicated when there will be changes in the demand and supply pattern of labour due to technical progress and demographic change. The impact of these changes on the labour force is certain to be selective. This will imply structural disequilibrium in the labour market, that is, excess demand on some segments while excess supply on others. It is possible that the labour supply at any time does not satisfy the need of production and yet exceeds the demand for labour (see Bihari, 1982; Trivedi and Baker, 1985).

The coexistence of unemployment and labour shortage is a typical feature of unemployment today. In France, in 1977, for example, 10% of the companies were unable to increase production because of a shortage of labour, and 25% of them had definite difficulties with recruiting labour - and all that in spite of an unemployment figure of over one million. According to Driehuis's (1978) calculations, structural factors accounted for 25% of the unemployment in the Netherlands, for 39% in West Germany and for 30% in the other EEC countries in 1975. The

US Bureau of Labour Statistics estimates that 11.5 million workers lost their jobs because of plant closing or staff cutbacks between 1979 and 1984. Dungan and Younger (1985) report that there is a possibility of job loss of 2.7 million in Canada and 5 million in the U.K. due to high technology production methods by the end of the century.

Discussion so far suggests that the problem of structural unemployment should not be taken lightly. We want to examine the issue with the Australian labour force primarily because there has not been enough and detailed study in this context. Let us mention a number of studies using Australian data. Harper (1980) found considerable evidence of structural instability in an estimated U-V relationship in Australia which implied structural imbalance or mismatchedness in the labour market. Trivedi and Baker (1985) using a number of explanatory variables (both cyclical and structural in nature) concluded that most of the observed increase in unemployment in Australia since 1969 has been due to non-structural factors. However, this view has undergone some changes in Trivedi and Hui (1987) where the importance of long term unemployment has been recognized. Although, Gregory (1986) deals with the question of how government policy affects the process that generate wage changes, he identifies this as a structural factor that influences the free movement between unemployment and wage changes. Finally, Mitchell (1987) deals with only two sectors of the labour market, namely age and sex, in analyzing the problem of structural unemployment in Australia during 1966-86. His results support our findings.

Plan of the paper: In section II, the analytical framework will be presented. In section III, we shall discuss the numerical results. Finally, section IV will provide conclusions and policy implications.

## II. ANALYTICAL FRAMEWORK

It is difficult to have a direct measure of the proportion of structural unemployment to total unemployment. But it is possible to test empirically for the presence of symptoms of growing structural maladjustments in the economy. The main hypothesis underlying the test is that if rapid and widespread structural changes in the economy are causing a rise in the unemployment rate then unemployment should be more heavily concentrated in those sectors in which the adverse effects of structural transformation are strongest. These do not necessarily follow a time trend, though. As in the US and Canada, the crux of the structural transformation thesis in Australia is that there has been taking place in the economy a large shift in demand from goods to services, accompanied by much more rapid technological changes in the goods producing than in the service producing industries. Now, under these situations, one would expect the rising unemployment to be concentrated among the groups most vulnerable to structural displacement. These displaced people are unable to fit into the new jobs created in the expanding technology and service sectors because of lack of proper training and experience, inadequate education and inappropriate locality.

The test of structural unemployment hypothesis will consist of the following two models. In the first model, we consider the difference between the sectoral unemployment rate (for different sectors of the labour force) and the overall unemployment rate, and regress this on a constant and the time trend. The sectors considered will be in regard to sex, age and region. We observe the sign and statistical significance of the coefficient representing the time trend. The finding that a particular coefficient is positive and statistically



significant implies an upward shift over time of the sectoral unemployment rate which cannot be explained by the business cycle alone. The value of the constant term in the regression provides an estimate of the deviation of the unemployment rate for that sector from the overall unemployment rate. Unlike previous studies, the constant term here provides useful information regarding the structural hypothesis (see Section III).

The equation to be estimated is as follows:

$$u_t^i - u_t = \alpha + \beta T + \varepsilon_t \quad (1)$$

where

$u_t^i$  = the unemployment rate of  $i$ th group of a particular sector of the labour force at time  $t$ ;

$u_t$  = overall unemployment rate;

$T$  = time trend.

