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**SHORT-TERM EMPLOYMENT TRANSITIONS OF THE CANADIAN LABOUR  
FORCE: RURAL- URBAN DIFFERENCES\***

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## **SHORT-TERM EMPLOYMENT TRANSITIONS OF THE CANADIAN LABOUR FORCE: RURAL- URBAN DIFFERENCES**

ABSTRACT. Using data from the Canadian Survey of Labour and Income Dynamics (SLID) for the period 1993-1996, we examine patterns and determinants of labour force transitions of adequately employed and underemployed workers in an attempt to explore whether employment dynamics significantly differ between rural and urban workers so as to disadvantage rural economic performance. The results indicate that rural underemployed workers in Canada are, in the short run (year-to-year transitions) equally likely to enter adequate employment as adequately employed individuals are to enter underemployment. Further, we also found there is weak evidence that education level of rural workers has a lower impact on the probability of moving out of underemployment than in urban areas. In addition rural women are significantly less likely than their male counterparts and urban workers to enter adequate employment although the presence of young children does not seem to especially constrain rural women's employment. The results suggest that labour force transition in and out of adequate employment, and particularly underemployment, significantly differ between rural and urban workers and should be taken into account when evaluating employment hardship in rural Canada.

*JEL:* R11, R23, J63

*Keywords:* Rural Development; Structural Change; Regional Labour Markets; Mobility; Underemployment.

## **SHORT-TERM EMPLOYMENT TRANSITIONS OF THE CANADIAN LABOUR FORCE: RURAL- URBAN DIFFERENCES**

### **1. Introduction**

The restructuring of economies in developed countries over the last few decades has had a considerable impact on the composition and characteristics of the labour market. While labour force participation has increased, it has also resulted in a significant rise in employment hardship, referred to as underemployment. As a labour force concept, 'underemployment' provides a comprehensive measure of under-utilized labour resources since it includes not only unemployment, but some types of discouraged, involuntarily part-time, low-income and seasonal workers with marginal or unstable labour market attachments (Clogg, 1979). This broader definition acknowledges that employment itself is the primary route out of poverty and is central to issues of poverty and economic well-being for several reasons (Bane and Ellwood, 1986). First, frequent transitions to and from various disadvantaged labour states can bring about highly unstable monthly income flows and substantial annual income losses. Second, repeated episodes of joblessness may result in discouragement and precipitate eventual withdrawal from the labour market. Finally, regular job departures preclude the accumulation of valuable job-specific tenure, which is positively related to lifetime earnings (Devine and Keifer, 1993). Hence, not only the degree of employment hardship but its dynamic aspect is of crucial importance in understanding poverty and poverty persistence.

Analyses on the determinants of underemployment suggest that the young, poorly educated and other minority groups are especially likely to suffer employment hardship reflecting the social stratification of people (Lichter, 1989; Hsueh and Tienda, 1994). However, few efforts have been made to assess the effects of geographical labour market characteristics on the overall adequacy of employment (Tigges and Tootle, 1990; Clark and Davis Withers, 1999; Jensen *et al.* 1999; Neumark, 1999). Individuals participate in a geographically limited labour market, with boundaries quite often determined by proximity to residence. Empirical findings suggest that differential labour mobility among workers may be an important determinant of observed wage differences between regions (Dickie and Gerking, 1998). The rural/urban dichotomy is of particular interest. In his study, Stabler (1999) argues, “...*the development of the national economies of both Canada and the United States is characterized (at best) by persistent underemployment and income gaps between their rural and urban components*”. It has been shown that rural areas are more likely to provide low-paying, part-time, seasonal and non-unionised jobs (McLaughlin and Perman, 1991; Bryden and Bollman, 2000). Thus, although individual characteristics (“supply side” factors) may determine an individual’s employment success, there is an increasing concern about “demand side” issues that emphasize the quality and quantity of jobs available in rural areas and the subsequent effects these demand factors have on the degree and persistence of employment hardship among rural dwellers. Accordingly, the challenge for economists is to develop theoretical frameworks and empirical verifications to shed light into rural economic performance facilitating answers to questions on how to alleviate persistent underemployment in rural areas as compared to urban ones.

