Labour Market Gross Flows and Transition Rates 1980-1992

Gareth D. Leeves*

Abstract

This paper examines the cyclical properties of gross flows and transition rates between the alternative labour market states of 'employed', 'unemployed', and 'not in labour force' for Australian workers for the period 1980–1992. The study is based on ABS monthly gross flow data, disaggregated by gender, and with the employment status disaggregated into part-time and full-time work. The principal finding is that the somewhat surprising pattern, of counter-cyclical monthly flows from unemployment to employment, is primarily the result of counter-cyclical male transitions to full time employment. The results are compared with those from European empirical studies. The paper also considers the consistency of the results with the implications of theoretical models which emphasise the counter-cyclical 'quality' of the unemployment pool.

1. Introduction

By July 1992, the end of the period covered by this study, the unemployment rate stood at 11 per cent. This historically high rate and the slow reduction in unemployment after recessions in 1982 and 1990 lead to much comment on the poor performance of the Australian labour market (Sloan and Wooden 1992, Fahrer and Heath 1992). However, it would be misleading to view the labour market as inactive or stagnant when unemployment is high. For instance, from June to July 1992, according to ABS gross flow statistics, 84,600 moved from employment to unemployment (EU flow) whilst 101,400 people moved from unemployment to employment (UE

* University of Western Sydney, Hawkesbury

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

flow). Yet the growth in unemployment over the same period was 10,700. Clearly, flows into and out of unemployment are far greater than changes in the stock. In fact, labour market activity, as reflected in labour market gross flows from EU and UE, increases during periods of recession compared to other phases of the business cycle. The former result appears a logical outcome of recessions, but the latter is more surprising and counter-intuitive. An investigation of the constituents and source of this countercyclical UE flow is the major motivation for this paper.

Counter-cyclical UE and EU flows have been reported by many studies, including Blanchard and Diamond (1990) for the US, Jones (1993) for Canada, Burda and Wyplosz (1994) for European countries and Leeves (1995) for Australia. Different explanations for the counter intuitive result of rising UE flows during a downturn have been advanced. Saint-Paul (1992) puts forward an argument based on a dual labour market framework. Firms hire more secondary workers in a recession to increase flexibility in their workforce and secondary workers constitute a greater proportion of hiring from unemployment. A proportion of primary workers are recruited from secondary workers already in the workforce. All secondary workers are recruited from the unemployed. Burda and Wyplosz (1994) offer an explanation based on the desire of firms to hire from the expanded unemployment pool in a recession so as to improve the 'quality' of their workforce from the greater range of potential applicants. Recessions are periods when the opportunity cost for such activity is at its lowest.

Most studies of gross flow cyclical behaviour have disaggregated flows by sex (Blanchard and Diamond 1990, Jones 1993, Burda and Wyplosz 1994, Leeves 1995 and Antolin 1995) and found some variation in the cyclical behaviour of male and female flows. Though Blanchard and Diamond using US data and simulation methods found no major difference in male and female UE flow response to an adverse aggregate shock. This study will extend previous analysis of cyclical behaviour by using a further disaggregation between full-time and part-time employment to gain a more detailed picture of the source and extent of countercyclical behaviour. There have been previous accounts of disaggregated Australian gross flows (Fahrer and Heath 1992) and although the present paper is essentially descriptive, the empirical work that follows provides a more detailed analysis of cyclical and secular effects than in previous research.

The cyclical properties for the disaggregated UE and EU flows over the period 1980-1992 found in this study are as follows: male flows from unemployment to full-time employment and full-time employment to unemployment demonstrate significant countercyclical effects; female flows from unemployment to full-time employment and full-time employment to

unemployment indicate no cyclical effects; both male and female flows from unemployment to part-time employment and part-time employment to unemployment are significantly countercyclical, with female flows showing less cyclical sensitivity than males. These results indicate that it is worthwhile distinguishing flows by full-time and part-time work and by gender as this reveals additional information about the pattern of cyclical behaviour.

The UE gross flow may rise in a recession, but this conveys no information about the likelihood of an individual leaving unemployment for employment. Transition rates (the probability of movement out of a state), where the outflow is normalised by the size of the unemployment pool, can be used in conjunction with flows to accommodate for increases in numbers of workers in that state. It is important to distinguish between the cyclical effects on flows and transition rates. Although an analysis of the countercyclical UE flow is a major concern of this paper, using flows and transition rates out of and into unemployent and other labour market states can give more insight into the context in which countercyclical flows occur. Assume that for a particular group the UE flow rise in a recession, in addition the UE transition rate decreases. This is quite different from a situation where the flow increase is the same but the transition rates remain unchanged. In the former case the countercyclical flow is associated with a relative growth of unemployment stock compared to the flow and in the latter case the flow and stock increase are equivalent. In Australia, the aggregate UE flow is counter-cyclical but the transition rate (PUE) is procyclical (Leeves 1995). More workers leave unemployment in a recession than at other times but the average probability of an unemployed worker moving into employment decreases.

