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Employability and Labour Under-utilization in Non-Metropolitan Labour Markets

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BAUM S., BILL A. and MITCHELL W. F. Employability and labour under-utilization in non-metropolitan labour markets, *Regional Studies*. This paper addresses labour under-utilization and considers the factors that are associated with under-utilization risk of individuals embedded in diverse non-metropolitan labour market regions. Taking survey and census data for Australian non-metropolitan regions, this paper applies a broad employability framework that presents the risk of under-utilization as a function of individual characteristics, personal circumstances, and labour market characteristics. The analysis finds that under-utilization is associated with individual characteristics and circumstances plus local labour market conditions. The findings indicate that policy designed to address labour under-utilization needs to focus on the outcomes of a multilevel framework in order to be effective.

Labour under-utilization Regional labour markets Employability

BAUM S., BILL A. and MITCHELL W. F. 非大都市地区劳动力市场的就业度与劳动力的非充分性使用, 区域研究。本文重在关注劳动力的非充分性使用, 同时考虑了存在于非大都市地区各类劳动力市场内的与劳动力非充分性使用相关的各种要素。采用在澳大利亚非大都市地区进行的问卷与人口数据, 本研究构建了一个扩大的就业度框架, 该框架揭示了将劳动力非充分性使用结合不同个体特征、个人背景以及劳动力市场特征考虑时可能存在的风险。分析指出, 劳动力的非充分性使用与个人特质、背景以及地方劳动力市场状况相关。研究结果表明, 旨在解决劳动力非充分性使用的政策应当更加关注多层次框架的结果。

劳动力非充分性使用 区域劳动力市场 就业性

BAUM S., BILL A. et MITCHELL W. F. L'employabilité et le sous-emploi sur les marchés du travail non-métropolitains, *Regional Studies*. Cet article cherche à aborder la question du sous-emploi et à considérer les facteurs qui expliquent le risque de sous-emploi des individus et qui sont ancrés dans divers marchés du travail régionaux non-métropolitains. A partir des données provenant des enquêtes et des recensements de la population pour les régions non-métropolitaines australiennes, cet article applique un cadre général de l'employabilité qui présente le risque de sous-emploi en fonction des caractéristiques individuelles, des circonstances personnelles et des conditions du marché du travail. Il en résulte de l'analyse que le sous-emploi se rapporte aux caractéristiques et aux circonstances individuelles conjointement avec les conditions du marché du travail. Les résultats laissent voir qu'une politique élaborée pour aborder le sous-emploi devrait focaliser les résultats d'un cadre à plusieurs niveaux afin d'être efficace.

Sous-emploi Marchés du travail régionaux Employabilité

BAUM S., BILL A. und MITCHELL W. F. Beschäftigungsfähigkeit und mangelnde Auslastung von Arbeitskräften in nicht-metropolitanen Arbeitsmärkten, *Regional Studies*. In diesem Beitrag wird die mangelnde Auslastung von Arbeitskräften untersucht, und es werden die Faktoren analysiert, die mit dem Risiko einer mangelnden Auslastung von Einzelpersonen verknüpft sind, die in diversen, nicht-metropolitanen Arbeitsmarktregionen eingebettet sind. Anhand von Umfrage- und Volkszählungsdaten für nicht-metropolitane Regionen in Australien wenden wir einen breiten Rahmen der Beschäftigungsfähigkeit an, mit dem das Risiko einer mangelnden Auslastung als Funktion von individuellen Merkmalen, persönlichen Umständen und Merkmalen des Arbeitsmarktes dargestellt wird. Aus der Analyse geht hervor, dass eine mangelnde Auslastung mit persönlichen Merkmalen und Umständen sowie mit den Bedingungen des lokalen Arbeitsmarktes verknüpft ist. Die Ergebnisse lassen darauf schließen, dass eine Politik zur Bekämpfung der mangelnden Auslastung von Arbeitskräften auf die Ergebnisse eines mehrstufigen Rahmens abzielen muss, um effektiv zu sein.

Mangelnde Auslastung von Arbeitskräften Regionale Arbeitsmärkte Beschäftigungsfähigkeit

BAUM S., BILL A. y MITCHELL W. F. Capacidad de empleo e infrautilización laboral en mercados laborales no metropolitanos, *Regional Studies*. En este artículo analizamos la infrautilización laboral y consideramos los factores que están relacionados con el riesgo de esta infrautilización que corren las personas arraigadas en diversas regiones de mercados laborales no metropolitanos. Recabando datos de estudios y censos para las regiones no metropolitanas de Australia, aquí aplicamos una amplia estructura en cuanto a la capacidad de empleo que presenta el riesgo de la infrautilización como una función de las características individuales, circunstancias personales y las características del mercado laboral. En este análisis observamos que se asocia la infrautilización a las características y circunstancias individuales además de las condiciones del mercado laboral. Los resultados indican que para conseguir una política eficaz que solucione las necesidades de la infrautilización laboral debe prestarse atención a los resultados de una estructura multinivel.

