Examining the relationship between commuting patterns, employment growth and unemployment in the NSW Greater Metropolitan Region

Anthea Bill, William Mitchell and Martin Watts[1]

Abstract

This paper employs the Labour Market Accounts framework to explore how employment growth and commuting patterns interacted to determine changes in the spatial distribution of unemployment in Statistical Local Areas within the NSW GMR over the period 1996-2001. Separate regression models (including control variables) for men and women provide estimates of the relative strength of the relationships between these labour market adjustment responses and the percentage local employment change. The results show that employment growth between 1996 and 2001 has elicited substantial changes in commuting behaviour. Men reveal greater in-commuting and migration responsiveness to employment growth. Unemployment changes in local areas of the Greater Metropolitan Sydney region have been swamped by commuting responses, potentially posing problems for locally targeted employment strategies.

Keywords: Labour mobility, commutingand migration, regonal uneployment

Introduction

Analysis of regional labour markets in Australia reveals persistent disparities in rates of labour utilisation (Mitchell and Bill, 2005b). In particular, unemployment dispersion has not fallen despite the decline in the national unemployment rate since 1993. There is increasing evidence that regional labour market outcomes are not determined exclusively by the national business cycle, even if account is taken of industrial structure, so that reliance on indiscriminate Keynesian macroeconomic policy will not redress persistent inequality in labour utilisation rates (Mitchell and Juniper, 2006). In addition, regions differ in their composition of unemployment between short and long term, but notwithstanding the spatial persistence of unemployment, the evidence does not support the commonly held view that long term unemployment is irreversible (Mitchell and Bill, 2005a).

Moreover, when employment growth is spatially uneven as it has been over the 1990s, regionally localised growth (and stagnation) may promote strong migratory and commuting responses, as relatively advantaged workers seek out employment opportunities. Gordon (2003: 56) argues that few barriers to labour market adjustment exist at the small area level. While interactions between labour markets are strongest between proximate or neighbouring regions (Mitchell and Bill, 2004 and 2005a, 2005b for empirical application to Australia), adjustments to disequilibria travel across sub-markets relatively quickly. Such adjustments occur through commuting and migration; and the majority of migration is through small moves between neighbouring regions (Gordon, 2003: 59). Migration and commuting are likely to play a greater role in times of buoyant economic activity than recession (Gordon, 2003). Further, unevenness in the distribution of employment opportunities is likely to be the key motivating factor, rather than differentials in the rewards and risks of the destination region (Gordon, 2003).

From a policy view point, commuting and migration are liable to directly impact on the effectiveness of local employment growth in reducing local unemployment (Renkow, 2003). In-commuting may frustrate the attempts of local policymakers to deliver opportunities to resident unemployed or to stimulate local business via increased resident purchasing power. On the other hand, local job creation strategies may not be strictly necessary to revitalise flagging local economies, if resident workers are able to secure employment in neighbouring regions. This reliance on residential mobility to remedy regional downturns may heavily disadvantage low-skilled workers who are less likely to commute or migrate (Mitchell and Bill, 2005b).

In this paper we employ the labour market accounts (LMA) framework for the period 1996-2001 to analyse these labour market responses in the NSW GMR, one of the most buoyant economic regions in Australia over the 1990s. This framework decomposes the movements in working age population (*WAP*) and labour force (*LF*) for a particular area to determine who fills the jobs arising from changing employment levels. We provide estimates for the following components: (a) labour force changes due to demographic processes, which are broken down into natural increase and net in-migration; (b) labour force changes due to changes in the labour force participation rate; (c) changes in unemployment, which are broken down into changes arising from demographic

processes and changes arising from changes in the percentage of the labour force that are unemployed; and (d) changes in net in-commuting.

Regression models are estimated to assess the relative strength of the relationships between these adjustment responses and percentage employment change. Separate models are estimated for men and women to test whether their respective adjustment processes are different. We also augment the regressions to determine whether the initial occupational structure of each area impacts on the adjustment process.