Although  $u_t$  and  $u_t^i$  may well be non-stationary variables, the results to follow indicate that they are cointegrated in the sense of Engle and Granger (1987), and hence that their difference is stationary. Standard theory will thus apply to the distribution of the  $t$  statistics on  $\alpha$  and  $\beta$ .

The second model relates to the duration of unemployment, occupation and industry categories. The dependent variables here will be the proportion of total unemployed persons in each of the three categories which will be regressed on a constant, the structural change in the demand for labour ( $x_1$ ) and the labour force participation rate ( $x_2$ ). The constant term implies the percentage of the total unemployment in a sector. The coefficients of  $X_1$  and  $X_2$  will have the similar interpretations as that of  $T$  in the first model. The equation we estimate is the following

$$u_t^j = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + V_t \quad (2)$$

where

$u_t^j$  = proportion of total unemployed persons of the  $j^{\text{th}}$  group in a category at time  $t$ ;

$x_1$  = the structural change in the demand for labour (Stoikov index);

$x_2$  = labour force participation rate .

Note that since the dependent variables are proportions, their values at each time period add to unity. This implies a constraint that the right hand sides of the equations must also add to unity. The restrictions that constants add to unity and the coefficients of  $x_1$  and  $x_2$  add to zero are sufficient for this. The restrictions are imposed by specifying the equations as a system and estimating jointly by TSP.

As mentioned above, the analysis of structural unemployment, (since it involves uneven incidence of joblessness among different categories of the labour force) must be carried out in a disaggregative manner. Thus, we divide the labour force into a number of sectors or categories. We have considered unemployment rates in six such categories as follows: unemployment rate by age, sex, region, industry, occupation and duration. We have used the ABS seasonally adjusted quarterly data from 1976 to 1987. However, for a few sectors the sample size is slightly different and the data are annual for age and sex categories.

### III. NUMERICAL RESULTS

Overall unemployment rate in Australia has continued to increase throughout the last decade, reaching a peak of around 10% in 1983. This rate is more than five times the average of the decade 1964-65 to

1973-74. As in most countries, there is a heavy concentration of unemployment upon young people. Further, the average duration of unemployment is currently very long and has increased at a faster rate than the number of unemployed (see Gregory, 1986). The average duration of unemployment in 1966 was 3 weeks (all persons); it is currently 49 weeks. Trivedi and Hui (1987) also report that long-term unemployment (lasting more than 26 weeks) has increased between five and six times during the 1970s especially after 1974.

Most studies in Australia have either considered youth unemployment or duration of unemployment to indicate growing structural imbalance in the labour market. Our study covers all aspects of the labour force in a comprehensive way in terms of age, sex, region, occupation, industry and duration of unemployment. The overall conclusion of this paper confirms the earlier studies in connection with youth and duration of unemployment and provides additional support for structural unemployment from other categories of the labour force.

Regression results in terms of sex (see Table 1) show that the male labour force suffers disproportionately more difficulty than the female labour force over time. However, the overall female rate is significantly above national average (by 1%) whereas the male rate is significantly below (by .57%) as indicated by the constant term.

In terms of age the youth unemployment rates (particularly 20-24) have shown significant upward trend over time both for the male and female labour force (see Tables 2 and 3). The situation is more serious for the male youths. Although the trend term is not significant for the age group 15-19, the constant term for this group shows higher unemployment rate than national average by 11% for the female and 10.5%

for the male. For the age group 25-34 (for both sexes), the trend term is positive and significant but the rate for this group is below national average as indicated by the constant terms. For other age groups, the constant and trend terms are negative. Thus, the results clearly indicate that the youth are in trouble.

When regional unemployment is considered, New South Wales, Queensland and Tasmania show signs of increasing tendency over time which was also observed in Canada for Atlantic regions. Victoria shows less than national average rate (by .82%) whereas S.A., Tas., Qld., and W.A. show above average rate by 1.07%, .94%, .75% and .26% respectively as indicated by the constant terms (see Table 4). Trend rates for Vic., W.A. and S.A. are significantly falling over time. Thus, there are some moderate symptoms of structural unemployment in connection with regions.