Infrautilización laboral Mercados laborales regionales Capacidad de empleo

JEL classifications: J65, R23

INTRODUCTION

Regional scientists often use the official unemployment rate as a summary indicator of the socio-economic health of regions and the people that live in them (BROWN and SESSIONS, 1997; BADINGER and URL, 2002; LAWSON and DWYER, 2002; TRENDLE, 2002; LOPEZ-BAZO *et al.*, 2005; SUNLEY *et al.*, 2006). However, despite the importance placed on unemployment rates, the assumptions underpinning traditional conceptions of unemployment are becoming less valid as the boundaries between work, inadequate work and non-work have become increasingly fluid (BECK, 1992; DOOLEY and CATALANO, 2003). Consequently, as opposed to unemployment per se, the issue of employment adequacy is now at the forefront of research dealing with questions of socio-economic disadvantage at a regional level. The simple divide between employment and unemployment is giving way to a multi-dimensional enquiry where other forms of labour resource wastage that are not captured by unemployment are considered. Researchers interested in exploring the link between regional labour market performance and socio-economic disadvantage now highlight the increasing casualization of jobs, the polarization between 'good' and 'bad' jobs, the persistence of long-term unemployment, and a more complex picture of occupation and employment mobility that may also include periods of marginal labour market attachment (FOTHERGILL, 2001; JENSEN *et al.*, 1999; MCQUAID and LINDSAY, 2002).

In the face of these changing employment dynamics, defining and exploring broader conceptions of labour under-utilization is seen as increasingly important for articulating a wide range of employment hardship and disadvantage (JENSEN *et al.*, 1999; CARTER, 1982; CLOGG, 1979; HAUSER, 1974). Total labour under-utilization includes official unemployment as well as inadequate employment and other forms of dislocation from the labour market. It includes individuals who want to work but are excluded from official unemployment statistics 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. Within broader definitions it also may include individuals who are working full time or part-time voluntarily but who receive very low wages (working poor) and those who are employed in jobs that are classified as low skilled relative to the individual's qualifications.

There is a significant body of evidence drawn from a number of countries that suggest that individuals characterized as under-utilized were more likely to be female, young or aged, belong to ethnic minorities, have lower work skill levels and, when employed, are concentrated in low pay service sector jobs (WOODEN, 1993; AUSTRALIAN COUNCIL OF SOCIAL SERVICES (ACOSS), 2003; WILKINS, 2004; FLYNN, 2003; DE ANDA, 1994; DE JONG and MADAMBA, 2001; SOLTERO, 1996; ZHOU, 1993; NORD, 1989). The results are consistent across various measures of labour under-utilization although gender nuances have been detected by FLYNN (2003) who shows that women are more likely to suffer low pay and men more likely to suffer low hours.

Most of these studies suggest that individual (supply-side) factors are the main drivers of labour under-utilization and this insight is taken as the evidence base for policy development. However, it is hypothesized here that equally important are a range of other contextual factors, including aggregate and regional labour demand characteristics. As such this paper moves beyond simply focusing on individual supply-side factors to concentrate on understanding the broader range of factors that are associated with the risk of labour under-utilization. The authors specifically want to examine how location impacts on, and interacts with, individual level influences to determine labour market outcomes. In this regard, space is considered to be an important determinant in its own right rather than being simply another way to aggregate the data. In other words, location is considered to be an important consideration which is missing from most of the extant studies. Some evidence to support this contention comes from FLYNN (2003) who found that the more

service and manufacturing jobs available in local regions the lower was the labour under-utilization among those with disadvantaging personal characteristics (also JENSEN *et al.*, 1999; WILKINS, 2004).

This paper thus considers employment adequacy from a wider viewpoint and extends the analysis of labour market disadvantage in non-metropolitan Australia by considering the wider notion of labour under-utilization, rather than simply unemployment. The paper therefore contributes to the Australian regional science literature which has sought to understand a range of social and economic outcomes in localities outside of the major metropolitan cities (BAUM *et al.*, 2005, 2007; BEER *et al.*, 2003; MAUDE, 2004). It also contributes to a wider international literature that has developed to understand the role of factors taken at multilevel or multi-scalar dimensions in mediating a range of socio-economic outcomes (SAMPSON *et al.*, 2002; FRIEDRICHS *et al.*, 2005). The paper thus considers the analysis has relevance for regional economies in all Organisation for Economic Co-operation and Development (OECD) countries given that the trends documented and investigated herein and the policy questions that arise are more or less common now in these economies.