The results show that migration and commuting responses are dominant with employment growth between 1996 and 2001 eliciting substantial changes in commuting behaviour. There are clear differences between men and women, with men showing relatively greater in-commuting responsiveness to employment growth. The important implication is that as a result of this mobility, unemployment changes in local areas have been muted.

In Section 2, we review the LMA literature, followed in Section 3 by a presentation of the LMA framework and the data to be used. Section 4 utilises the decomposed labour market responses in regression models to estimate the relation between employment change and the components of labour market adjustment. Concluding comments and policy implications are presented in the final section.

The labour markets accounts literature

A number of UK studies of cities have analysed the 'sectoral and spatial shifts for different sections of the labour force' (Bailey and Turok, 2000: 631) arising from the processes of de-industrialisation and de-urbanisation within the LMA framework. An equivalent approach to regional labour market analysis which has been extended to analyse localised fiscal impacts of growth was developed separately in the US by researchers within the Community Policy Analysis Network (see Scott and Johnson, 2000; Renkow, 2003). The major differences between the two approaches relate to the analytical methods used and applications targetted.

Bailey and Turok (2000) examined the impact of job loss on the labour market adjustment process across major cities in Britain from 1981 to 1991. They found high rates of adjustment occurred through migration and changes in commuting patterns, but some of these changes arose from workers relocating out of the cities, but continuing to work in them. For some of the resident workforce, however, the adjustment took the form of higher levels of economic inactivity, which combined with out-migration led to unemployment falling despite lower employment. The authors identified major gender and occupational differences in responses to employment changes. Women were more likely to drop out of the labour force in response to employment loss, and women in less skilled occupations had a much higher rate of inactivity than their more skilled counterparts. Also cities with high shares of manual workers experienced less out-migration and greater increases in inactivity when employment fell. The authors attribute these results to a number of factors. First more qualified individuals have higher incomes and are able to commute greater distances. Also, women tend to be more constrained than men due to their higher level of domestic responsibilities, and greater incidence of part-time work. Second, less qualified workers are alleged to experience

greater barriers to migration than professional and managerial employees, which can be attributed to income levels, moving costs and barriers to migration arising from the social housing system. Bailey and Turok (2000: 648) suggest that there are likely to be few direct benefits for residents from creating professional and managerial employment because: (a) there are few unemployed residents in these occupations; and (b) the potential applicants for these jobs have wide commuting fields and hence significant choice about housing location. Conversely, job creation for less qualified workers brings direct local benefits. Over half of the jobs are obtained by residents who were previously unemployed or inactive; while more than a quarter go to in-migrants or those who would have out-migrated. Few jobs are lost to commuters.

Renkow (2003) employs the LMA framework to explore the labour market adjustment process across both urban and rural counties in the U.S. over the period 1980-90. The motivation for his study is both who secures new jobs created in a particular county, but also the public finance implications, since 44 per cent of local public expenditures in rural North Carolina are funded by residential property taxes. Changes in commuting patterns and the size of the labour force account for most of the labour market adjustment associated with employment change, rather than the unemployment rate, which is consistent with Owen *et al.* (1984). Significant differences in the pattern of labour market adjustment are found between rural and metropolitan counties. The significant take up of new jobs via in-commuting suggests that leakages associated with employment shocks may be substantial (Renkow, 2003: 510).

