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FUNCTIONAL ECONOMIC REGIONS AND LABOUR UNDERUTILISATION

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ABSTRACT

This paper addresses labour underutilisation and considers the factors that are associated with underutilisation risk of individuals embedded in diverse labour market regions. Taking survey and census data for Australian functional economic regions, this paper applies a broad framework that presents the risk of underutilisation as a function of individual characteristics, personal circumstances, and labour market characteristics. The analysis finds that employment outcomes are associated with individual characteristics and circumstances plus regional labour market conditions. The findings indicate that policy designed to address labour underutilisation needs to focus on the outcomes of a multilevel framework in order to be effective.

INTRODUCTION

Questions of labour market outcomes and disadvantage have long been an important component of the understanding and analysis of disadvantage. While labour market disadvantage is often considered in terms of unemployment and measured by official unemployment rates the recent global economic slowdown has been felt in terms that are much broader than just unemployment. For economists and other social scientists working in this area, a broader concept of labour market disadvantage — labour underutilisation — is considered to be a more holistic concept for understanding employment outcomes. In that the official unemployment rate is thought to underestimate the true level of joblessness and underused labour, an accurate understanding of underutilisation is required in order to inform and enable appropriate responses and reasoning within policy debates. Moreover, concerns are expressed about the extent of the underutilisation problem, because like unemployment more generally, labour underutilisation has significant impacts on economic efficiency, social isolation and exclusion, and individual wellbeing (Dooley & Catalano, 2003).

The definition of labour underutilisation used in this paper moves beyond narrowly defined unemployment to consider other forms of dislocation of

adequate employment. It includes individuals who want to work but are not included in ILO definitions of unemployment because they are not actively seeking employment, and it also includes individuals who are not working full time but would like to work more hours. More formally the paper considers individuals to be underutilised if they are:

- unemployed;
- working involuntarily part-time; or
- a discouraged job-seeker.

There is general agreement that underutilisation is of large enough magnitude to warrant its inclusion as an important area of social concern. International comparisons suggest that the gap between the official unemployment rate and a measure of underutilisation can be significant, often hiding the true extent of labour wastage. The work by Fothergill (2001) and others (Beatty, Forthergill & MacMillan, 2000; Turok & Edge, 1999) have illustrated the divergence that has appeared between activity rates and claimant unemployment rates in the UK, while in the US work has also recognised the utility of considering a broad measure of labour underutilisation (Clogg, 1979; Jensen & Slack, 2003). In Australia, while official unemployment rates have declined, there is significant evidence to suggest that taking a broader measure of labour underutilisation illustrates the true extent of labour disadvantage. Official Australian Bureau of Statistics (ABS) estimates illustrate the converging trends that characterise unemployment and underutilisation rates, suggesting that while headline unemployment rates have shown improvement, underlying labour market disadvantage as represented by broader labour underutilisation has remained much more constant. As of August 2008, the ABS estimated the unemployment rate to sit at 3.9 per cent, while at the same time estimating total labour underutilisation to be at 9.6 per cent (ABS, 2010). While this figure is lower than earlier estimates — Wilkins (2004) estimated underutilisation to be at 18 per cent — it does illustrate the gap between a narrow notion of unemployment and a broader term such as underutilisation.

Within the academic literature which aims at understanding the broad problems associated with underutilisation, approaches have focused on the ways in which individual characteristics impact on an individual's risk of being disadvantaged. The literature that has considered this has drawn on a range of theoretical lenses that seek to situate disadvantaged labour market outcomes as a function of, for example, skills, training and human capital (Becker, 1975), labour market segmentation (Peck, 1989), the impact of perceived employment opportunities (Humphrey, 1940; Long, 1958), decisions about job search and employment (Kingdon & Knight, 2006; Ehrenberg & Smith, 2003) or other tradeoffs between work and non-work (Becker, 1976, 1991; van Ham,

Mulder & Hooimeijer, 2001). International literature has included the work by Little (2006), Fieldhouse and Hollywood (1999) and Green and Owen (1998) into hidden unemployment and economic activity in the UK; Sa'di and Lewin-Epstein (2001) in Israel; Hilst and Schuup (2000) in Germany; and Partridge (2001) in North America. Little (2006) for example shows that the likelihood of belonging to a particular non-employed state is influenced by the level of education, ethnic background, marital status and child-care responsibilities and gender.   In Australia the work by researchers including Stricker and Sheehan (1981), Wooden (1993), and Gray, Heath and Hunter (2002) find that the degree of labour force discouragement is generally higher for females than for males, especially women with children under 15 years of age, and for unmarried people than for married. Also, people born in Australia are more easily discouraged than their foreign-born counterparts, as are secondary and tertiary students compared to non-students.