Results relating to the duration of unemployment category confirm the earlier studies that structural unemployment in this area is quite significant. The results are presented in Tables 5a, 5b and 5c. In 5a (where both  $x_1$  and  $x_2$  are included) we see that 19% are unemployed for  $\leq 4$  weeks, 26% for 4-13 weeks, 16% for 13-26 weeks, 16% for 26-52 weeks and 23% for over 52 weeks as indicated by the constant terms. Between 1978 and 1988, there is a definite decrease in short to medium term unemployment but definite increase in long term ( $> 52$  weeks) unemployment. The overall picture shows that the structural factors are quite strong in connection with the duration of unemployment. Tables 5b and 5c are particular cases of 5a and quite consistent with 5a.

In terms of occupation, the structural factors are very important for the categories labourers and related workers, and farms and fisheries both in terms of the constant and  $x_1$  terms (see Table 6). For

others, this is not important which is understandable. When the economy undergoes structural changes, the relatively less educated, less trained and less experienced section of the labour force suffer most. We do not present particular cases of Table 6 because they show similar pattern as in Table 5. Same is the case for Table 7.

Structural factors in industry are also significant. So far as  $x_1$  is concerned, finance and insurance, community services and entertainment and recreation show some problems, whereas the constant terms show serious problems for manufacturing, and wholesale and retail trade (see Table 7). This might result from increasing mechanization in these sectors. We note that the demographic factors (represented by  $x_2$ ) do not make significant contribution as can be seen from Tables 5-7.

Let us now make a few comments about the diagnostics. The  $R^2$  values are fairly low in some cases. This is understandable for the first four Tables where the main explanatory variable (the overall unemployment rate) has been moved to the left hand side of the equation. Further, the DW statistic is quite unsatisfactory on several occasions. And hence we ran the regressions using AR(1) method. The results are not significantly different as are reported in Tables 1 and 4.

Our findings are, in general, in agreement with the earlier studies in the U.S.A. and Canada. For example, Stoikov (1966) found that women teenagers and non-white generally experienced a greater unemployment rate than white adult males in the U.S.A. between 1947 and 1962. Simler (1964) showed that the long term (15 weeks or more) and the very long term (27 weeks or more) unemployment rates have both shifted upwards over the period 1947-62. These long term unemployed people represent

square pegs for which there are only round holes. Further, Kaliski (1969) observes that the occupational structural unemployment in Canada appears to be potentially important. These findings are consistent with the contention that the labour market position of the relatively unskilled, uneducated and inexperienced has been worsening in the post-war periods. The Australian experience is no different except with respect to sex where male labour force faces more trouble.

We now make an attempt to interpret the results in terms of overall economic situations in Australia. The following three factors are thought to be significant in causing the structural imbalance in the labour market:

- A. Participation rate for youth and women.
- B. Institutional factors.
- C. External shocks.

A. This factor is particularly important in increasing youth unemployment. The youth unemployment rate in Australia has increased from 5% in 1966 to 16.5% in 1982. A substantial part of this increase is due to recession; however, important questions remain unanswered. For example, what accounts for the secular rise in youth unemployment rate? Part of the answer to this question can be found from the youth participation rate itself. It is argued that the youths have been 'crowded out' of the market by expansion in their own numbers and/or by expansions in female labour force participation. A large influx of young, relatively unskilled and inexperienced workers clearly imposes some serious problems of adjustment on the labour market.

Further, the expansion in female labour force participation from about 25% in 1940 to more than 60% now has created added pressure on youth employment especially at the entry level. The female participation rate, in turn, has increased because of the growth in part-time employment, the improvement in household technology and the changes in employers' attitudes (see Hart, 1990).

B. Some institutional factors are also responsible for secular rise in youth unemployment. It may be argued that youths have been 'priced out' by either minimum wages or other public policy which narrows the gap between wages or unemployment benefits for juniors and adults. Minimum wages represent a general barrier to labour market adjustment which would adversely affect the young workers because they have lower levels of skill and experience and therefore lower productivity. Studies in the US show that 80 to 90% of employers preferred workers older than 22 years of age even for relatively unskilled jobs. In such a situation, minimum wages would certainly create more trouble for youths. Finally, between 1945 and 1971 there was no significant change in the real value of the unemployment benefits in Australia. But in 1972 benefits were increased substantially and in 1973 teenagers were granted the same payment as single adults which might account for rising trend in the duration of unemployment category.