Problems associated with the use of gross flow data have been well documented in the US (Abowd and Zellner 1985, Poterba and Summers 1986) and in Australia (Borland 1996a). One eighth of the sample is rotated each month, individuals in non-private dwellings are excluded, other individuals fail to respond or cannot be located . These 'missing observations' are estimated to amount to roughly 20 per cent of the Australian sample. If their flow behaviour is different to the matched group then a bias can occur in the flow estimates. The other main source of bias is 'classification error' – incorrect answers being recorded for individuals which leads to labour market status being recorded inaccurately.[1] US studies and later work for Australia by Borland (1996b) suggest that this bias overstates UE and EU flows compared to the true flow.[2] However, as Jones (1993) points out it is not clear that these qualifications serve to undermine conclusions drawn from changes in gross flows over the cycle. Barkume and Hovarth (1995)

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

and Borland (1996b) find high correlations between predicted changes in monthly net changes in actual labour force stocks and those implied by gross flow statistics. Thus, whilst bias may make use of gross flow data in levels problematic, data relating to monthly changes in the levels of gross flows through time can still convey important insights into the process of cyclical adjustment. The next section will review evidence from recent Australian studies of the cyclical behaviour of transition rates and job flows to give some context to the results in this paper.

2. Previous Australian Studies

Worker Flows

There have been a number of recent studies into the cyclical effects on transitions into and out of unemployment. Fahrer and Heath (1992) calculated annual averages of monthly transition rates between labour market states for the period 1981-1991 as part of an investigation into the determinants of unemployment. Hughes (1992) employed a matching function approach and Engle-Granger cointegration methods[3] to examine the determinants of quarterly unemployment inflow and outflow transition rates from 1981-1992. A matching function is based on the labour market operating as a clearing mechanism between job openings (vacancies) and job searchers (unemployed). Fahrer and Pease (1993) also used a matching function methodology to investigate unemployment outflows, using quarterly data for the period 1975-1992, in the context of investigating shifts in the vacancy-unemployment relationship (or Beveridge Curve) for Australia. The last two studies disaggregated the data by sex but not by full-time and part-time employment and estimated equations using data in logs. All studies used ABS published gross flow data. The findings for the cyclical effects on transition rates are summarised in Table 1, a positive effect (Pos) means the transition rate is procyclical and a negative effect (Neg) indicates a countercyclical transition rate; M, F or S indicates either the male (M) or female (F) flow is more sensitive to cyclical change or the response is similar (S).

Overall, there is agreement on the sign of the transition rates, but not on the relative significance of male and female responses to cyclical changes, except in the case of EU transition where the male cyclical response is consistently identified as greater. Direct comparison of the results is not possible due to the differing time periods, estimation methods and explanatory variables employed in the three studies; but some comments on the cylical findings for transition rates out of unemployment may be useful to contrast with the results of the present study. Fahrer and Pease (1993)

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

Table 1: Cyclical Effects on Transition Rates

Transition Rate	UE	UN	EU	NU	P/T-F/T	F/T-P/T
Fahrer and Heath (1992) (Annual Average 81-91)	Pos (M)	Pos (M)	Neg (M)	Neg (M)	None	None
Hughes (1992) (Quarterly Average 81-92)	Pos (S)	Pos (F)	Neg (M)	Neg (F)	–	–
Fahrer and Pease (1993) (Quarterly Average 75–92)	Pos (F)	Pos (?)	Neg (M)*		–	–

* Equation was total inflow rate to unemployment (EU + NU)

estimated the female UE transition rate cyclical response (indicated by the coefficient on the aggregate v/u ratio) to be twice that of males (0.38 and 0.19 respectively). Hughes (1992) using the separate male and female v/u ratios found cyclical response to be similar for males and females (a normalised coefficient of 0.2). Fahrer and Heath (1992) interpreted time series data of annual average transition rates, which were disaggregated into full-time and part-time employment as well as male and female (unlike the other studies). In their analysis they emphasised the sharp decline in the male UE full-time transition rate in recession.

For the unemployment to not a labour force (UN) transition rate Fahrer and Pease (1993) reported a positive coefficient for the v/u ratio in the female equation of 0.17. They take this to indicate a possible added worker effect, where women, especially married women, enter the labour force in response to falling demand. The male equation had an insignificant v/u ratio but an unemployment gap variable (the difference between actual and trend unemployment) had a signifcant negative effect (-1.15). Thus, they concluded that a rise in cyclical unemployment leads to lower exit rates. Hughes (1992) finds implied PUN elasticities with respect to unemployment of approximately 0.4 for females and 0.37 for males. Finally, Fahrer and Heath (1992) make no specific comments on the UN transition rate but a visual inspection of the diagrams (p 24) reveals a sharper decline in the male UN rate.

Job Flows

Another strand of relevant research is concerned with employment change arising from job flows between industrial sectors. Previous studies indicate that nearly fifty per cent of worker flows are generated by job flows from the destruction and creation of jobs in the economy, requiring workers to move within and between sectors as firms and establishments change their employment levels.[4] Worker flows in excess of job flows are churning

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

flows; establishments firing and hiring workers for the same job or workers quitting and being replaced.[5] Borland (1996c) investigated job destruction and job creation between disaggregated sectors of Australian manufacturing over the period 1979-1992 using ABS data from the Census of Manufacturing Establishments. He found job destruction to be more cyclically sensitive than job creation; the increase in job destruction is significantly greater than the decrease in job creation as the economy moves into recession. The total number of jobs destroyed and created in a period is equal to the amount of employment reallocation. Employment reallocation measures the number of jobs that would need to be transferred between sectors to achieve the same employment in each sector before the job changes ocurred. In Australia, fluctuations in employment reallocation are associated mainly with changes in job destruction rather than job creation (Borland 1996c). The dominance of job destruction in a recession causes employment reallocation to move countercyclically both at the aggregate and sectoral level. When there is a decrease in aggregate net employment growth there is an increase in the extent of employment reallocation. A decomposition of the variance of employment reallocation indicated that sector-specifc shocks or aggregate shocks that have different impacts on individual sectors rather than aggregate shocks which have a common impact on each sector are a major factor in explaining this variation (Borland 1996c Table 6). Perhaps due to the significance of the variation in sectoral impact of aggregate fluctuations, job destruction exhibited variations in its growth between recessionary periods covered by the study (Borland 1996c Fig 1).