Apart from individual factors there is the question of how labour market institutions and processes shape the outcomes experienced by different groups and individuals. Of specific interest for geographers and other spatially influenced social scientists is how regional labour market contexts affect the ways in which labour market outcomes and processes operate. Placed in a broader context, this shifts the analysis of labour underutilisation from one that focuses almost exclusively on the impact of individual characteristics to a more holistic approach. This approach has become more widely accepted in recent years and is situated within a broad framework of employability that considers individual outcomes in terms of

> *… the capability to move into and within labour markets and to realise potential through sustainable and accessible employment. For the individual, employability depends on: the knowledge and skills they possess, and their attitudes; the way personal attributes are presented in the labour market; the environmental and social context within which work is sought; and the economic context within which work is sought* (DHFETE 2002, p. 7, see McQuaid & Linsday, 2005 for a range of definitions).

In this regard space and the interplay between individuals and a spatially or regionally specific labour market is considered to be an important determinant of individual labour market outcomes. In terms of employability, differences in aggregate labour demand across different spatially distinct labour markets or differences in the strength of local labour markets will interact with individual characteristics to determine the eventual labour market outcomes for an individual. The research work in support of this broader approach clearly illustrates the importance of aggregate labour market performance. For

example, focusing on the United States Flynn (2003) found that the more service and manufacturing jobs available within local regions the lower was the labour-underutilisation among individuals with characteristics which would otherwise disadvantage their labour market outcomes. Similarly, the Australian work of Wilkins (2004), Baum and Mitchell (2010), and Baum, Bill and Mitchell (2008) show that individuals with poorer employment characteristics do better when located within stronger labour markets.

The current paper is set within the context of these later studies in that it considers how individual labour market outcomes are shaped by both factors associated with individual social characteristics plus the influence of the types of regional labour markets an individual lives in. It extends previous Australian work by considering the role that specially designed functional economic regions have on outcomes. In what follows, the paper sets out the data and methodology issues associated with the particular analysis prior to considering the findings. The paper concludes with a discussion of the findings and the implications for policy.

DATA AND METHODS

In considering the main issues to be addressed the paper models labour market underutilisation as a function of individual level characteristics, social or personal circumstances and aggregate characteristics of functional economic regions. The investigation of the impacts and associations surrounding individual behaviour and outcomes has, as pointed out by Galster (2003), assumed several methodological guises with the focus often being on the best way to account for data that is hierarchical or composed of indicators taken at different levels of measurement. In the case of the current research we are faced with data measured at the individual level together with data measured at a broader regional level (Functional Economic Regions). In order to consider the issues raised in this paper we run a series of multivariate logit models which take into account the clustering of observations at the regional level. This provides us with a modelling technique that produces robust outcomes in the face of the hierarchical data structure and accounts for concerns regarding the independence of residuals in the regression when individuals are from the same region (Brent Moulton Problem).

The paper estimates multi-nominal logit models with individual respondents categorised into one of four labour market outcomes depending on responses to a range of questions contained in the Household, Income and Labour Dynamics in Australia (HILDA) survey (see below). The four categories used are:

- Adequately employed[1] — employed persons who do not fit the categories below, including those that are working part-time voluntarily;
- Involuntarily part-time — persons who are working part-time, but would like to work more hours (under-employed);
- Unemployed — Persons not working but actively looking for work;
- Discouraged worker (also known as hidden unemployed) — persons not working and not looking for work, who would take a job if one became available.