To motivate the choice of location-specific characteristics to be considered in the empirical work along with the usual demographic characteristics identified in earlier studies, a multilevel conceptual model is developed (sketched in Fig. 1). The empirical implementation of this holistic theoretical framework uses individual and aggregate-level data to estimate

logit models to consider the association between labour under-utilization and relevant explanatory variables at the individual and contextual (local and regional) level. The analysis allows one to consider the multi-scalar nature of labour under-utilization risk and provides a useful broad framework with which to consider appropriate policy responses. In what follows the individual and contextual issues associated with understanding the risk of labour under-utilization are first considered before discussing in detail the data and methods adopted for the analysis. Following this, the findings from the authors' analysis are presented, before undertaking a discussion of the implications of the analysis.

LABOUR UNDER-UTILIZATION RISK: INDIVIDUAL AND SPATIAL ISSUES

Fig. 1 presents a broad conceptual framework for understanding how individual factors combine with contextual factors at the local and regional levels to determine an individual's labour market outcomes. It draws from a number of social science disciplines and, unlike previous studies, which have tended to be piecemeal and narrowly focused on specific drivers and processes, the framework attempts to integrate the broader understandings that exist across these disciplines. The concept of employability drives an individual's labour under-utilization risk. While various definitions of employability have been applied, including those

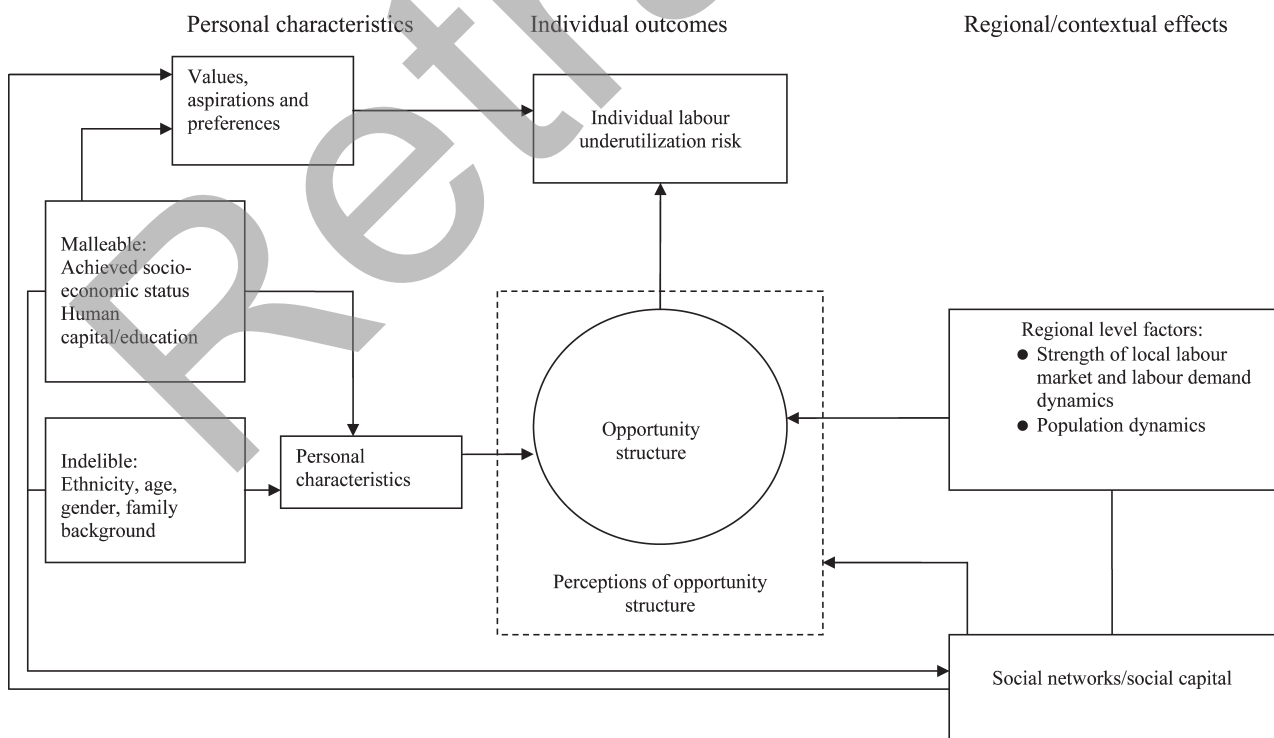


Fig. 1. Heuristic model of individual labour under-utilization risk
 Source: Adapted from GALSTER and KILLEN (1995)

narrowly focused on simple supply side characteristics only, a more holistic definition would include:

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.

(DEPARTMENT OF HIGHER AND FURTHER EDUCATION TRAINING AND EMPLOYMENT (DHFETE), 2002, p. 7)

A broad employability context therefore includes both supply-side characteristics and demand-side characteristics of the labour market.

Accordingly, the heuristic sketch provided by Fig. 1 posits that individual labour market outcomes are determined by the interplay between individual and personal circumstances (considered as being either malleable or indelible) and contextual (regional and social) factors (MCQUAID and LINDSAY, 2005; also GALSTER and KILLEN, 1995). The individual factors describe labour supply influences, while the regional and social factors are considered largely external to the individual. Importantly, these external factors include local and regional labour market demand, a fact often overlooked in the extant literature (MCQUAID, 2006).