C. External shocks might affect all sectors of the labour force although with differential impact. For a profit-maximizing price-taking representative firm, an exogenous increase in the price of a variable input will reduce output and hence the demand for labour. Examples of such shocks included OPEC-engineered oil price shocks in 1973 and 1979.



The effect of increase in fuel prices has been substantial in Australia creating recession in the economy. However, the effect of the second oil price shock of 1979 was larger than that of the first in 1973. Because by 1978, Australia had adopted import parity pricing with respect to oil and was no longer substantially insulated from world oil price movements as in 1973.

Our regression results with respect to age are not unexpected and confirm the earlier results obtained in the U.S.A., Canada and Australia. However, regarding sex we have a different result in Australia. We find that the male labour force faces more difficulty. But this is not totally unexpected in Australian situation. Given that there has been a shift in demand from goods to services with increasing demand for labour in the service sector and given that women are more suitable or preferred in the service sector, we have the result which could be defended. Again, higher wages (minimum wages may be higher than the market can offer) may have motivated employers to create more part-time jobs to save labour cost. Indeed, this is becoming increasingly popular among employers since 1974 (see Peters and Petridis, 1985). Given that adult males prefer full-time to part-time jobs, the results with respect to sex are not surprising. As a matter of fact, growth in part-time jobs is a factor in the growth of female participation rate especially for the married female with children.

Results with respect to occupation and industry confirm earlier studies. Results with respect to region are quite expected and are the same as Canada where Atlantic regions suffer disproportionate increases in unemployment rates. The states in Australia which suffer disproportionate increase in unemployment rates are New South Wales,

Queensland and Tasmania. That structural factors are causing mismatches in the labour market can be further supported by two studies relating unemployment to vacancy. Abraham (1983) reports for U.S.A. that except during periods of deep recession such as 1971-72 and 1974-75, the number of vacant jobs was large relative to the number of persons seeking work. Harper (1980) observes instability in U-V relationship in Australia. Such instability implied an increase in the degree of structural imbalance in the Australian labour market of the order of 13% over the period 1952-1978. In other words, the structural factors are making a positive contribution to the current unemployment problems in Australia.

#### IV. CONCLUSIONS AND POLICY IMPLICATIONS

The overall conclusion certainly goes in favour of structural unemployment hypothesis. Of six categories studied, we have strong claims in five categories namely age, sex, industry, occupation and duration of unemployment. The position, however, is not very strong in terms of region. This conclusion has an important and well-known policy implication. Aggregate policies designed to create new jobs will reduce unemployment if it is known that the unemployment is due to demand deficiency. However, it will not work if the unemployment has significant structural components. In the latter case, we need disaggregated policy to be targetted to the weaker segments of the labour force with a design to match people with already existing jobs by special training programmes or a relocation programme (in case of regional disparity in unemployment) as suggested by Choate and Carey (1985).

Economists have generally been concerned with unemployment because it represents a non-recoverable waste of resources. But there may be additional reasons for concern with regard to youth unemployment. First, early work experience is fundamental to making the transition from school to work and is central to learning job search techniques, effective work habits, self-respect, confidence and reasonable career expectations. Second, it has been documented that lack of legitimate opportunities clearly increases the likelihood that youth will become involved in illegal activities or anti-social behaviour (see Singell, 1983). Young people who have prematurely dropped out of school may be caught in long term unemployment. They will thus require special assistance.

TABLE 1

Unemployment by Sex (annual data: 1976-87)

Dependent Variables	Const.	T	R <sup>2</sup>	DW	Rh0
MUT	-.57 (-6.8)	.09 (3.76)	.59	1.02	
FUT	1.0 (7.2)	-.17 (-4.19)	.64	.88	
	AR(1) Estimates				
MUT	-.57 (-4.3)	.08 (2.30)	.42	1.67	.47
FUT	1.0 (4.3)	-.13 (-2.39)	.47	1.36	.55

MUT = Male unemployment rate less overall unemployment rate;

FUT = Female unemployment rate less overall unemployment rate;

T = Time trend (zero for 1981);

Figures in brackets are t values (also in the subsequent tables);

AR(1) estimates use maximum likelihood to estimate the model assuming first order autoregressive disturbances.