Models are fitted with reference to the following —

$$y_{i,j} = f(IC_{i,j}, PC_{i,j}, RC_j, \lambda)$$

where y_{ij} is the outcome on the categorical dependent variable accounting for labour underutilisation for individual i in region j; IC_{ij} is a range of variables accounting for the characteristics of individual i in region j, PC_{ij} is a range of variables accounting for the personal circumstances of individual i in region j, PC_j is a range of variables accounting for the characteristics of region j; λ is a correction accounting for the clustering of individuals within a given region. The models were run in Stata.

The models are built up in three stages:
- Model 1: individual characteristics and personal circumstances level independent variables, showing differences in labour underutilisation risk between respondents with different socio-economic and demographic characteristics;
- Model 2: Characteristics of functional economic regions showing differences in labour underutilisation risk between respondents residing in different regions;
- Model 3: The combination of model 1 and 2 showing the associations between individual characteristics and personal circumstances, functional economic regions and individual level labour underutilisation.

The main data used in this paper has come from the Household, Income and Labour Dynamics in Australia (HILDA) survey and aggregate level data from the Australian Bureau of Statistics (ABS). The HILDA survey is a longitudinal social and economic survey conducted annually which contains information on employment, individual socio-economic characteristics and household/family

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[1] Adequately employed is the reference category in the results shown in this paper.

characteristics. It also contains identifiers to allow broad spatial characteristics (such as labour market or local area available from census data and labour force surveys) to be considered.   This current paper considers the sixth wave of the HILDA survey undertaken in 2006. A reduced data set is used in this paper which includes individuals aged between 15 and 65 years of age defined as either adequately employed, involuntarily working part-time, unemployed or discouraged. This results in a reduced data set of around 9000.

Individual Characteristics

The individual level explanatory variables are guided by variables used in similar studies (Caspi, Wright, Moffitt & Silva, 1998; Dujardin & Goffette-Nagot, 2006; Le & Miller, 1999; Beggs & Chapman, 1988; Brooks & Volker, 1985; Harris, 1996; Dex & McCulloch, 1997; Flynn, 2003) and by the availability of data. It is expected that the following individual level dummy variables will be important:

- AGELS_25 Age less than 25 (1 if aged less than 25, 0 otherwise)
- AGE2544 Age 25 to 44 years (1 if aged 25 to 44, 0 otherwise)
- GENDER (1 if male, 0 if female)
- DEGREE Education at university level (1 if yes, 0 otherwise)
- POST_SECOND Education beyond high school but not university (1 if yes, 0 otherwise)
- MARRIED Marital status (1 if currently married, 0 otherwise)
- HEALTH Self reported disability or long term health issue (1 if have disability or long term health issue, 0 otherwise)
- ENG_PROF Self reported English proficiency (1 if poor or very poor English, 0 otherwise)

A further explanatory variable is included to represent the impact of family background

- ROLE_MOD measures the impact of parental employment during childhood (1 if no employed adult role model/parent, 0 otherwise).

In addition to family background, the HILDA data allows the development of proxies accounting for the impact of social networks on labour underutilisation. An index, ISOLATION, accounting for an individual's social networks and level of social isolation is included to account for the potential impact that social networks may play in labour market outcomes and was

developed using responses to questions relating to the extent to which individuals had contact with friends and colleagues.[2]

Functional Economic Regions

An important issue for the analysis presented in this paper relates to the extent to which the characteristics of local or regional labour markets result in differential impacts on labour market outcomes. The effects of regional labour markets are modelled by considering Australian Functional Economic Regions (FERs), with data available from the Australian Bureau of Statistics 2006 census. Functional economic regions approximate self contained labour market regions or travel-to-work areas (McCulloch, 2003) and were developed by Mitchell and Muysken (2008) using 2006 journey to work data and considering interaction via commuting flows using the Intramax procedure. A total of 141 Functional Economic Regions were delineated across Australia using this method and recent research has shown that the use of these spatial units provides robust areas in terms of possible spatial autocorrelation issues (Mitchell & Stimson, 2010).