The principal objective of this paper is to explore empirically whether employment dynamics of individuals experiencing underemployment in rural areas differs from those in urban areas. In particular, as the focus is on regional differences in labour market conditions, two specific questions are to be addressed. First, are there residential differences in the probability of making transitions into and out of underemployment that work to disadvantage rural individuals after controlling for socio-demographic and labour market characteristics. Second, do significant differences exist in any of the determinants affecting the transitions between labour force states between rural and urban individuals.

This paper seeks to address these seldom explored questions by providing a comparative picture of the employment transitions in “rural” and “urban” sub-samples of individuals drawn from the Survey of Labor and Income Dynamics (SLID)<sup>1</sup> of Canada. Few empirical studies of transitions between labour force states and the difference between rural and urban dwellers have been undertaken so far (Lichter et al., 1991; Jensen et al., 1999). The unavailability of longitudinal data, together with an appropriate rural sample (in size and definition) has precluded the possibility of adequately examining and explaining underemployment transitions to determine whether a rural disadvantage exists. The time series and cross-sectional nature of the SLID data allows a wide range of factors such as human capital, job type, firm and market characteristics to be used to explain short-term transitions into and out of different labour

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<sup>1</sup> The data used in this paper were made available through Statistics Canada. Statistics Canada does not bear any responsibility for the analyses or interpretation presented here.

force states by rural and urban individuals. Hence, we are able to use the data to test systematically for the source of any rural-urban differences.

The paper begins with the theoretical arguments of geographical distribution and labour force mobility in and out of adequate employment. The model is presented in Section 3. Section 4 provides information on the data and the measurement of labour force states and employment hardship followed by the results in Section 5. Conclusions are presented in Section 6.

## **2. Theoretical Arguments**

For all workers, mobility into and from underemployment is determined by both labour supply and demand factors. From the labour supply side, human capital characteristics, especially education and training obtained on the job, increase the stability of adequate employment. Workers who have invested in job-specific skills/education are less likely than other workers to leave their jobs. To the extent that adequate employment (normally full-time) requires higher investments in job-specific skills/education, adequately employed individuals are less likely to move into underemployment or to exit the labour force. Similarly, underemployed workers who have higher education levels are more likely to move into full-time employment in order to better use their skills, while the less-skilled have higher rates of employment interruptions. Significant differences may be found in this pattern between rural and urban workers since the lack of training in rural areas, and the significantly greater concentration of poorly educated people might be reflected in a higher level of

underemployment. Thus, Lichter and Constanzo (1987) identify educational composition as a major factor accounting for the metropolitan-nonmetropolitan underemployment differential. However, among those not completing high school, nonmetropolitan underemployment rates were higher than metropolitan ones. Further, Sheets *et al.* (1987) also find higher median education lowers metropolitan underemployment.

Other socio-demographic characteristics, such as age, gender and marital status, are also likely to influence the transition into and from underemployment. A woman's employment decisions are determined, for the most part, by factors at the family level and the roles imposed on them by society. Women experience a variety of transitions among different employment statuses over their family life cycle, and not many of them work continuously in full-time jobs. Some women drop out of paid employment to take care of the household when they have children, while others maintain their attachment to the labour market by moving into part-time employment (Moen, 1985). The more traditional role imposed on women is likely to have a greater effect on the labour force transitions in many rural areas than in urban ones.

The move into and out of underemployment is also conditioned by occupation and by the industrial structure of the labour market (labour demand characteristics). From a dual economy perspective (Doeringer, 1984), high paid, high-skilled jobs are concentrated in the industries that constitute the core segment of the market, while the less stable, lower-skilled jobs are more likely to be in the periphery. Core workers, who are usually highly skilled and most attractive to employers, have a high holding power over their jobs, and for them mobility takes place within internal, vertical ladders. In the secondary market, job stability is lower; workers move between occupations and jobs, but



are less likely to enter primary jobs. Thus, above and beyond socio-demographic constraints, workers employed in core industries and occupations are less likely to move into underemployment and out of the labour force because of the high opportunity costs involved in such moves. The greater presence of low-skilled, low-paying jobs in rural areas is likely to significantly differentiate the transition into underemployment and out of the labour force for rural workers versus urban ones (Bluestone and Harrison, 1982).