An individual is considered to begin with some endowment characteristics comprising the indelible factors. The social capital of parents and other intergenerational effects which impact on social capital more generally are included here (CASE and KATZ, 1991). According to the human capital theory, the individual then builds a portfolio of productive skills over his/her life which include basic and more advanced formal education, transferable skills, health and well-being, job-seeking skills, and attitudes to adaptability and mobility. These characteristics are typically included in models attempting to understand an individual's labour under-utilization risk (GALSTER and KILLEN, 1995; MCQUAID and LINDSAY, 2005).

While not denying the significance of these factors in shaping an individual's destiny, broader contextual factors are also important for several reasons. First, an individual's social circumstances usually are mediated through social networks, the shape of which is influenced by geographic distance according to the individual's circumstances. For example, persons with lower levels of employability tend to have narrower and more localized social networks than the educated or wealthy (REINGOLD, 1999). The impact that social networks might have on an individual's employment outcomes is widely discussed and includes the impact on perceived and real opportunity structures and individual aspirations and preferences (BUCK, 2001; ELLIOTT, 1999). In situations where social networks

are not widely developed, and this is often compounded by residential concentrations in disadvantaged neighbourhoods or localities, job search and access to employment opportunities are thought to be less effective and hence are associated with negative individual employment outcomes (BUCK, 2001). Social or personal circumstances are therefore an important inclusion in the broader understanding of employability.

Second, the quality, quantity and diversity of institutions at a local level are relevant. GALSTER (2002) notes that:

the array of markets and institutions that provide the potential means of social mobility within which an individual may interact, such as labour, housing and financial markets, schools and the social welfare and criminal justice systems

(p. 6)

will interact with individual characteristics to determine the pattern of labour market outcomes. MCQUAID and LINDSAY (2005) refer to these effects as a range of external factors that include local labour market demand and enabling support factors such as local jobs policies.

For the broad conceptualization of employability, labour demand factors include the level and nature of local and regional labour demand, the location of labour markets with respect to major industrial or service centres, vacancy characteristics such as the level of remuneration, and local labour control regimes and human resource factors including employers formal recruitment and selection practices (JONAS, 1996; ADAMS *et al.*, 2000; MCQUAID and LINDSAY, 2005). Understandably, these labour demand factors are seen as acting alongside the individual level factors to influence individual-level opportunity structures and labour market outcomes.

Moreover, it is important to recognize that these labour demand factors will have an important spatial dimension. Although researchers such as BUCK (2001) question whether local labour demand can be considered as a source of local or regional contextual effect, others including GREEN (1996), NOBLE and SMITH (1996), GOULD and FIELDHOUSE (1997), JARGOWSKY (1997), FLYNN (2003), and SUNLEY *et al.* (2006) all point to its necessary inclusion in an analysis of individual labour market outcomes. Significantly:

there is no such thing as a national labour market, but rather a complex geographical mosaic of overlapping local and sub-national labour markets

(SUNLEY *et al.*, 2006, p. 43)

which will have differential effects on an individual's opportunity structures and hence on employment outcomes. In situations where local labour markets do not provide sufficient quality jobs for all who want to work, one can expect to see a direct impact on labour under-utilization through either increases in unemployment or

sub-unemployment or an increase in the numbers of people who are working part-time and would like more hours. When local labour markets constrain the employment opportunities, the individual characteristics function to shuffle the labour supply queue.

DATA AND METHODS

Data

The main data used in this paper have 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 broad social and economic survey conducted annually which contains information on employment, individual socio-economic characteristics and household/family 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. The current paper considers the first wave of the HILDA survey (2001), with subsequent papers considering longitudinal outcomes. The wave one survey file contains a total of around 19 000 respondents. A reduced data set (3813 individuals) is used in this paper and includes individuals defined as either adequately employed, involuntarily working part-time, unemployed or discouraged and who are living outside the metropolitan regions.

Model variables

To accommodate the use of multinomial logit estimation, a four-category dependent variable reflecting the individual's reported employment status is devised. The four categories are as follows:

- Adequately employed: all employed persons who do not fit the categories below.
- Involuntarily part-time: persons who are working part-time but would like to work more hours (the so-called underemployed).
- Unemployed: persons who are not working but actively looking for work.
- Sub-unemployed: persons not working and not looking for work who would take a job if one became available (the so-called hidden unemployed or discouraged workers).

To consider the potential associations between these four categories and the factors outlined in the conceptual discussion, models were developed that view labour market outcomes in a multi-scalar or multilevel fashion. In particular, labour market is expressed outcomes in terms of relative risk ratios within a multinomial logit model so that the relative risk of being in a given category of labour under-utilization versus being adequately employed depends on a set of individual

characteristics, personal circumstances of the individual and regional-level factors.