The analysis includes five variables measured at the function economic region. As with the individual level variables, the aggregate level variables were chosen with reference to existing studies and theories and to data availability (McCulloch, 2003; Bartik, 1993; Flynn, 2003). The variables are designed to differentiate functional regions in terms of economic performance and demographic characteristics. The variables are:

- FER_UR; the unemployment rate in the region
- FER_PT; the percentage of part time jobs available in the region
- FER_EMP_SH; the share of national employment in the region
- FER_POP_SH; the share of national population in the region
- FER_EMP_CH; the percentage change in the number of jobs in the region

Functional Economic Regions and Labour Underutilisation

The results of the multi-nominal logit models with the individual characteristics and personal circumstances variables included are reported in Table 1. In all

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[2] The social network index was constructed by considering the main components from a PCA of questions coded on a five-point Likert scale. The questions included in the index are: "People don't come to visit me as often as I would like"; "I often need help from other people but can't get it"; "I don't have anyone I can confide in"; "I have no one to lean on in times of trouble"; and "I often feel very lonely".

Table 1: Regression results, individual characteristics and personal circumstances and labour market outcomes

	Involuntary part time			Unemployed			Discouraged job seeker		
	Coefficient	Robust z-scores	Exp β	Coefficient	Robust z-scores	Exp β	Coefficient	Robust z-scores	Exp β
AGELS_25	0.01	0.11	1.01	0.17	0.92	1.19	-0.30	1.65+	0.74
AGE2544	-0.18	2.25**	0.84	-0.23	2.39**	0.79	0.00	0.01	1.00
GENDER	-0.16	2.01**	0.86	-0.13	1.37	0.88	-0.22	2.61*	0.80
MARRIED	-0.82	9.57#	0.44	-1.43	9.65#	0.24	-0.82	9.13#	0.44
HEALTH	0.42	4.38#	1.51	0.90	5.65#	2.45	0.92	8.55#	2.52
ENG_PROF	0.61	6.07	1.84	0.56	3.13#	1.75	0.79	6.38#	2.21
DEGREE	-0.79	6.69#	0.46	-1.28	9.61#	0.28	-1.58	10.97#	0.21
POST_SECOND	-0.59	7.18#	0.55	-0.64	4.97#	0.53	-1.25	11.46#	0.29
ROLE_MOD	0.57	3.79#	1.78	0.78	3.61#	2.18	0.62	4.22#	1.85
ISOLATION	-0.06	1.36	0.94	-0.18	3.61#	0.83	-0.12	2.29**	0.88
Constant	-1.52	0.08		-2.16	0.12		-1.61	0.09	

+ significant @ 10%; ** significant @ 5% ; # significant @ 1%

cases the category 'adequately employed' is used as the reference so that risk of being involuntarily part-time, unemployed or discouraged are compared to being adequately employed.

Individual and personal circumstances model

The first three columns (2 to 4) of Table 1 report the result for the relative risk of being *involuntarily employed part-time* versus adequately employed. An analysis of Table 1 reveals that the coefficients for respondents aged between 25 and 45 is significant with this group being less likely to be involuntarily working part-time than the older reference category (aged 45 to 64 years). Being male or married reduces the likelihood of being involuntarily employed part-time. Having a long term health issue typically restricts the job opportunities available to an individual and consequently the coefficient on the variable accounting for the presence of a long-term disability or health issue is positive and significant. The coefficients of the two education variables are of the expected direction and both are significant. Having a higher degree or above or some form of post-secondary education is associated with a reduced risk of being employed involuntarily part-time. Lacking an employed role model during childhood significantly increased the relative risk of being involuntarily employed part-time.

The second category of labour underutilisation is 'unemployed' versus 'adequately employed'. The outcomes are reported in columns 5 to 7 in Table 1. Largely the significant variables reflect the vast amount of research exists which purports to understand supply — side factors that predict unemployment. The two age variables are of the expected direction with only the variable accounting for those aged between 25 and 45 being significant. This age group was significantly less likely than the reference category (aged 45 to 64 years) to be unemployed. Being young (less than 25) increased the relative risk of unemployment, but was, in this case, insignificant. Gender is not significantly associated with the risk of unemployment; however being married reduces the risk of unemployment. Having poor English skills significantly increased the risk of being unemployed as did having a long term health problem or disability. The education coefficients are negatively associated with unemployment illustrating the expected inverse relationship between negative labour market outcomes and increasing levels of education. The variable ROLE_MOD accounts for the presence of positive work role models in a respondent's childhood. The positive coefficient on this variable indicates that the presence of positive role models is important to labour market outcomes and situations where such role models are absent are associated with a higher relative risk of unemployment. In line with an increasing amount of research looking at the role of personal contacts and