Borland's study related only to manufacturing industries. Mumford and Smith (1996) investigated job destruction and job creation across all Australian industries[6] for the period 1988-89 using Australian Workplace Industrial Relations Survey (AWIRS) data. They found substantial simultaneous job destruction and job creation across all industries and considerable variation between industries (employment reallocation was as high as 19 per cent in wholesale and retail and construction and as low as 9 per cent in communication), a variation that is consistent with the findings for the manufacturing industry sectors. Moreover, a decline in expected demand had a negative impact almost twice the size of the positive impact on job growth from an expected rise in demand. In sum, research on job flows indicates there are increased rates of job destruction and employment reallocation as the economy enters an economic downturn with milder decreases in rates of job creation.

3. Analysis

Gross flow estimates are derived from sample data published by the ABS (63020.0) on a monthly basis. The flow estimates are divided by the relevant stock figures for employment and unemployment to determine transition rates. It will be useful at this stage to give a formal definition of gross flows and transition rates. Gross flows represent the total number of workers who move from one labour market state to another in successive months – unemployment (U), employment (E) and not-in-the-labour-force (N). The flow from unemployment (U) to employment (E) in one month is described as the UE flow. Transition rates are defined as the rate at which individuals move from a state over a particular time period given the number of people in that state. So, if the unemployed at period t are represented by U_t and the number of individuals who make the transition from unemployment to employment during the interval (t, t+1) is UE_t (which represents the gross flow of workers) then the transition rate can be expressed as UE_{t+1}/U_t, or the probability PUE_t. This is the notation that will be used in the rest of the paper.

The regression results that follow are based on monthly data, which will hopefully lead to a much clearer distinction between cyclical and secular trends than that obtained by Fahrer and Heath (1992) using yearly averages. Before proceeding to the estimation method some summary data is presented in Table 2. The monthly average flows over the whole period are in the first column, the two other periods selected coincide with an expansionary phase of the economy (1987-88) and a downturn (1990-92). It is interesting to note, firstly, that only male flows between unemployment and full-time employment exhibit a distinct countercyclical pattern. Secondly, flows between part-time employment and unemployment appear to have experienced countercyclical effects and a trend growth associated with the increasing importance of part-time work, as indicated by the averages in the sub-samples relative to the overall average. Thirdly, male flows between unemployment and not-in-the-labour-force appear to be more cyclical than females. Fourthly, flows between part-time and full-time employment have grown over the period, particularly for females, and exhibit signs of cyclical effects. Finally, female NE and EN flows are much larger than males, illustrating the greater tendency to enter and leave employment from outside the labour force; neither male or female flows suggest there are strong cyclical effects. Overall, exits from unemployment to employment are, on average, approximately 52 per cent of unemployment outflows, which is similar to the findings of Clark and Summers (1979) for the US. This contrasts to the 60-70 per cent figure for European countries quoted by Burda and Wyplosz (1994).

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

Table 2: Gross Flow Monthly Averages

	Sept 1980-Sept 1992	Jan 1987-Dec 1988	Sept 1990-Sept 1992
UE (Full-time)			
Male	33,100	32,700	36,600
Female	15,900	16,400	14,600
UE (Part-time)			
Male	14,100	14,400	22,900
Female	22,000	23,300	30,700
EU (Full-time)			
Male	28,500	25,700	37,600
Female	10,700	10,600	11,600
EU (Part-time)			
Male	11,900	11,200	19,800
Female	15,900	16,300	23,600
Full-time to Part-time			
Male	43,500	41,800	56,500
Female	67,100	69,400	85,600
Part-time to Full-time			
Male	46,100	46,100	57,500
Female	71,400	76,200	88,600
UN			
Male	30,300	30,400	39,100
Female	47,200	48,200	53,200
NU			
Male	35,600	34,400	44,200
Female	54,500	54,800	60,500
NE			
Male	53,300	54,800	57,000
Female	99,000	100,400	101,800
EN			
Male	58,800	60,800	64,000
Female	102,800	104,400	105,900

Source: ABS 63020.0

The basic equation used to determine the seasonal, cyclical and trend influences for each transition rate is equation 1 below. GF_{ijt} is the gross flow between states i and j at time t (P_{ijt} is the transition rate). U_t is the unemployment rate for the current month. Unemployment has been used as a cyclical indicator in a number of previous studies (Jones 1993, Williams 1995, Antolin 1995) and this is the approach taken in this paper. An alternative cyclical indicator was tested, the Melbourne Institute Industrial Index. For all flows and transition rates the statistical significance of cyclical effects was unchanged. Jones (1993) found the same repeated pattern of significance when he tested unemployment against other cyclical indicators with Canadian data.