The individual-level explanatory variables are developed with regard to the availability of data and the conceptual framework presented in the previous section, and are similar to those used elsewhere in micro-level studies of employment outcomes (CASPI *et al.*, 1998; DUJARDIN and GOFFETTE-NAGOT, 2006; LE and MILLER, 1999; BEGGS and CHAPMAN, 1988; BROOKS and VOLKER, 1985; HARRIS, 1996; DEX and MCCULLOCH, 1997; FLYNN, 2003). Reflecting the conceptual discussion outlined above, one would expect that the following individual level dummy variables will be important:

- *AGE2544*: age 25–44 years (1 if aged 25–44; zero otherwise).
- *AGE4564*: age 45–64 years (1 if aged 45–64; zero otherwise).
- *GENDER* (1 if female, zero if male).
- *DEGREE*: education beyond high school but not university (1 if yes; zero otherwise).
- *POST_SECOND*: education at university level (1 if yes; zero otherwise).
- *MARRIED*: marital status (1 if currently married; zero otherwise).
- *ATSI*: indigenous Australian background (i.e. Aboriginal or Torres Strait Islander) (1 if ATSI; zero otherwise).
- *DISABLE*: self-reported disability or long-term health issue (1 if there is a disability; zero otherwise).
- *ENG_PROF*: self-reported English proficiency (1 if poor or very poor English; zero otherwise).
- *SINGLE*: single parent (1 if a single parent; zero otherwise).

Two explanatory variables are included to represent the impact of family background and personal circumstances:

- *PAR_UN*: measures the impact of parental employment during childhood (1 if no employed adult role model/parent; zero otherwise).
- *PAR_OS*: accounts for the ethnic background of parents (1 if one or both parents are born in the non-English speaking background country; zero otherwise).

In addition to family background, the HILDA data allows one to include proxies for the impact of social networks on labour under-utilization. While the authors experimented with a range of possible measures, the results of only one are reported in this paper. An index, *SOC_NET*, accounting for an individual's social networks is included to account for the potential impact that social networks may play in labour under-utilization and was developed using responses to questions relating to the extent to which individuals had contact with friends and colleagues.¹

An important issue identified in the conceptual discussion related to the extent to which labour market demand characteristics might be differentiated at the regional or local level and in turn how these might result in differing impacts on labour market outcomes. The effects of regional labour markets are modelled by considering Local Government Areas, with data available from the Australian Bureau of Statistics 2001 and 1991 Census data. While the authors experimented with several possible indicators, only four variables are included in the final analysis. Employment growth is considered to be an important determinant of the robustness of labour demand. Using shift-share analysis (MITCHELL and CARLSON, 2003a, 2003b), the regional-specific growth effect (*LGA_RS*) that captures the growth or decline in industry employment due to local factors was computed.² Several studies have indicated the impact that significant shares of manufacturing employment may have on regional unemployment. GREGORY and HUNTER (1995) have documented the very significant and disproportionate impact of deindustrialization on employment population ratios for males in low socio-economic status urban areas. The percentage share of employment in manufacturing within the local government area (*LGA_MAN*) is included to account for this impact. The percentage of people with certificate or tertiary education is included as a measure of the region's aggregate human capital (*LGA_EDUC*) and has been shown to impact on regional labour market outcomes (GLAESER and SHAPIRO, 2001). While the impact may vary, it might be hypothesized that a region with a highly skilled labour force may have more success in attracting firms thereby providing increased regional labour demand. The final regional variable included is the level of population change in the local government area (*LGA_PC*) which accounts for the potential impact of changing population dynamics on potential labour market outcomes.

Modelling strategy

GALSTER (2003) discusses the various choices available to model the interaction between individual-level variables and contextual variables operating at local and regional levels. Typically, researchers are concerned with accounting for the hierarchical nature of the data where explanatory variables are posited at different levels of measurement. GOLDSTEIN (2003) recommends using multilevel model estimation to account for the hierarchical nature of the data. This type of approach has become increasingly popular and it was explored in the pilot stage of this project. However, the multilevel estimation results are not reported in this paper because they provide no additional information to the results gained by deploying more conventional multi-nomial logit estimation adjusted for clustering (STATA, 2005, p. 209). The present authors adjusted for clustering to acknowledge

the likelihood that individuals within a region could not be considered independent observations if the regional level factors were significant.

REGRESSION RESULTS

To explore the associations between the range of independent variables and labour under-utilization in a meaningful way, two multinomial logit models were fitted, one containing individual characteristics and personal circumstances variables and the other adding the four regional-level variables. The results of the two models are presented in Tables 1 and 2. They contain the regression coefficient, robust standard errors and the relative risk ratio for each category of labour under-utilization relative to adequate employment. In all cases values on the relative risk ratio above 1 indicate that higher values of the explanatory variable increase the predicted probability of being in the particular category of labour under-utilization compared with being adequately employed. Coefficients less than 1 indicate the opposite.