The labour market accounts (LMA) model

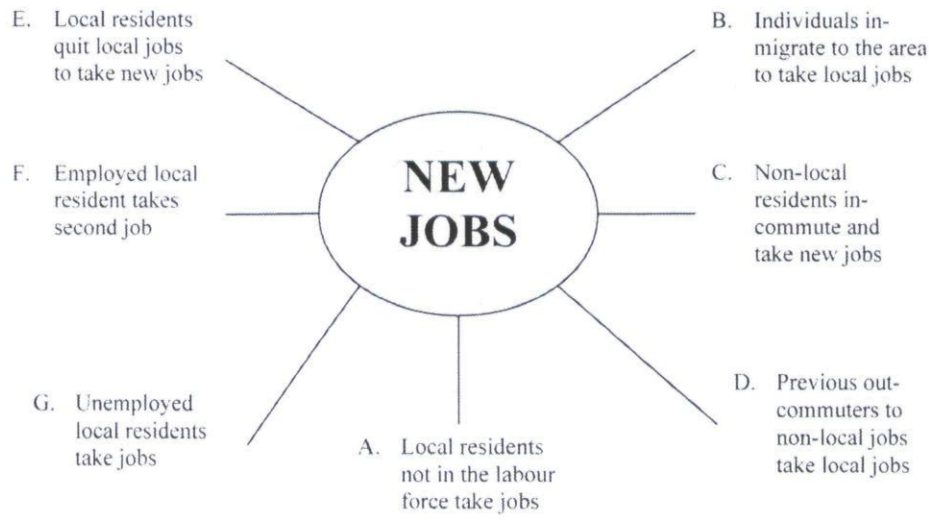
The LMA framework decomposes movements in working age population (*WAP*) and labour force (*LF*) for a particular area to determine who fills the jobs arising from employment growth. The approach is useful for analysing the extent to which a community enjoys higher incomes as a result of employment growth Barkley *et al.* (2002) and provides a basis for measuring the shortfall of jobs in a local area (Bailey and Turok, 2000).

Figure 1 presents a stylised version of the LMA framework to show the seven sources of take-up of new local jobs. Following Barkley *et al.* (2002), local residents who are currently not in the labour force, may choose to become economically active (A) by increasing their labour force participation. Local unemployed residents may gain local employment (B). Local residents who are in employment (locally or not) may take additional jobs (C), or they may quit and take new local jobs (D, E). Residents from outside the local area may also in-commute (F) or 'in-migrate' into the local area (G) and secure employment there.

The system of labour market accounts used in this paper draws on the contemporary approach of Bailey and Turok (2000), conceptualised in Figure 1. Bailey and Turok (2000) note that employment change over time in an area gives rise to three interrelated changes, namely labour force variations, which incorporates the level of net in-migration, changes in the number of these residents who are unemployed and changes in net commuting flows. In the process of estimating this relationship the labour force change is given to be a function of change in the working age population due to demographic factors (say new labour market entrants) and net out-migration. Changes

in unemployment are similarly broken down into a component associated with changes in labour force participation and a function of the unemployment rate. The final component of the accounts arises from the change in the net in-commuting associated with the local area, expressed as the difference between the change in local employment and the change in the level of employment of residents, some of which is local. Detailed working is included in Bill *et al.*(2005).

Figure 1: Allocation of new jobs among components of the labour force



Source: Barkley et al, 2002.

The primary data for this analysis are Statistical Local Area (SLA) data drawn from ABS Census 2001. A simple comparison of the working-age profile over the five years yields the natural increase in the working-age profile from individuals getting older minus any deaths in that age group plus the level of net in-migration. The natural change in the working-age profile is obtained by age adjusting the 1996 working-age profile. SLA level death rates were devised using ABS (2001a) and ABS (2001b). An estimate of deaths across the age distribution for men and women in each SLA over the 5 year period is obtained (see Bill *et al.* (2005) for details). While the NSW Greater Metropolitan Region (GMR) study area officially comprises 70 SLAs, only 55 SLAs were included in this study - the Sydney metropolitan area, Newcastle, Blacktown, Sutherland Shire but omitting SLAs in the upper and northern Hunter. This smaller dataset was imposed by the restricted availability of 1996 Census data. Data availability also does not permit complete disaggregation of labour market accounts by occupation. A complete analysis would require unemployment by occupation and gender for each spatial area.