labour market outcomes the social networks variable is negative. As the social networks measure is constructed so that higher scores indicate stronger networks or more personal contacts, the often hypothesised relationship between having stronger networks and positive job outcomes may be supported in this case. That is, individuals with a higher score on ISOLATION have a lower relative risk of unemployment.

The final three columns of Table 1 present the results for the final category of labour underutilisation: 'discouraged job seekers'. Of the two age group variables, only one (AGELS_25) is significant suggesting that younger people are less likely to be characterised as discouraged job seekers. The gender variable has a significant coefficient and indicates that females are more likely to be classified as discouraged compared to males and being married also reduces the likelihood of being a discouraged job seeker. Having a long term health problem or disability significantly increases the risk of being discouraged. Poor English skills have a significant and positive impact on the relative risk of being discouraged. The two variables accounting for education are again significant reflecting the negative association between human capital and the risk of underemployment generally. The positive coefficient on the variable accounting for having parents in paid employment during childhood indicates that the presence of positive role models is also important for understanding the risk of being a discouraged job seeker. Finally the isolation variable is negative suggesting that the relative risk of being a discouraged job seeker is lower as the score on the ISOLATION variable increases.

Functional economic region model

To consider the associations between individual level labour market outcomes and the performance and characteristics of broad labour markets, a model containing only the variables associated with the functional economic regions is presented in Table 2. As with the previous table columns 2 to 4 present the data referring to involuntary part-time employment. Three of the six FER variables are significantly associated with the likelihood of being employed involuntarily part-time. Not surprisingly, individuals in functional regions with larger shares of part time employment are more likely to be involuntarily working part-time. In addition, individuals residing in functional economic regions with higher unemployment rates are more likely to be employed part-time. Countering these factors, there is a weak significance between involuntary part-time employment and the level of jobs growth in the region. As job growth increases the likelihood of being employed part time declines.

Table 2: Regression results, functional economic region characteristics and labour market outcomes

	Involuntary part time			Unemployed			Discouraged job seeker		
	Coefficient	Robust std errors	Exp β	Coefficient	Robust std errors	Exp β	Coefficient	Robust std errors	Exp β
FER_UR	0.12	3.74#	1.13	0.14	2.53*	1.15	0.12	3.83#	1.13
FER_PT	0.03	2.70#	1.03	0.03	1.17	1.03	0.01	0.72	1.01
FER_EDU	-0.00	0.62	1.00	-0.02	2.81#	0.98	-0.01	2.95#	0.99
FER_EMP_SH	-0.02	0.44	0.98	0.17	2.45*	1.19	0.15	2.82#	1.16
FER_GWTH_JOBS	0.06	1.37	1.06	-0.14	1.84+	0.87	-0.15	2.20*	0.86
FER_EMP_CH	-0.01	1.71+	0.99	-0.01	0.67	0.99	-0.02	2.49*	0.98
Constant	-3.95	0.39		-4.71	0.53		-3.24	0.40	

+ significant @ 10%; ** significant @ 5% ; # significant @ 1%

Columns 5 to 7 report the findings for the category 'unemployed' versus 'adequately employed'. Four of the functional economic region variables are significant. If the strength of the labour market within the region is measured by the overall unemployment rate, then living in a region with a weaker labour market (higher unemployment rate) increases the likelihood that an individual will be unemployed. A positive association is also reported for the national share of employment. As the share of national employment within a region increases so does the likelihood that an individual will be unemployed. Two of the variables have negative associations with unemployment. The variable FER_EDU measures the aggregate level of people with tertiary education. Glaeser and Shapiro (2001) have hypothesised that a region with higher levels of aggregate skills (higher formal education) may have more success in attracting firms providing increased regional labour demand. The negative co-efficient on the education variable suggests that as the aggregate level of tertiary education increases in a region the likelihood of being unemployed falls. The final variable accounts for the percentage of jobs found in mining, government administration and defence and construction (the three highest growing industry sectors); as the proportion of jobs found in these sectors increases, the likelihood of being unemployed declines.