Individual characteristics and personal circumstances model

The first three columns 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 on the age variables are significant with older cohorts significantly less likely to be involuntarily part-time compared with being adequately employed. The coefficients of the two education variables are of the expected direction with only one being significant. Having a higher degree or above is associated with a reduced risk of being employed involuntarily part-time. Importantly, the significant gender variable suggests that females are more likely to be classified as involuntary part-time and similarly being a single parent has an increased relative risk. Being currently married reduces the relative risk of being involuntarily employed part-time. The variable indicating indigenous background (*ATSI*) is included so as to account for the impact of racial disadvantage associated with employment outcomes. The *ATSI* variable is mildly significant and suggests that the risk of involuntary part-time employment is higher for individuals from an indigenous background. Having a disability 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 is positive and significant.

Only one of the personal circumstances predictors was significant. The variable 'parents born overseas' is significant at the 1% level and suggests that respondents whose parents were born in a non-English-speaking country were at a higher risk of being involuntarily employed part-time.

Table 1. Multinomial logit results, individual level predictors, personal circumstances and disaggregated labour under-utilization

	Involuntary part-time			Unemployed			Sub-unemployed		
	β	Robust standard errors	Exponential β	β	Robust standard errors	Exponential β	β	Robust standard errors	Exponential β
AGE2544	-0.379*	0.159	0.685	-0.444**	0.177	0.641	-0.775**	0.172	0.461
AGE4564	-0.655**	0.179	0.520	-0.414*	0.197	0.661	-0.911**	0.180	0.402
GENDER	0.840**	0.121	2.316	0.024	0.132	1.024	0.981**	0.129	2.668
ATSI	0.629*	0.324	1.875	1.127**	0.359	3.087	1.217**	0.286	3.376
ENG_PROF	0.326	1.196	1.386	1.874	1.179	6.512	-0.023	1.527	0.977
DISABLE	0.505**	0.152	1.657	0.736**	0.143	2.088	1.051**	0.148	2.862
MARRIED	-0.540**	0.126	0.583	-1.415**	0.181	0.243	-0.388**	0.138	0.678
SINGLE	0.680**	0.180	1.973	0.592**	0.185	1.808	0.926**	0.157	2.526
DEGREE	-0.688**	0.226	0.502	-1.369**	0.347	0.254	-1.338**	0.208	0.262
POST_SECOND	-0.349	0.141	0.705	-0.502**	0.164	0.605	-0.695**	0.154	0.499
SOC_NET	-0.023	0.059	0.977	-0.185**	0.063	0.831	-0.150**	0.051	0.860
PAR_OS	0.462**	0.146	1.588	-0.013	0.206	0.988	0.464**	0.165	1.591
PAR_UN	0.129	0.282	1.137	0.557*	0.260	1.746	0.434**	0.212	1.543
CONSTANT	-1.884	0.169		-1.466	0.168		-1.648	0.161	

Notes: ***Significant at 10%; *significant at 5%; **significant at 1%.

Log-pseudo likelihood = -3068.865.

Count $R^2 = 0.72$.

Bayesian Information Criteria (BIC) = -24958.583.

Table 2. Multinomial logit results, individual level predictors, personal circumstances, local labour market effects and disaggregated labour under-utilization

	Involuntary part-time			Unemployed			Sub-unemployed		
	β	Robust standard errors	Exponential β	β	Robust standard errors	Exponential β	β	Robust standard errors	Exponential β
AGE2544	-0.437**	0.164	0.646	-0.509**	0.181	0.601	-0.837**	0.180	0.433
AGE4564	-0.687**	0.182	0.503	-0.455**	0.197	0.634	-0.940**	0.183	0.390
GENDER	0.835**	0.121	2.304	0.011	0.134	1.011	0.978**	0.129	2.659
ATSI	0.699*	0.322	2.013	1.197*	0.364	3.310	1.278**	0.293	3.589
ENG_PROF	0.394	1.157	1.483	1.987***	1.131	7.294	0.078**	1.473	1.081
DISABLE	0.488**	0.153	1.629	0.722**	0.144	2.058	1.036**	0.146	2.818
MARRIED	-0.500**	0.123	0.606	-1.399**	0.184	0.247	-0.358**	0.141	0.699
SINGLE	0.664**	0.182	1.943	0.545**	0.191	1.724	0.902**	0.160	2.465
DEGREE	-0.747**	0.229	0.474	-1.387**	0.353	0.250	-1.384**	0.215	0.251
POST_SECOND	-0.395**	0.141	0.674	-0.533**	0.164	0.587	-0.742**	0.151	0.476
SOC_NET	-0.018	0.058	0.982	-0.178**	0.064	0.837	-0.147**	0.053	0.864
PAR_OS	0.448**	0.147	1.565	-0.062	0.202	0.940	0.446**	0.165	1.562
PAR_UN	0.157	0.279	1.170	0.550*	0.266	1.733	0.455*	0.212	1.577
LGA_MAN	-0.008	0.015	0.992	0.029	0.020	1.029	0.001	0.019	1.001
LGA_EDUC	0.010	0.022	1.010	-0.037	0.028	0.963	-0.017	0.031	0.983
LGA_PC	0.037**	0.011	1.038	0.052**	0.017	1.054	0.043**	0.015	1.044
LGA_RS	-2.981**	0.931	0.051	-4.526**	1.722	0.011	-3.348*	1.457	0.035
CONSTANT	-2.508	0.569		-1.519	0.624		-1.802	0.688	

Notes: ***Significant at 10%; *significant at 5%; **significant at 1%.