Modelling labour market responses to employment growth

Overview of labour market responses

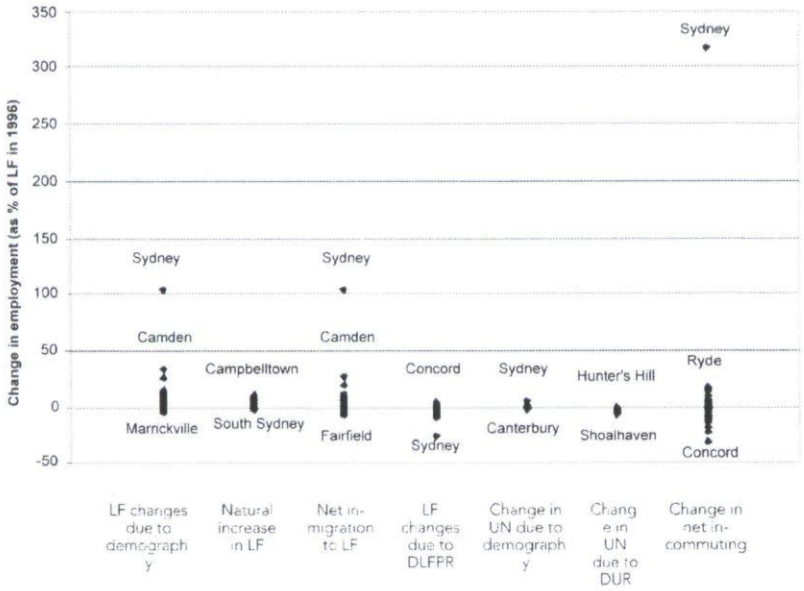
Summary statistics of the labour market responses to employment change between 1996 and 2001 (Table 1), show that Greater Metropolitan Sydney gained on average 8.6 per cent of their male labour force and 8.8 of their female labour forces over this period via demographic changes with net in-migration dominating (4.6 per cent for males and 5.3 per cent for females). In this growth period, changes in male labour force participation reduced the available labour force on average across the areas whereas female labour force participation increased. On average, employment growth only had a muted impact on the unemployment of residents. Interestingly changes in net in-commuting represented the dominant labour market response to the extra employment generated over the period. This is true for both males (5.6 per cent on average) and females (4.5 per cent on average) for the study areas shown.

Table 1: Summary of labour market responses to employment change, 1996-2001

	Mean	Std. Dev.	Maximum	Minimum
Males				
LF changes due to demography	8.6	14.8	105.0	-3.6
Natural increase in LF	4.0	2.9	11.8	-1.6
Net in-migration to LF	4.6	15.1	105.2	-6.1
LF changes due to DLFPR	-2.1	4.0	4.6	-24.9
Change in UN due to demography	0.5	1.0	6.0	-0.6
Change in UN due to DUR	-1.6	1.1	0.4	-4.4
Change in net in-commuting	5.6	44.0	319.2	-30.1
Females	Mean	Std. Dev.	Maximum	Minimum
LF changes due to demography	8.8	16.5	118.8	-3.4
Natural increase in LF	3.4	3.0	10.5	-3.1
Net in-migration to LF	5.3	16.6	117.9	-5.4
LF changes due to DLFPR	1.6	3.6	8.3	-17.3
Change in UN due to demography	0.8	1.2	8.0	-0.4
Change in UN due to DUR	-1.4	1.2	0.2	-4.6
Change in net in-commuting	4.5	38.8	283.1	-19.6

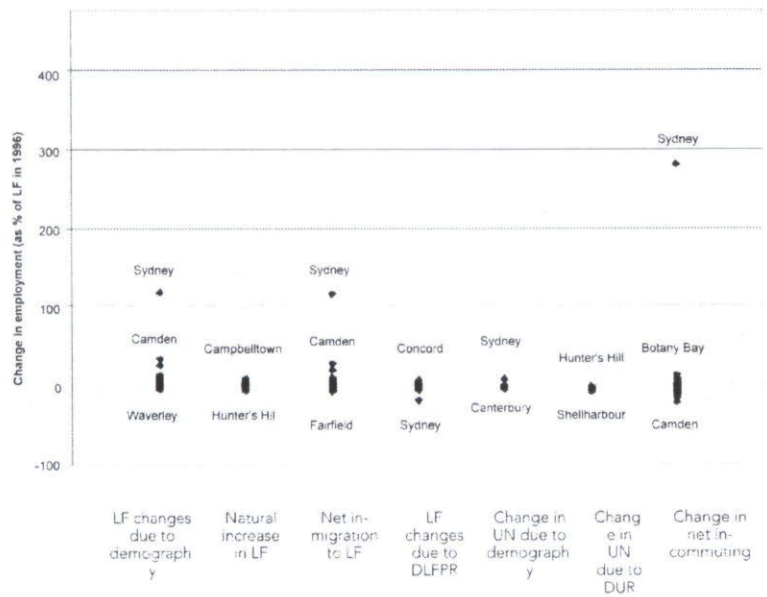
Note: components are expressed as a percentage of 1996 labour force, for males and females, respectively. LF refers to the Labour Force, _LFPR is the change in the labour force participation rate, UN is unemployment and _UR is the change in the unemployment rate.