Results for the final category — 'discouraged job-seekers' — are presented in columns 8 to 10. Five out of the six functional economic region variables included are significant. As with unemployment, there is a significant positive association between being a discouraged job seeker and the regional unemployment rate and the share of national employment. In regions where unemployment is high or in regions with larger shares of national employment, the likelihood of being a discouraged job seeker increases. As with unemployment the aggregate level of tertiary education in the region acts to reduce the risk of being a discouraged job seeker. Similarly the proportion of jobs in growth industries found in the region also has an off-setting impact on the likelihood of being a discouraged job seeker. The final significant variable is change in the number of jobs, with the likelihood of being discouraged falling in regions recording higher growth in the number of jobs.

Individual, personal circumstances and functional economic region model

The final multinomial logit model includes factors measured across both individuals and the functional economic region (FER) they reside in (Table 3). The combination of the two levels of variables results in some changed outcomes across the categories of labour market outcomes. Importantly, the fact that many regional variables remain significant even after the inclusion of individual level variables provides support for the wider conceptualisation of labour underutilisation that is outlined here. For the category 'involuntary

Table 3: Regression results, individual characteristics and personal circumstances, functional economic region characteristics and labour market outcomes

	Involuntary part time			Unemployed			Discouraged job seeker		
	Coefficient	Robust std errors	Exp β	Coefficient	Robust std errors	Exp β	Coefficient	Robust std errors	Exp β
AGELS_25	0.03	0.23	1.03	0.19	1.02	1.21	-0.29	1.60	0.75
AGE2544	-0.17	2.14*	0.84	-0.23	2.32*	0.79	0.01	0.07	1.01
GENDER	-0.15	1.88+	0.86	-0.10	1.13	0.90	-0.19	2.23**	0.83
MARRIED	-0.86	9.74#	0.42	-1.48	10.22#	0.23	-0.87	9.33#	0.42
HEALTH	0.39	4.15#	1.48	0.87	5.56#	2.39	0.91	8.21#	2.48
ENG_PROF	0.65	6.20#	1.92	0.59	3.30#	1.80	0.81	6.25#	2.25
DEGREE	-0.74	6.07#	0.48	-1.23	8.83#	0.29	-1.55	10.81#	0.21
POST_SECOND	-0.60	7.64#	0.55	-0.66	5.21#	0.52	-1.26	11.58#	0.28
ROLE_MOD	0.52	3.47#	1.68	0.71	3.32#	2.03	0.55	3.78#	1.73
ISOLATION	-0.05	1.31	0.95	-0.18	3.56#	0.84	-0.11	2.27#	0.90
FER_UR	0.12	3.51#	1.13	0.15	2.70#	1.16	0.12	3.96#	1.13
FER_PT	0.04	3.43#	1.04	0.03	1.40	1.03	0.02	1.40	1.02
FER_EDU	0.00	0.20	1.00	-0.01	1.25	0.99	-0.00	0.87	1.00
FER_EMP_SH	-0.03	0.67	0.97	0.17	2.17*	1.19	0.12	2.19*	1.13
FER_GWTH_JOBS	0.06	1.38	1.06	-0.16	1.93+	0.85	-0.13	2.14*	0.88
FER_EMP_CH	-0.01	1.80+	0.99	-0.01	0.88	0.99	-0.02	2.94#	0.98
Constant	-3.50	9.18		-4.09	6.18		-2.66	6.87	

+ significant @ 10%; ** significant @ 5% ; # significant @

part-time' the likelihood increases if an individual has a long term health issue or disability, has poor English skills, lacked an employed role model, lives in a high unemployment functional economic region or a region with a high number of part-time jobs. The likelihood decreases if the individual is aged 25-44 years, a male, is married, has a degree or some post-school education and lives in a region that has experienced jobs growth.