Log-pseudo likelihood = -3045.638.

Count R^2 = 0.72.

Bayesian Information Criteria (BIC) = -24906.083.

The second category of labour under-utilization is unemployed versus adequately employed. The outcomes are reported in columns 5–7 in Table 1. Largely, the significant variables reflect the vast amount of research that purports to understand supply-side factors that predict unemployment. The two age variables are significantly related to the relative risk of unemployment with negative coefficients in both cases. The education coefficients are also negatively associated with unemployment, illustrating the expected inverse relationship between negative labour market outcomes and increasing levels of education. The *ATSI* variable is highly significant and suggests that the risk of unemployment is a significant issue for individuals from an indigenous background. The variable *DISABLE* had the expected significant positive association with unemployment. The two variables currently married and single parent are both significant and not surprisingly reflect opposite impacts. Being currently married is associated with a reduced relative risk of being unemployed, while being a single parent is associated with an increased relative risk of being unemployed. The results of both these variables concur with previous studies of unemployment risk.

Two of the three variables accounting for personal circumstances are significant. The variable *PAR_UN* accounts for the presence of positive work role models in a respondent's childhood household. 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 and 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 hypothesized relationship between having stronger networks and positive job outcomes seems supported in this case. That is, individuals with a higher score on *SOC_NET* have a lower relative risk of unemployment.

The final three columns of Table 2 present the results for the final category of labour under-utilization, sub-unemployed or discouraged workers. The two age variables are significantly related to the relative risk of sub-unemployment with negative coefficients in both cases. The two variables accounting for education are again significant reflecting the negative association between human capital and the risk of underemployment generally. The gender variable has a significant coefficient and indicates that like the category of involuntary part-time workers, females are more likely to be sub-unemployed or a discouraged worker. The variable *ATSI* is positively associated with the relative risk of sub-unemployment. As with the previous categories of labour under-utilization, the variable accounting for disability is positive and

significant. As with the variables associated with unemployment the two variables currently married and single parent are both significant and reflect opposite impacts. Being currently married is associated with a reduced relative risk of being sub-unemployed, while being a single parent is associated with an increased relative risk of being sub-unemployed.

For the category of sub-unemployed or discouraged worker the coefficients of the variables accounting for personal circumstances are similar to those for the previous unemployment category, with the addition of a significant outcome on the predictor accounting for parental birthplace. 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 relative risk of being sub-unemployed or a discouraged worker. The significant coefficient on the variable accounting for parental country of birth indicates that having parents born in a non-English-speaking country is associated with an increased relative risk of being sub-unemployed or a discouraged worker. Finally, the social networks variable is negative suggesting that the relative risk of being sub-unemployed or a discouraged worker is lower as the *SOC_NET* variable increases.

Individual, personal circumstances and local labour market predictor model

The second multinomial logit model includes factors measured across all levels of the multi-scalar approach (individual characteristics, personal circumstances and regional level influences). The addition of the regional-level factors only result in a minor change in the magnitude of the individual level and personal circumstances-level variables suggesting that the omitted variable bias was small in the first regressions. The direction of the association remains unchanged.

The results for the category involuntary part-time employment are presented in columns 2–4 of Table 2. Two of the regional labour market variables are significant. The variable *LGA_PC* is strongly positive at the 1% level suggesting that regional labour markets with higher levels of population growth will be associated with an increased risk of being employed part-time involuntarily. The variable accounting for regional employment growth (*LGA_RS*) is negative and significant at the 1% level pointing towards an association between positive regional jobs growth and a reduced risk of working involuntarily part-time.

The results for the second category of labour under-utilization, unemployment versus adequately employed are presented in columns 5–7 of Table 2. Two of the regional labour market predictors are significant in this case. There is a significant positive association between the level of population growth in a region and the risk of unemployment. The variable accounting for the regional shift effect (*LGA_RS*) is significant and

has a negative coefficient suggesting that regions which are encountering positive regional growth effects act to reduce the relative-risk of unemployment.

Finally the results for the third category of labour under-utilization, sub-unemployed or discouraged workers, are presented in the last three columns of Table 2. As with unemployment there is a significant association between the level of population growth in a region and the risk of unemployment. The positive coefficient suggests that the risk of being sub-unemployed is greater in regions with higher rates of population growth. The variable accounting for the regional shift effect is significant and has a negative coefficient suggesting that regions which are encountering positive regional growth effects act to reduce the relative-risk of sub-unemployment.