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

Table 3: Trend and Cyclical Influences on Transition Rates, 1980-1992

	Trend	se	Cyclical	se	adj R^2	DW	method
Unemployment to f/time employment							
Males (Gross flow)	-0.0008*	0.0003	0.48*	0.054	0.63	2.01	
Males (Transition rate)	-0.000005	0.0003	-0.64*	0.052	0.70	2.15	
Females (Gross flow)	-0.00007	0.0004	-0.08	0.072	0.45	2.06	
Females (Transition rate)	0.0007*	0.0004	-1.20*	0.073	0.75	1.93	
Unemployment to p/time employment							
Males (Gross flow)	0.0046*	0.0004	0.76*	0.070	0.84	1.84	
Males (Transition rate)	0.0004	0.0005	0.50*	0.097	0.44	1.56	AR1
Females (Gross flow)	0.0048*	0.0003	0.21*	0.063	0.81	2.14	
Females (Transition rate)	0.0006*	0.0004	-0.06	0.057	0.35	2.36	AR1
F/time employment to unemployment							
Males (Gross flow)	-0.0007	0.0009	0.75*	0.159	0.67	1.09	AR2
Males (Transition rate)	-0.002*	0.0008	0.86*	0.148	0.69	1.10	AR2
Females (Gross flow)	0.0012*	0.0005	-0.01	0.10	0.30	1.78	
Females (Transition rate)	-0.0015*	0.0005	0.14	0.10	0.31	1.82	
P/time employment to unemployment							
males (gross flow)	0.0039*	0.0005	0.83*	0.09	0.86	1.45	AR1
Males (Transition rate)	-0.0013*	0.0004	0.82*	0.08	0.70	1.64	AR1
Females (Gross flow)	0.0046*	0.0003	0.31*	0.06	0.80	1.74	
Females (Transition rate)	-0.00009	0.0003	0.45*	0.06	0.60	1.81	
P/time employment to f/time employment							
Males (Gross flow)	0.0026*	0.0002	0.15*	0.04	0.74	2.09	
Males (Transition rate)	-0.0026*	0.0002	0.13*	0.04	0.67	2.07	
Females (Gross flow)	0.0050*	0.0002	-0.18	0.04	0.86	1.97	
Females (Transition rate)	0.0002	0.0002	-0.04	0.04	0.43	1.92	
F/time Employment to P/ime Employment							
Males (Gross flow)	0.0027*	0.0004	0.13	0.08	0.74	1.49	AR2
Males (Transition rate)	0.0015*	0.0004	0.27*	0.08	0.69	1.50	AR2
Females (Gross flow)	0.0050*	0.0002	-0.21*	0.03	0.88	1.80	
Females (Transition rate)	0.0022*	0.0002	-0.06**	0.03	0.67	1.72	
Unemployment to not-in-the-labour-force							
Males (Gross flow)	0.0042*	0.0002	0.60*	0.05	0.84	2.26	
Males (Transition Rate)	0.0020*	0.0002	-0.59*	0.05	0.74	1.97	
Females (Gross flow)	0.0019*	0.0002	0.46*	0.04	0.79	1.70	
Females (Transition rate)	-0.00005	0.0002	-0.15*	0.04	0.65	1.49	AR1
Not-in-the-labour-force to unemployment							
Males (Gross flow)	0.0033*	0.0002	0.63*	0.05	0.86	2.14	
Males (Transition rate)	0.0008*	0.0002	0.59*	0.52	0.80	1.98	
Females (Gross flow)	0.0016*	0.0002	0.43*	0.04	0.81	1.78	
Females (Transition rate)	0.0015*	0.0002	0.38*	0.04	0.79	1.74	
Employment to not-in-the-labour-force							
Males (Gross flow)	0.0021*	0.0002	-0.23*	0.04	0.86	2.09	
Males (Transition rate)	0.0008*	0.0002	-0.11**	0.04	0.85	2.08	
Females (Gross flow)	0.0009*	0.0002	-0.15*	0.04	0.86	2.23	
Females (Transition rate)	-0.0023*	**0.0002**	**-0.01**	**0.04**	**0.86**	**2.27**	
Not-in-the-labour-force to employment							
Males (Gross flow)	0.0020*	0.0002	-0.29*	0.04	0.80	2.48	AR1
Males (Transition rate)	-0.0005*	0.0002	-0.33*	0.04	0.80	2.47	AR1
Females (Gross flow)	0.0010*	0.0002	-0.16*	0.04	0.75	2.28	AR1
Females (Transition rate)	0.0009*	0.0001	-0.21*	0.03	0.74	2.33	AR1

* significant at 1% level ** significant at 5% level

Source: ABS 62030.0

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

$$\ln(GF_{ijt}) = a+b_1 T \text{ (Trend)}+b_2 \ln u_t \text{ (Cycle)}+\text{Dummy Variables (Seasonal)}+\varepsilon_t \quad (1a)$$
$$\ln(P_{ijt}) = a+b_1 T \text{ (Trend)}+b_2 \ln u_t \text{ (Cycle)}+\text{Dummy Variables (Seasonal)}+\varepsilon_t \quad (1b)$$

T is a linear time trend used to capture secular effects. The equations were estimated in logs[7] so that b_2 represents the elasticity of the transition rate with respect to the stage of the business cycle. The equation was estimated with a one period lag for the cyclical variable but this made no significant difference to any of the results or the diagnostic statistics. The regression results are presented in Table 3. Certain equations exhibited first and/or second order serial correlation in the residuals. Where this was the case the equation was re-estimated using an Exact Maximum Likelihood Method, under the assumption that the disturbances follow stationary auto-regressive processes of order one or two with stochastic initial values. The final column of the table indicates where the method was employed and the order of the disturbance process. The Durbin-Watson statistic refers to the initial ordinary least squares regression in all cases. In all cases the application of autoregressive correction made no difference to the level of statistical significance of cyclical and trend variables.