For the second category of underutilisation — 'being unemployed' — the likelihood increases if an individual has a long term health issue or disability, has poor English skills, lacked an employed role model, lives in a high unemployment functional economic region or in a region with a higher share of national employment. The likelihood decreases if the individual is aged 25-44 years, is married, has a degree or some post-school education, has a lower level of social isolation and lives in a region that has a higher proportion of jobs in the three growth industries.

Finally, for the 'discouraged job seeker' the likelihood increases if an individual has a long term health issue or disability, has poor English skills, lacked an employed role model, lives in a high unemployment functional economic region or in a region with a higher share of national employment. These are the same as the unemployed status. The likelihood decreases if the individual is male, is married, has a degree or some post-school education, has a lower level of social isolation and lives in a region that has a higher proportion of jobs in the three growth industries or lives in a region that has experienced an increase in the overall number of jobs.

DISCUSSION AND CONCLUSION

This paper sets out an analysis of labour underutilisation in Australia using a combination of data from the sixth wave of the Household, Income and Labour Dynamics in Australia (HILDA) survey and aggregate employment data from the 2006 Australian Census of Population and Housing. Acknowledging that there exists a range of frameworks within which to place issues surrounding underutilisation, the paper casts the analysis in terms of a broad employability framework that consists of factors that include individual characteristics, family and personal circumstances and characteristics of aggregate local or regional functional economic regions.

In considering the analysis it is important to recognise that the outcomes and patterns identified have several limitations. It is important to note that the paper has not sought to identify causal relationships. Rather it has simply identified associations that exist between a range of independent variables net of other factors in the model and the dependent variable of interest, namely labour underutilisation. Additionally, the analysis presented could not consider

all hypothesised associations. For instance the analysis has not satisfactorily considered the ways in which labour market policy, which may be regionally differentiated, impacts on outcomes in the ways suggested by Peck (1998) and others (Helms & Cumbers, 2005; Jonas, 1996), nor has it been able to satisfactorily account for the impact of local vacancy conditions or the way in which there may be a local or regional skills mismatch (Abraham & Wachter, 1987; Holzer, 1991).

Being mindful of these limitations the analysis does provide some interesting insights. In terms of the first level of analysis — individual characteristics and circumstances — a range of widely discussed individual employability assets appeared important. There is clearly a gendered division in underutilisation outcomes with females more likely to be working part-time involuntarily or being a discouraged job seeker. These patterns reflect the findings of previous research, with the outcomes identified being compounded by the gendered dimension of segmented labour demand (Flynn, 2003; Wilkins, 2004; Sunley, Martin & Nativel, 2006) and the impact of changes in the make-up of households and other demographic factors which have impacted on the way in which female are able to engage in the labour market. Perhaps as expected, higher levels of education improved the likelihood that an individual would not be underutilised, illustrating the important returns to investment in education discussed by researchers working from a human capital theory perspective (Becker, 1975). Other individual level factors such as racial background or English proficiency were also important, especially in terms of the most extreme forms of underutilisation and may be associated with lower levels of necessary skills (in the case of language proficiency) or discrimination.

Aspects of a respondent's family background were also seen as important. Researchers such as Wilson (1987) have persuasively argued that household and family dynamics are important to understanding disadvantage in labour markets net of other factors. Social capital, the role models and the social/employment networks provided by parents are likely to impact on the life chances of children even into adulthood. The impacts may be through the knowledge regarding opportunities or may be through changes to preference, values or aspirations regarding work. The existing empirical research is highly suggestive of the impact of intergenerational outcomes suggesting that family background does have an important impact to play on school-to-work transitions and later in adult life (Caspi et al., 1998; McCoull & Pech, 2000) and the results presented here support these findings. Apart from issues surrounding intergenerational transfers of disadvantage, captured by whether the respondent's parents were working it may be that individuals who have weaker social networks have a higher risk of underutilisation than those with stronger social networks. There has been significant work on the impact that

social networks have on employment outcomes (see for example Granovetter, 1973; Elliott, 1999; Topa, 2001; Calvó-Armengol & Jackson, 2004) and the findings reported here support the suggestion that 'social isolation impedes individual success in the labour market because it denies residents informal job contacts that are critical not only for finding jobs but good jobs that promote prolonged labor force attachment' (Elliott, 1999, p. 200).