Figure 2: Change in employment by SLA, 1996-2001, Male residents



Source: Authors' own calculations from Equation (6).

Figure 3: Change in employment by SLA, 1996-2001, Female residents



Source: Authors' own calculations from Equation (6).

Figures 2 and 3 illustrate the individual LMA components of the employment change between 1996 and 2001 for men and women, respectively. Clearly, Sydney dominates the other SLAs for both men and women. The muted response of unemployment revealed in Table 1 also translates into a lack of variation in the unemployment responses across the SLAs. Employment growth between 1996 and 2001 did not significantly reduce residents' unemployment, partly because it was not of a sufficient strength, given movements in workers from other areas, through migration and commuting.

That the Sydney SLA emerges as an outlier in terms of demographic changes, in-migration and commuting in both Figures is hardly surprising. As a result of a considerable inner-city economic revival the workforce of Sydney expanded by 16 per cent over the 5 years. Most of this growth was in high-skill managerial and professional occupations in line with industrial shifts favouring the 'new economy' (Raskall, 2002: 284). Sydney's residential population almost doubled from 1991 to 1996 and again from 1996 to 2001. In August 2001 a well-educated workforce more than 16 times larger than the residential population of the city commuted inwards (Raskall, 2002: 285).

Regression analysis of labour market responses

Bailey and Turok (2000: 639) use regression models "to examine the relative strength of the relationships between employment change and each of the labour market adjustment variables." The first male and female equations involved regressing each of the labour market components outlined in Section 3 expressed as a percentage of the 1996 labour force on total local employment change between 1996 and 2001 expressed as a percentage of the 1996 labour force. The constant term captures labour market adjustments not attributable to employment change. We also employed systems estimation imposing the cross-equation restriction that the sum of the slope coefficients for the % change in employment should sum to one. The restricted results (not reported) generally accord with the unrestricted results.

We also seek to determine whether the initial occupational structure of an area impacts on adjustment. It is expected that areas with higher proportions of manual workers (labourers and tradespersons) would experience lower rates of adjustment, so that the adjustment processes of men and women would be different. While this arises partly due to occupational differences, women are more likely instrumentally attached to the labour force.

The male and female labour market adjustment responses to employment change are shown in Table 2 and Table 3. As noted above, the sample period was one of consolidated growth, following the 1991 recession. There was considerable adjustment to employment change in the form of net in-migration and net in-commuting with the latter dominating. For every 1000 male jobs created in an area, net in-commuting by men rose by 846 and 274 economically-active men migrated into the same area. The goodness of fit measures (adjusted R^2) indicate that the relationships are strong (0.97 and 0.86, respectively for in-commuting and in-migration). So both out-migration and out-commuting occur in areas where employment losses arise.

Overall the labour force responses due to demographic processes are smaller for women (Table 3). Further, while the net in-commuting response is lower for females (745 jobs per 1,000 extra jobs, compared to 846 for males), the statistically significant net in-migration coefficient indicates that for every 1,000 jobs generated net female in-migration on average is 306 (compared to 274 for males). Consistent with Bailey and Turok (2000) we find that females have exhibited a more dramatic participation response compared to males, a 2.3 per cent (on average) labour force increase which is not surprising given a period of consolidated employment growth. This is in contrast to the decline in the male labour force.

Strikingly, employment growth only had a small impact on unemployment for both males and females (1000 extra jobs reducing unemployment by 4 via reductions in the unemployment rate for males and 3 for females (although statistically this result is barely significant for males) but increasing it by 15 as a result of demographic processes for males and by 20 for females (including the hidden unemployed). For males with every 1000 jobs created, 61 workers dropped out of the labour force via participation rate changes. Given this surprising result, we explored the role of different age cohorts, but found no significant variations by age.