4. Results

Unemployment – Full-time Employment

Male gross flows are counter-cyclical into and out of unemployment, female flows are acyclical. Both transition rates out of unemployment are significantly procyclical, with the female coefficient twice the size of that for males. Only the male transition rate into unemployment is counter-cyclical possibly reflecting the greater exposure of male employment to the rapid increase in job destruction as the economy moves into recession (Borland 1996c).[8]

Unemployment – Part-time Employment

Male and female flows into and out of part-time employment are significantly counter-cyclical, with male flows more responsive to cyclical change. The male transition rate into part-time employment is counter-cyclical and the female transition rate is acyclical. Both transition rates out of part-time employment are counter-cyclical.

Full-time Employment – Part-time Employment

Male gross flows and transition rates from part-time to full-time employment are counter-cyclical. Females flows and transition rates exhibit no

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

cyclical effects. Male flows from full-time to part-time are not influenced by the cyclical change but the transition rate is counter-cyclical. For females both the flow and transition rate from full-time to part-time are procyclical.

Unemployment – Not-in-the-Labour-Force

UN flows are countercyclical and PUN is procyclical. A procyclical female PUN is indicative of added worker effects (Fahrer and Pease 1993) but it is notable that the male coefficient is over three times the size of that for females. Male and female NU flows and transition rates are countercyclical with the male coefficients indicating slightly more cyclical sensitivty.

Employment – Not-in-the-Labour-Force

NE and EN flows and transition rates are procyclical, except for the female transition EN transition rate which is acyclical. Male flows and transition rates are more influenced by cyclical changes.

The findings can be compared to the earlier studies described in Section II. The signs attached to the cyclical variable in the transition rate equations confirm previous evidence ie procyclical transition rates for UE and UN and countercyclical transition rates for EU and NU. However, at the more disaggregated level some differences emerge in the male and female transition rate results.

Firstly, if we consider the UE transition rate (full-time + part-time), then it is clear from the results that the female rate exhibits a stronger procyclical response than the male transition rate as found by Fahrer and Pease (1993). This is in contrast to the approximately similar cyclical response found by Hughes (1992).

Secondly, there is a significant positive trend for female PUE part-time employment rate but male transition rates are dominated by cyclical rather than secular effects. Fahrer and Heath (1992) suggest that both male and female PUE part-time rates contain strong upward trend effects.

Thirdly, the cyclical coefficient of the UN transition rate for men is larger than that for females which is consistent with the time series evidence presented by Fahrer and Heath (1992) but is the opposite conclusion to that reached by Hughes (1992). Thus, whilst the possible added worker effect of a procyclical female PUN described by Fahrer and Pease (1993) is found to be the case in the present study, an even larger slowdown in the male transtion rate occurs. This is one possible source for the greater increases in male full-time unemployment duration accompanying recent recessions (Chapman, Junankar and Kapuscinski 1992).

Fourthly, the EU transition rate (full-time + part-time) for males is more countercyclical than the female transition rate. Fahrer and Pease (1993) and Hughes (1992), using data that did not distinguish between full- and part-time work, also found a greater countercyclical effect for male EU transitions. The female transition rate is only countercyclical through the effect of signifcantly higher probabilities of part-time work outflows to unemployment. Fahrer and Heath (1992) suggested that the probability of females moving from part-time employment to unemployment has been quite stable (p 23), Table 3 suggests there is a significant countercyclical effect present.

Finally, the results in this paper indicate, for males, there is a significant increase in the probability of moving between full-time and part-time work during a recession. Fahrer and Heath (1992) did not refer to cyclical effects operating on transition rates between full- and part-time work.

Next the results are considered with reference to one of the hypotheses that has been advanced to account for a countercyclical UE flow. Burda and Wyplosz (1994) suggest that recessions encourage firms to hire from the unemployed as the 'quality' in the expanded pool improves and it is less costly during recessions to undertake adjustment to the workforce under the guise of restructuring or through worker quits. It is clear, based on the cyclical coefficients in Table 3, that the countercyclical UE and EU flows in Australia have been driven by males rather than females. For males there is the possibility that the significant countercyclical flow from full-time employment to unemployment can expand the size and quality of the unemployment pool, generating some of the countercyclical UE flow. Whereas the female EU flow from full-time employment is acyclical; there is no growth in the size or quality of the female unemployment pool from full-time employment during a recession. Flows between unemployment and part-time employment reveal a similar but less extreme pattern. Some evidence on the quality of the unemployment pool can be ascertained from the annual ABS data on unemployment and educational attainment. Figure 1 depicts the numbers of unemployed males and females with post-school qualifications for the years 1980-1993. Clearly, rapid increases in the numbers of males with tertiary qualifications occurs during periods of recession. In Figure 2 the ratio of post-school qualified to those without post-school qualifications is shown. The 'quality ratio' for males rises to catch up to female levels with the onset of recession, though it is worth noting that both ratios continued to rise in 1992-93.