Over and above these individual level factors, regional or local labour market conditions and characteristics were also important. Although some existing research tends to ignore the impact of these spatial level factors, focusing only on the narrower individual influences, the analysis presented here has illustrated that there is an important independent regional labour market dimension to understanding individual level outcomes. Importantly, the background to the analysis suggested that the differential nature of regional labour markets would mean that net of other factors individuals with access to different types of labour markets would be differentially affected. It is clear that those labour markets which have deficiencies in broad labour demand characteristics result in an increase in the risk of negative labour market outcomes. This is a similar message to that presented by researchers including Green and Owen (1998), Turok and Edge (1999), Turok and Webster (1998) and Sunley et al. (2006). Deficiencies in jobs may be measured in a number of ways and the variables included in this paper suggested that while the general strength of the local labour market is important, it is also important to consider the types of jobs available — the type of industry as well as the tenure of jobs —the size of the labour market and the impact of jobs growth. One particularly interesting finding was the association between the size of the functional economic region — measured by national employment share — and the likelihood of being unemployed or a discouraged job-seeker. In regions where the national share of employment was higher, the likelihood of being in these two extreme forms of underutilisation increased. Although difficult to pin-point a causal chain, one possible explanation may be that smaller labour markets effectively export their unemployed and discouraged job-seekers, a suggestion that has been suggested elsewhere (Baum et al., 2005).

In sum, while the individual level variables might be thought of as accounting for risk associated with belonging to a particular socio-economic group or having weaker individual employability assets, there are other factors such as the constraints posed by caring responsibilities, the impact of family background, the strength of social ties and the contextual milieu of local labour markets within broad metropolitan areas which also act on labour market outcomes. These outcomes clearly suggest that narrow approaches to considering metropolitan labour market questions are likely to be less effective than those which take account of both the impacts of individuals and their

circumstances (people) and the potential impact of the contextual milieu of space, whether that be neighbourhood, locality, labour market region or some other level of scale.

Turning to consider the implications of the research for policy it is reasonable to suggest that the analysis discussed here can be useful in considering the best mix of policy with which to address labour market disadvantage. Discussion about policy mix has, in the past, debated the merits of both people based policy and place (regional) based policy (O'Connor, Stimson & Daly, 2001; Bolton, 1992; Karmel, McHugh & Pawsey, 1993; Partridge & Rickman, 2006). The policy message from this paper is that a mix of both may well be the most appropriate course of action. The empirical example discussed here clearly shows that if governments are to pursue policy to address questions of labour market disadvantage, then simply focusing on one facet of the problem will likely be sub-optimal. In several industrialised countries the emphasis of government policy on combating labour market disadvantage is to improve personal employment prospects by introducing schemes which focus on the employment assets of the individual job seeker that are increasingly neo-liberal in their approach. However, improving the employability of individuals through increasing their employability assets or helping them overcome other personal constraints to adequate employment is, in itself insufficient and to a large extent simply reshuffles the existing queue for the available jobs. A more sustainable and successful approach is likely to include also improving the available job opportunities. Turok and Webster (1998) and Sunley et al. (2006) argue that employment creation that is targeted at the local level (ie place based) is the missing link in much contemporary labour market policy. Similar arguments have been put forward by Australian researchers including Mitchell and Watts (1997) who suggest that buffer stock employment schemes or public sector employment schemes are required to appropriately address disadvantage in the labour market. A significant question also relates to the correct balance of jobs. Ensuring that sufficient full-time jobs are created will be important. Additionally local labour markets are generally not entirely self-contained. As was noted here some potential workers may be bumped down by the in-movement of commuters into an area (Gordon, 1999; Baily and Turok, 2000; Bill, Mitchell & Watts, 2005) and hence this is also an important issue in understanding potential labour market outcomes and adjustment in metropolitan labour markets. Clearly, while the exact mix between people based policies and place based policies will require careful consideration and further understanding ,there can be little debate on the need to consider both. Further research is needed to fully unpack these dimensions but analysis such as that presented in this paper will be an important start to this understanding.

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