The picture of labour adjustment emerging within the Greater Metropolitan Sydney is that both men and women rely heavily on commuting responses across regions to gain income-earning opportunities, with migration being the second most significant response. This suggests that labour mobility between neighbouring regions is a strong adjustment factor in the Australian economy during the late 1990s.

Bailey and Turok (2000: 642) suggest that "part of the explanation for these changes must lie in the changes for different occupational groups." With a rising proportion of jobs in the professional and other skilled occupations, it would be expected that a larger proportion of the employment opportunities would be taken by in-commuters. This reflects the fact that the more advantaged population cohorts have greater choice of housing and transport and as a result tend to commute longer distances than the more disadvantaged segments of the population. Equally, the declining participation rate for the resident populations is consistent with a smaller proportion of lower skilled job opportunities.

The regression models for males and females were extended by adding control variables to the right hand side. A metropolitan dummy which took the value of 1 for the metro region and 0 otherwise was added. We also consider two occupational groups at opposite ends of the wage distribution, manual workers and professionals. The percentage of manual male workers in total male and female employment and the percentage of professional male workers in total male and female employment for each area were added to the basic regressions. If significant differences were found, the results would contribute to an explanation of persistent regional unemployment differentials based on the regional occupational structure.

Table 2: Labour market adjustment responses to employment change for males

Labour market adjustment component	Constant (%)	Coefficient for % change employment	t-statistic for % change employment	Adjusted R^2
Change in residents Labour Force				
Due to demographic processes	5.208	0.265	16.29	0.83
natural increase	4.067	-0.009	-1.18	0.01
net in-migration	1.141	0.274	18.05	0.86
Due to change in LFPR rate	-1.343	-0.061	-9.17	0.61
Increase in net in-commuting	-5.174	0.846	41.26	0.97
Change in unemployment				
Due to demographic processes	0.294	0.015	10.07	0.65
Due to change in unemployment rate	-1.536	-0.004	-1.41	0.02

Table 3 Labour market adjustment responses to employment change for females

Labour market adjustment component	Constant (%)	Coefficient for % change employment	t-statistic for % change employment	Adjusted R^2
Change in residents Labour Force				
Due to demographic processes	4.915	0.301	18.65	0.87
natural increase	3.488	-0.005	-0.61	-0.01
net in-migration	1.427	0.306	20.90	0.89
Due to change in LFPR rate	2.286	-0.050	-7.52	0.51
Increase in net in-commuting	-5.066	0.745	39.13	0.97
Change in unemployment				
Due to demographic processes	0.510	0.020	11.92	0.72
Due to change in unemployment rate	-1.397	-0.003	-0.96	0.00

Note: LFPR is labour force participation rate.

In all cases the fit of the regressions is improved with the introduction of occupational shares (see Table 4 and Table 5), in some cases, substantially. For males the labour market responses to employment growth are similar to those in Table 2. For every 1,000 jobs created, net in-migration rises by 150 and net in-commuting rises by 966, other things equal. The impact of adding occupational controls is similar for females – reducing the net in-migration response and increasing the net in-commuting response.

The adjusted results suggest that males have larger net-migration and net in-commuting responses compared to females after controlling for occupational structure.

Table 4: Male labour market adjustment responses to employment change with occupational structure and metro dummy