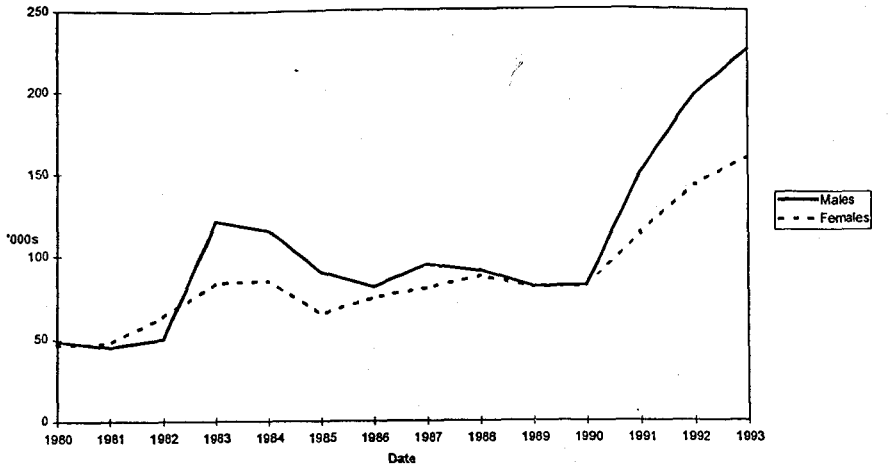
Given the variation in job destruction, job creation and employment reallocation between the two recessions (Borland 1996c) discussed earlier, it will be instructive to isolate the cyclical effects of the latest recession. A

subset of the data sample from 1985-1992 was used and the unemployment outflow results are presented in Table 4. The countercyclical UE flow for this sub-sample is now entirely the result of male flows. The female unemployment to part-time employment flow has become acyclical and the unemployment to full-time employment has become procyclical. In addition, all transition rates out of unemployment have now become procyclical. The male-female flow differences observed in the whole sample have become even more pronounced.

Finally, in this section, the cyclical pattern of flows and transition rates between full-time and part-time work will be considered in more detail. In a US study of part-time employment during recessions Bednarzik (1983) analysed the two main categories for involuntary part-time employment over the business cycle; these are described in US data as 'Slack Work' and 'Could only find a part-time job'. He identifies the former with changes in hours and the latter with changes in employment related to structural change. Bednarzik concludes that the cyclical behaviour of involuntary part-time employment is accounted for by changes in hours rather than changes in employment. Figure 3 presents the equivalent category of 'Slack Work' for Australian data 'Stood down,on short time, insufficient work'. It is males who suffer almost all of the involuntary hours adjustment in a cyclical downturn (Stood Down) and this has been particularly significant in the latest recession.

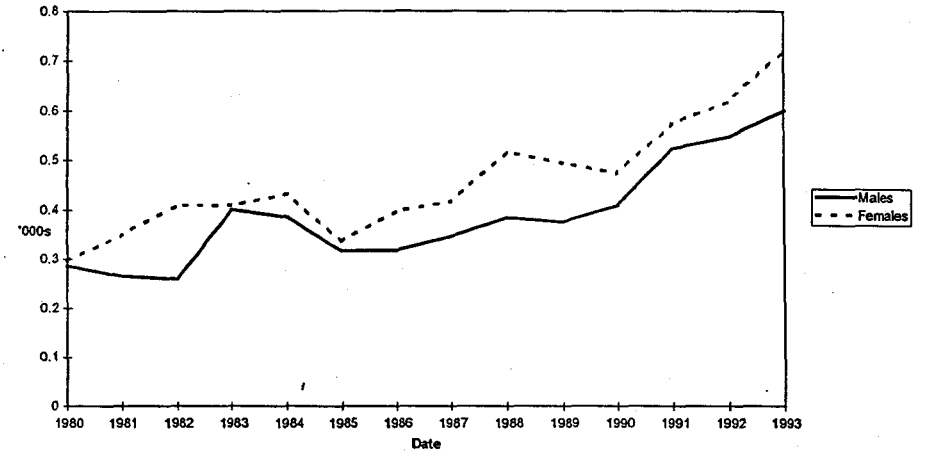
Figure 3 can be reconciled with the regression results in Table 3. Male flows and transition rates between full-time and part-time employment are highly countercyclical and this is attributed to hours adjustment (stood down). Females do not suffer an increased incidence of being stood down and so no countercyclical effects are exhibited. By June 1992, males stood down as a percentage of total male employment was 1.6 per cent while the corresponding figure for females was 0.008 per cent. To accommodate the fact that there is an increase in transition rates in both directions, it is possible that employer recalls are increasing commensurate with the rise in numbers being stood down. If the incidence of recall and stood-down are increasing during a period of a cyclical downturn it lends further credence to the notion that worker and firm heterogeneity determine some of the features seen in gross flow data in a recession. From the cyclical coefficients we note that the proportionate rise in the male full-time to part-time transition rate is greater than the rise in the part-time to full-time rate. Thus, the stock of workers stood down rises in a downturn.