DISCUSSION AND CONCLUSION

This paper sets out an analysis of labour under-utilization in Australian non-metropolitan labour markets using a combination of data from the first wave of the Household, Income and Labour Dynamics in Australia (HILDA) survey and aggregate employment data from the 2001 Australian Census of Population and Housing. Acknowledging that there exists a range of frameworks within which to place issues surrounding labour under-utilization, the research conducted in this paper was cast in terms of a model that considers labour under-utilization risk as a function of broadly defined employability concepts. The employability framework used in this paper follows earlier work by MCQUAID and LINDSAY (2005) and others and considers employability to be:

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)

In this case, labour under-utilization, defined here as involuntary part-time employment, unemployment and sub-unemployment or discouraged workers, is a function of a range of individual level characteristics together with contextual effects that include personal circumstances such as social networks and family background and the impacts of regional labour market demand characteristics.

It is not surprising, given the established literature dealing with labour under-utilization, to find that individual characteristics such as human capital, gender, age and race are implicated in the risk of labour under-utilization. Being in an older age cohort, having high formal qualifications or currently being married universally reduces the risk of labour under-utilization. Against

this being a single parent, having a disability or being from an Aboriginal or Torres Strait Islander (ATSI) background acts to increase the risk across all categories of labour under-utilization. Reflecting the gendered nature of labour market engagement, being female is associated with an increased risk of being employed involuntarily part-time and being sub-unemployed or a discouraged worker.

While the inclusion of the individual predictors in the models provides validation for existing research, it is the variables accounting for personal circumstances and regional labour market context that are perhaps the most interesting. 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 social/employment networks imbued by parents' impact on the life chances of children and these impacts are likely to have significant impact even into adulthood (CASPI *et al.*, 1998; MCCLELLAND *et al.*, 1998; PECH and MCCOULL, 1999). Parental employment engagement background was a significant influence on unemployment and sub-unemployment risk, while parental country of birth impacted on the risk of being involuntarily working part-time and being sub-unemployed.

Apart from issues surrounding intergenerational transfers of disadvantage, captured by whether the respondent's parents were working, the model suggests that individuals who have narrower social networks have a higher risk of some forms of labour under-utilization than those with wider social networks. There has been significant work on the impact that social networks have on employment outcomes and the findings 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 labour force attachment.

(ELLIOTT, 1999, p. 200)

In particular, the social network variable exerted a significant impact on the risk of being unemployed or sub-unemployed.

The final level at which the present framework acts on individual labour market outcomes is through the impact of regional level processes. Importantly, two of the regional-level variables were seen as important in mediating labour market outcomes net of other characteristics. It is clear that regional labour markets that have job deficiencies result in an increase in the risk of negative labour market outcomes, in the present case labour under-utilization, at the individual level net of other characteristics. 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 significant variables included in this paper suggested that the general strength of the local labour market is important as suggested by the variable accounting for the regional shift effect. However, it seems that it is not only the strength of the labour market that is important, but also the level of regional population growth. The models presented here illustrate that net of other factors strong population growth may offset other regional factors such as strong jobs growth. Although further modelling is required using longitudinal data, there does appear to be some support for arguments that link regional population growth to potential negative labour market outcomes as population in-migration outstrips jobs growth and less skilled or employable workers get bumped down (BILL and MITCHELL, 2006).

Returning to consider the broad employability framework set out at the beginning of this paper, it would appear that given the available data and the sample utilized that a broad understanding of labour under-utilization that takes into account both individual-level, supply-side factors and more aggregate contextual factors, including the impacts of local or regional labour market demand, is indeed a useful approach. Importantly, the approach provides a useful framework for considering policy, especially as it relates to attempts to improve employment outcomes across groups in society and across spatially distinct communities. In several industrialized countries the emphasis of neo-Liberal 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. However, improving the employability of individuals 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 and considering other contextual effects. This is clearly what the broader employability framework aims to achieve. Within Australia and elsewhere labour market policies that ignore the

need for this broader approach remain a significant impediment to ensuring that available workers are employed in the most efficient manner. Until these deficiencies are properly addressed the wasted human resources that are reflected in joblessness and more broadly labour under-utilization will remain a significant social problem.

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NOTES

1. The social network index was constructed by considering the main components from a principal components analysis of questions coded on a five-point Likert scale. The questions included in the index were: ‘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.’
2. While shift-share analysis has been criticized in the past (DAWSON, 1982; STEVENS and MOORE, 1980), it is acknowledged as a useful tool for partitioning employment growth into different shares and it has been widely used in the analysis of regional economies (STIMSON *et al.*, 2002; NAZARA and HEWINGS, 2004). In the case of the research presented in this paper, as the possible impact of local or regional labour markets on individual employment outcomes is of interest, being able to differentiate a particular regional growth effect is important.

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