Labour market adjustment component	Constant (%)	Coeff. % change emp	t-stat % change emp	Coeff manual % total emp	t-stat manual % total emp	Coeff profs % total emp	t-stat profs % total emp	Coeff on metro dummy	t-stat metro dummy	Adj R^2
Change in residents Labour Force										
Due to demographic processes	3.97	0.173	6.90	-0.039	-0.54	0.362	4.59	-3.570	-1.74	0.68
natural increase	1.51	0.023	1.78	0.388	2.73	-0.111	-2.76	1.057	1.01	0.16
net in-migration	2.45	0.150	8.06	-0.427	-2.66	0.473	8.07	-4.627	-3.03	0.93
Due to change in LFPR rate	0.31	-0.085	-9.15	-0.443	-4.27	0.076	2.58	1.150	1.50	0.77
Increase in net in-commuting	-0.21	0.966	32.06	-0.767	-0.50	-0.480	-5.05	2.719	1.10	0.98
Change in unemployment										
Due to demographic processes	0.27	0.005	2.18	-0.021	-0.90	0.041	6.30	-0.388	-2.28	0.80
Due to change in unemployment rate	-0.20	0.002	0.61	-0.179	-4.00	-0.033	-2.60	0.589	1.79	0.42

Note: Adj R2 is the adjusted R2. Coeff refers to the estimated coefficient; emp is employment, profs is professionals.

Table 5: Female labour market adjustment responses to employment change with manual occupational structure and metro dummy

Labour market adjustment component	Constant (%)	Coeff. % change emp	t stat % change emp	Coeff manual % total emp	t stat manual % total emp	Coeff profs % total emp	t stat profs % total emp	Coeff on metro dummy	t stat metro dummy	Adj R^2
Change in residents Labour Force										
Due to demographic processes	0.53	0.119	5.42	-0.413	-2.25	0.580	9.45	-3.764	-2.82	0.95
natural increase	0.68	0.000	0.01	0.472	3.54	0.003	-0.07	-0.210	-0.22	0.21
net in-migration	-0.14	0.119	7.03	-0.885	-5.27	0.583	12.33	-3.554	-3.45	0.97
Due to change in LFPR rate	2.70	-0.109	-9.05	-0.304	-3.02	0.184	5.46	-2.061	-2.81	0.68
Increase in net in-commuting	-6.20	0.909	25.54	0.972	3.27	-0.506	-5.08	4.579	2.11	0.98
Change in unemployment										
Due to demographic processes	0.36	0.004	1.84	-0.019	-1.08	0.052	8.65	-0.775	-5.97	0.91
Due to change in unemployment rate	0.28	0.000	0.07	0.205	4.90	0.017	1.22	0.420	2.03	0.49

Notes: see Table

For males, metropolitan regions have lower net in-migration and lower unemployment due to demographic processes, other things equal than non-metropolitan areas. Females in metropolitan regions have lower in-migration (similar to males), lower labour force participation rates (in stark contrast to males), higher net in-commuting (in accord with males but with a stronger relative impact) and overall lower unemployment compared to non-metropolitan areas. All other labour market responses are insensitive to this geographic distinction.

For males in SLAs where the manual employment share is higher, the role of natural increase is higher, but, other things equal, the responses of net in-migration, labour force participation and unemployment from changes in the unemployment rate, are lower. The results for SLAs with higher female manual employment share are very similar.

Conclusion

This paper is the first to apply the LMA framework to Australian data and yields two policy-relevant results. First, commuting, followed by migration, was the main labour market adjustment mechanism for both men and women in the late 1990s. Thus considerable leakages exist in local employment creation, with the effects of local employment shocks rippling out across the Greater Sydney Metropolitan region. Such leakages, in upturns and downturns, need to be considered by policy-makers when estimating the returns to local residents of local employment generation. Men rely more heavily on commuting across local areas than women to gain income-earning opportunities in response to employment growth. Second, employment growth had only a small impact on the change in unemployment for both males and females. While this may partly be due to increased job-competition from in-migrants and in-commuters it remains that the overall employment growth has not been sufficient to generate enough jobs to satisfy the desires of the workers.

It may be, in the case of the NSW GMR that the occupational and industrial pattern of job growth, has benefited those employed in new economy rather than those in old economy industries, and has resulted in skill or spatial mismatch amongst local unemployed. Unfortunately only an occupational or industrial breakdown of these adjustment processes can shed light on this phenomenon, the subject of future work. It is often claimed that supply-side policies (such as retraining) ought to be directed towards the local unemployed when employment growth in their region is largely absorbed by in-commuters (Sunley *et al.*, 2006: 61). However, when there are insufficient employment opportunities macro-wide, and workers are highly mobile as they are within the NSW GMR, the most eligible job-seekers will out-compete the local unemployed for local jobs. Without a demand-led strategy (more job creation overall), supply-side policies to address localised unemployment will have minimal impact on the probability of employment. Gordon (1999) concludes that the solution may lie in employment creation strategies which target a less leaky area, such as a metropolitan wide area, and perhaps demand-side solutions might best be designed on a larger, region-wide scale (cited in Sunley *et al.*, 2006).