Figure 1: Numbers of unemployed with post-school qualifications 1980



Source: ABS 6235.0 and 6227.0

Figure 2: Ratio of unemployed with post-school qualificatins to total unemployed 1980-1992



Source: ABS 6235.0 and 6227.0

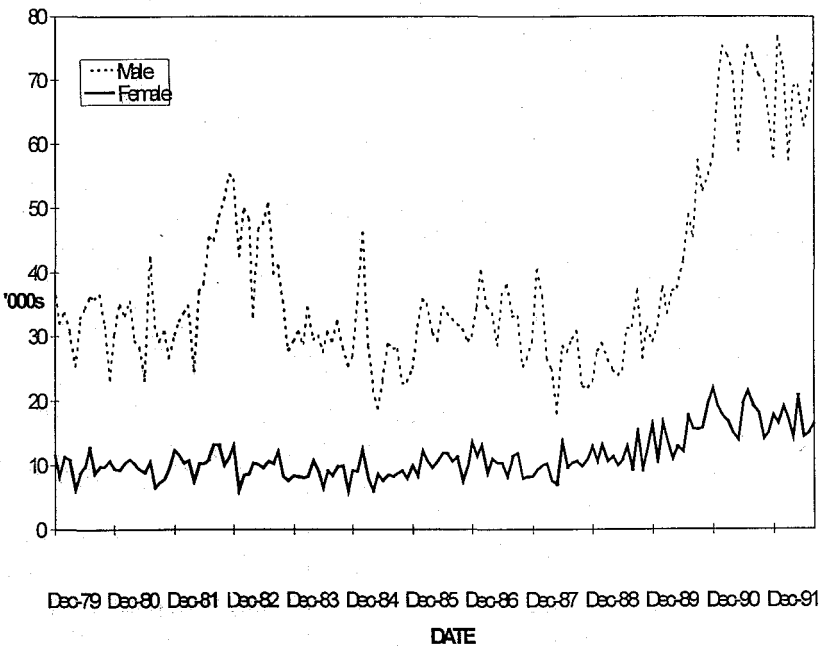
https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

Table 4: Trend and Cyclical Influences on Transition Rates, 1985-1992

	Trend	se	Cyclical	se	adj R^2	DW	method
Unemployment to f/time employment							
Males (Gross flow)	-0.0007	0.0006	0.66*	0.12	0.52	2.18	
Males (Transition rate)	-0.0003	0.0006	-0.82*	0.12	0.61	2.22	
Females (Gross flow)	-0.001*	0.0005	-0.32*	0.11	0.53	2.43	AR1
Females (Transition rate)	-0.009*	0.0005	-1.80*	0.11	0.79	2.50	AR1
Unemployment to p/time employment							
Males (Gross flow)	0.006*	0.0006	0.88*	0.13	0.81	1.79	
Male (Transition rate)	0.007*	0.0006	-0.60*	0.13	0.65	1.83	
Females (Gross flow)	0.005*	0.0005	0.10	0.10	0.79	1.91	
Females (Transition rate)	0.005*	0.0005	-1.39*	0.10	0.82	1.87	

* significant at 1% level
Source: ABS 62030.I

Figure 3: Stood Down, on Short Time, Insufficient Work



5. Conclusions

This paper has attempted to identify the cyclical effects on gross flows and transition rates of workers, at a disaggregated level, within the Australian labour market; with particular reference to the components of the counter-cyclical UE flow. The countercyclical UE flow between 1980 and 1992 has

https://doi.org/10.1177/103530469700800108 Published online by Cambridge University Press

been driven predominantly by male flows (in the period since 1985 countercyclical UE flows have been exclusively male). This includes a statistically significant increase in the numbers moving into full-time work at the same time as the flow into unemployment from full-time work rises. By contrast, there is no cyclical pattern for female flows between unemployment and full-time employment. Burda and Wyplosz (1994) argue countercyclical UE flows occur through an expansion in the unemployment pool (countercyclical EU flow) offering firms more quality applicants to draw upon at a time when the opportunity cost of hiring and firing is low. However, as the growth in the pool is larger than the increase in outflows, the male transition rate (PUE) is significantly procyclical. As the female full-time EU flow does not increase in a downturn, there is no addition to the quality of the pool. This is reflected in the acyclical UE flow and a procyclical transition rate which is approximately twice as large as for males. Some supporting evidence for the Burda and Wyplosz (1994) hypothesis is found in ABS data on the numbers of post-school qualified in the unemployment pool.

A possible explanation for the greater slowdown in the female UE transition rate is the influence of the added worker effect; women, particularly married women, exhibiting greater attachment to the labour force in recession to compensate for the loss of income from spouses. A significant procyclical UN transition rate, which may be indicative of added worker effect (Fahrer and Pease 1993), was identified for females. However, the male UN transition rate was estimated to be significantly procyclical with a coefficient three times as large. Consequently, growth in the female unemployment pool through a slowdown in exit probabilities to outside the labour force is more than matched by a simmilar effect in the case of males.

Finally, the cyclical effects on flows and transitions between full-time and part-time work were consistent with the time series evidence on workers stood down. For the male workforce, recessions are periods of significant hours adjustment generating contemporaneous increases in the probability of moving between full- and part-time work.