TABLE 2

Male Unemployment by age (annual data: 1976-87)

Dependent Variables	Const.	T	R <sup>2</sup>	DW
MU(15-19)	10.44 (20.0)	.19 (1.28)	.14	1.33
MU(20-24)	4.14 (14.0)	.28 (3.26)	.51	1.21
MU(25-34)	-1.02 (-14.2)	.07 (3.23)	.51	1.86
MU(35-44)	-2.62 (-18.4)	-.15 (-3.72)	.58	.92
MU(45-54)	-2.40 (-12.7)	-.06 (-1.05)	.10	1.08
MU(55+)	-2.20 (-10.7)	-.01 (-.15)	.002	1.85

MU = Male unemployment rate for particular age group  
less overall unemployment rate for males;

T = Time trend (zero for 1981).

TABLE 3

Female Unemployment by age (annual data: 1976-87)

Dependent Variables	Const.	T	R <sup>2</sup>	DW
FU(15-19)	10.9 (27.0)	-.02 (-.19)	.004	2.77
FU(20-24)	1.4 (8.4)	.16 (3.31)	.52	2.90
FU(25-34)	-1.1 (-8.8)	.08 (2.40)	.36	2.58
FU(35-44)	-2.8 (-21.0)	.05 (1.47)	.18	.89
FU(45-54)	-4.0 (-23.6)	-.08 (-1.66)	.22	2.10
FU(55+)	-5.3 (-24.9)	-.12 (-1.88)	.26	2.21

FU = Female unemployment rate for particular age group less  
overall unemployment rate for females;

T = Time trend (zero for 1981).

TABLE 4

Unemployment by Region (Seasonally adjusted data:1978/1-1987/4)

Dependent Variables	Const.	T	R <sup>2</sup>	DW	Rh0
	OLS estimates				
UR(NSW)	.23 (1.94)	.019 (1.90)	.09	1.44	
UR(VIC)	-.82 (-8.2)	-.047 (-5.38)	.43	2.03	
UR(QLD)	.75 (4.95)	.024 (1.81)	.08	.95	
UR(WA)	.26 (2.36)	-.034 (3.60)	.25	1.86	
UR(SA)	1.07 (9.1)	-.029 (-2.89)	.18	1.78	
UR(TAS)	.94 (6.45)	.019 (1.51)	.06	1.30	
	AR(1) Estimates				
UR(NSW)	.25 (1.72)	.018 (1.47)	.06	1.84	.19
UR(VIC)	-.83 (-8.9)	-.046 (-5.76)	.47	1.90	-.08
UR(QLD)	.84 (3.12)	.019 (.88)	.09	2.14	.52
UR(WA)	.26 (2.29)	-.034 (-3.50)	.24	1.92	.03
UR(SA)	1.07 (8.45)	-.029 (-2.68)	.17	1.93	.08
UR(TAS)	.96 (4.72)	.017 (.99)	.05	1.94	.33

UR = Unemployment rate in each state less overall unemployment rate;

T = Time trend (zero in 1983/1);

NSW = New South Wales, VIC = Victoria, QLD = Queensland,  
WA = Western Australia, SA = South Australia, TAS = Tasmania.



TABLE 5a

Unemployment by duration (Seasonally adjusted Quarterly data:  
1978/2 - 1988/4)

Dependent Variables	Const.	$x_1$	$x_2$	$R^2$	DW
UD( $\leq 4$ weeks)	.1905 (27.10)	-.00013 (-1.79)	.00028 (.220)	.67	.65
UD(4-13 weeks)	.2613 (23.32)	.0002 (-1.67)	.0107 (.69)	.58	1.70
UD(13-26 weeks)	.1621 (20.11)	.00002 (.25)	.0287 (1.72)	.13	.48
UD(26-56 weeks)	.1617 (19.80)	.00003 (.37)	.0079 (.71)	.44	1.60
UD(over 52 weeks)	.2241 (17.06)	.0211 (2.00)	.0049 (.27)	.65	1.98

UD = Proportion of total unemployed whose duration of unemployment lies in each category;

Note: Constant terms are constrained to add to 1 and the coefficients of  $x_1$  and  $x_2$  add to zero.