References

Australian Bureau of Statistics, (ABS) (2001a), *Demography NSW*, Cat no. 3311.1, Canberra, Government Publishing Service.

Australian Bureau of Statistics, (ABS) (2001b), *Deaths, Australia*, Cat no. 3302.0, Canberra, Government Publishing Service.

Bailey, N. and Turok, I. (2000) 'Adjustment to Job Loss in Britain's Major Cities', *Regional Studies*, 34(7), 631-653.

Barkley, D.L., Henry, M.S. and Warner, M. (2002) *Economic Development: The Role of Local Labor Market Adjustments*, Mississippi, Southern Rural Development Center.

Bill, A., Mitchell, W.F. and Watts, M.J. (2005) 'Examining the Relationship Between Commuting Patterns, Employment Growth and Unemployment in the NSW Greater Metropolitan Region', *Working Paper 05-10*, Centre of Full Employment and Equity, University of Newcastle.

Gordon, I.R. (2003), 'Unemployment and Spatial Labour Markets: Strong Adjustment and Persistent Concentration', in *Geographies of Labour Market Inequality*, Martin, R and Morrison, P.S. (eds), London, Routledge.

Gordon, I. R. (1999), 'Targeting a Leaky Bucket: The Case against Localised Employment Creation', *New Economy* 6, 199-203.

Mitchell, W.F. and Bill, A., (2004) 'Spatial Dependence in Regional Unemployment in Australia', in Carlson E. (ed) *A Future that works: economics, employment and the environment, Proceedings of the 6th Path to Full Employment Conference and the11th National Conference on Unemployment*, 312-326.

Mitchell, W.F. and Bill, A., (2005a), 'A Spatial Econometric Analysis of the Irreversibility of Long Term Unemployment in Australia', *Working Paper No. 05-05*, Newcastle, Centre of Full Employment and Equity.

Mitchell, W.F. and Bill, A. (2005b) 'Who Benefits From Growth? Disadvantaged Workers in Growing Regions', *Working Paper 05-12*, Centre of Full Employment and Equity, University of Newcastle.

Mitchell, W.F. and Juniper, J. (2006) 'Towards a Spatial Keynesian Macroeconomics', in Arestis, P. and Zezza, G. (eds.) *The Keynesian Legacy in Macroeconomic Modelling*, London, Macmillan/Palgrave, forthcoming.

Owen, D.W., Gillespie, A.E. and Coombes, M.G. (1984) 'Job Shortfalls in British Local Labour Market Areas: a Classification of Labour Supply and Demand Trends, 1971-81', *Regional Studies*, 18, 469-488.

Raskall, P. (2002), 'Equity Issues in the 'New Prosperity' of the 1990s: the Case of Sydney', *Australian Geographer*, Vol. 33, No.3, pp. 281-299.

Renkow, M. (2003) 'Employment Growth, Worker Mobility and Rural Economic Development', *American Journal of Agricultural Economics*, 85(2), 503-13.

Sunley, P., Martin, R., and Nativel, C., (2006), *Putting Workfare in Place – Local Labour Markets and the New Deal*, Oxford, Blackwell Publishing.

Scott, J. and Johnson, T.G. (2000) 'The Community Policy Analysis Network: A national infrastructure for community policy decision support', *Journal of Regional Analysis and Policy*, *28*, 49-63.

(Endnotes)

[1] The authors are Research Officer, Centre of Full Employment and Equity (Bill), Director of Centre of Full Employment and Equity and Professor of Economics (Mitchell), and Deputy Director, Centre of Full Employment and Equity and Associate Professor in Economics (Watts), all at the University of Newcastle, Australia.