Future research into the factors influencing worker transition behaviour including the gender differences revealed in this paper can draw upon information from the forthcoming ABS 'Survey of Employment and Unemployment Patterns' (SEUP). SEUP is a longitudinal survey of the determinants of change in labour force status of 'jobseekers', conceived to monitor the effects of the Working Nation employment strategy. It offers a new opportunity to explore the dynamics of an individual's labour market history with detailed information on all work and non-work episodes.

Notes

1. Abowd and Zellner (1985) and Poterba and Summers (1986) attempted to adjust the flows using reinterview survey information. This information is not available in Australia.
2. The US studies found that the flows into and out of not-in-the-labour-force are most affected by classifcation error whereas those between U and E are less affected.
3. Recent work by Harris (1996) suggests that when applying cointegration methods to modelling unemployment inflows and outflows it is far more efficient to use multivariate methods (Johansen 1992) than single equation methods like Engle-Granger. The former method allows for more than one cointegrating vector. Thus inflows can affect outflows and vice versa, which follows as a more natural procedure given their strong correlation.
4. Davis and Haltiwanger (1992) estimate up to 40-50 per cent of gross worker flows stemmed from employment reallocation through job creation and destruction for the US manufacturing industry. Mumford and Smith (1996) estimate about 45 per cent of worker reallocation across all industries was associated with gross job reallocation.
5. No research into churning flows has been conducted in Australia. Burgess et al (1996) investigated churning flows using state level US data for all industries and found churning flows to be procyclical.
6. All indiustries except agriculture and defence.
7. The equations were run with the data in levels and this made no difference to the statistical significance to the cylical results.
8. All regressions undertaken with Microfit 3.0 package.

References

Abowd, J.M. (1994) 'Gross worker and job flows in Europe by M. Burda and C. Wyplosz – Comments', *European Economic Review*, vol 38, pp 1316-1320.

Abowd, J.M. and Zellner, A. (1986) 'Estimating Gross Labour Force Flows', *Journal of Economic and Business Statistics*, 3, pp 254-283.

Antolin, P. (1995) 'Gross worker flows: How does the Spanish evidence fit the stylised facts?', *Institut d'Analisi Economica, CSIC* Working Paper 303.95, pp 1-16.

Bednarzik, R.W. (1983) 'Short workweeks during economic downturns', *Monthly Labor Review*, June 1983, pp 3-11.

Barkume, A.J. and Horvath, F.W. (1995) 'Using gross flows to explore movements in the labor force', *Monthly Labor Review*, April 1995, pp 28-35.

Blanchard, O.J. and Diamond, P. (1990) 'The Cyclical Behaviour of the Gross Flows of U.S. Workers', *Brookings Papers on Economic Activity*, Vol 2, pp 85-155.

Borland, J. (1996a) 'Labour Market Flows Data for Australia', *The Australian Economic Review* 2nd Qtr 1996, pp 225-235.

Borland, J. (1996b) 'What can labour market flows tell us about unemployment ?: Evidence for Australia', Paper presented to Macroeconomics Workshop, University of Melbourne.

Borland, J. (1996c) 'Job Creation and Job Destruction in Manufacturing Industry in Australia', *The Economic Record*, Vol 72, No 216, pp 46-62.

Burda, M. and Wyplosz, C. (1994) 'Gross worker and job flows in Europe', *European Economic Review*, Vol 38, pp 1287-1315.

Burgess, S. Lane, J. and Stevens, D. (1996) 'Job Flows, Worker Flows and Churning' *Economics Letters*, forthcoming.

Chapman, B. Junankar, P.N. and Kapuscinski, C.A. (1992) 'Long-term unemployment: Projection and Policy', *Australian Bulletin of Labour*, 18 (3), pp 195 207.

Clark, K. and Summers, L. (1979) 'Labour Market Dynamics and Unemployment: A Reconsideration' *Brookings Papers on Economic Activity,* No 1, pp 13-60.

Fahrer, J. and Heath, A. (1992) 'The Evolution of Employment and Unemployment in Australia', *Reserve Bank of Australia*, Research Discussion Paper, No 9215.

Fahrer, J. and Pease, A. (1993) 'The Unemployment/Vacancy Relationship in Australia', *Reserve Bank of Australia*, Research Discussion Paper, No 9305.

Hughes, B. (1992) 'Trends and Cycles in Unemployment Gross Flows: A preliminary investigation', Paper delivered at 21st Conference of Economists, University of Melbourne.

Jones, S.R.G. (1993) 'Cyclical and Sesonal Properties of Canadian Gross Flows of Labour', *Canadian Public Policy*, Vol XIX, 1, pp 1-17.

Leeves, G.D. (1995) 'Recent Evidence on the Cyclical Properties of Australian Gross Flows of Labour', *UNSW School of Economics*, Discussion Paper, 95, 2.

Mumford, K. and Smith, P.N. (1996) 'Gross Job Flows and Reallocation in Australia', Paper delivered at 25th Conference of Economists, Australian National University, Canberra.

Poterba, J.M. and Summers, L.H. (1986) Reporting Errors and labour market Dynamics', *Econometrica*, Vol 54, No 6, pp 1319-1338.

Saint-Paul, G. (1992) 'Explaining the cyclical behaviour of labor market flows: A dual perspective', *Economics Letters*, Vol 39, pp 339-343.

Williams, D.R. (1995) 'Women's part-time employment: a gross flow analysis', *Monthly Labor Review*, April 1995, pp 36-44.