TABLE 5b

Unemployment by duration (1978/2 - 1988/4)

Dependent Variables	Const.	$x_1$	$R^2$	DW
UD( $\leq 4$ weeks)	.18 63 (26.17)	-.000047 (-.69)	.14	.57
UD(4-13 weeks)	.2592 (23.95)	-.000157 (-1.54)	.56	1.65
UD(13-26 weeks)	.1639 (20.74)	-.000058 (-.76)	.40	2.15
UD(26-52 weeks)	.1633 (20.70)	.0000005 (-.0061)	.24	.46
UD(over 52 weeks)	.2251 (17.83)	.0002625 (2.20)	.63	1.71

TABLE 5c

Unemployment by duration (1978/2 - 1988/4)

Dependent Variables	Const.	$x_2$	$R^2$	DW
UD( $\leq 4$ weeks)	.1809 (38.39)	.01168 (1.4)	.40	.57
UD(4-13 weeks)	.2470 (33.03)	-.0034 (-.25)	.56	1.54
UD(13-26 weeks)	.1637 (31.40)	-.01736 (-1.87)	.12	2.30
UD(26-52 weeks)	.1640 (31.04)	-.00564 (-.60)	.40	.20
UD(over 52 weeks)	.2441 (27.49)	.01471 (.93)	.47	1.59

TABLE 6

Unemployment by Occupation (Seasonally adjusted Quarterly data:

1978/2 - 1986/3)\*

Dependent Variables	Const.	$x_1$	$x_2$	$R^2$	DW
UO(Professional and Technical)	.0594 (33.33)	-.00177 (-.87)	.0440 (.16)	.45	1.20
UO(Clerical)	.1234 (41.21)	-.00497 (-1.47)	.4407 (1.97)	.67	1.56
UO(Sales)	.1101 (53.25)	-.00256 (-1.09)	.3807 (1.81)	.57	1.63
UO(Farms, Fisheries)	.0728 (40.29)	.00054 (1.61)	-.0197 (-.071)	.48	.99
UO(Transport and Construction)	.0507 (36.06)	-.00047 (-.30)	.0514 (2.24)	.65	1.51
UO(Labourers and Related Workers)	.4561 (75.38)	.0055 (1.79)	-.9212 (-.98)	.77	1.69
UO(Services and Sports)	.1173 (52.72)	.0036 (1.73)	.0239 (.071)	.77	.62

UO = Proportion of total unemployed who are in each occupation;

Note: Constant terms are constrained to add to 1 and the coefficients of  $x_1$  and  $x_2$  add to zero.

\* We could not use data up to 1988 because of the change of definition by the ABS (Australian Bureau of Statistics).

TABLE 7

Unemployment by Industry (Seasonally adjusted Quarterly data:

1978/2 - 1988/4)

Dependent Variables	Const.	$x_1$	$x_2$	$R^2$	DW
UI(Manufacturing)	.3029 (58.17)	-.0070 (-1.23)	-.0634 (-.089)	.53	.46
UI(Construction)	.1408 (36.73)	-.0045 (-1.08)	-.0193 (-.36)	.75	.39
UI(Wholesale and Retail Trade)	.2829 (93.17)	-.0012 (-.36)	-.1071 (-.25)	.34	.90
UI(Finance and Insurance)	.0698 (29.43)	.0034 (1.72)	-.0059 (-.24)	.94	1.82
U(Community Services)	.099 (32.62)	.00169 (1.51)	.3825 (1.92)	.74	1.73
UI(Entertainment and Recreation)	.1130 (42.75)	.0076 (2.64)	-.1867 (-.03)	.59	1.57

UI = Proportion of total unemployed who are in each industry;

Note: Constant terms are constrained to add to 1 and the coefficients of  $x_1$  and  $x_2$  add to zero.

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