Finally, place of residence other than the rural/urban dichotomy is likely to influence the transitions between labour force states by individuals. Provinces with greater economic development and employment opportunities are more likely to increase adequate employment. In contrast, the probability of moving to a state of underemployment with all else constant is likely to be greater in regions with sluggish economies.

The probability of transitions to and from underemployment, the mobility between different employment states, and the differences found between rural and urban workers, are at the centre of the current study. Following the above discussion, the study focuses on the role socio-demographic characteristics and occupational and industry structures play in determining the probability of changes in a worker's employment status in the Canadian labour market. Three general hypotheses are examined:

(a) Higher education (as a proxy for skill level) increases the stability of adequate employment for those holding such jobs, and increases the likelihood of entering adequate employment for those underemployed. For rural workers, we expect education to have a significantly lower impact on the probability of moving out of underemployment given the characteristics of the labour market in rural areas.

(b) Being a female worker and having family responsibilities (i.e. presence of children in the household) decreases the stability of adequate employment and increases the likelihood of entering underemployment. The more traditional role of women within the family sustained by rural communities is likely to significantly increase this tendency in rural areas.

(c) Employment in high skilled jobs lowers the chances of exiting the labour force and of moving into underemployment, while the opposite is expected in low-skilled secondary occupations. The greater presence of secondary/low-skills job types in rural areas is likely to increase labour force instability among rural workers.

### 3. The Model

The approach for examining the factors that influence the shifts from one labour force status to another involves estimating logistic regression models of employment transitions. For each labour force state, the probabilities of shifting from the initial labour force state to each of the other two states are estimated. The employment states are denoted as 0 for underemployment, 1 for adequate employment, and 2 if the individual is out of the labour force. To analyse the corresponding transitions between states, we estimate the following multinomial logit model:

$$\lambda_{ijk}(x_i) = \frac{\exp(\beta'_{jk} x_i)}{\sum_{m=0,1,2} \exp(\beta'_{jm} x_i)} \quad (1)$$

$m$ = underemployment (0); adequate employment (1); out of the labour force (2).

where  $\lambda_{ijk}$  is the conditional probability of a transition into employment state  $k$  in the interval of one year (year  $t+1$ ), given that individual  $i$  is in employment state  $j$  in year  $t$ . We estimate four transition equations, namely:  $\lambda_{i10}$  (from adequate employment to underemployment);  $\lambda_{i12}$  (from adequate employment to out of the labour force);  $\lambda_{i01}$  (from underemployment to adequate employment); and  $\lambda_{i02}$  (from underemployment to out of the labour force)<sup>2</sup>.

In the above equation,  $x_i$  is a vector of covariates for individual  $i$  that are considered to affect the transitions rates; and  $\beta_{jk}$  the vectors of parameters to be estimated. The indicated specification implies independence of the three possible labour force states, and underemployment is taken as the base category in  $\lambda_{01}$  and  $\lambda_{02}$  whereas adequate employment is that for  $\lambda_{10}$  and  $\lambda_{12}$ <sup>3</sup>. Thus, the estimated effects are obtained relative to the effect of the respective variable on the conditional probability of remaining in either underemployment ( $\lambda_{01}$  and  $\lambda_{02}$ ) or adequate employment ( $\lambda_{10}$  and  $\lambda_{12}$ ). Hence, the probability (or the *relative risk ratio*) that an individual in underemployment in year  $t$  will enter adequate employment in year  $t+1$  to relative staying in underemployment is

$$\ln \left[ \frac{\lambda_{i01}}{\lambda_{i00}} \right] = \exp(\mathbf{X}_i \beta_{01}) \quad (2)$$

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<sup>2</sup> The results for the sample out of the labour force in year  $t$  did not produce any significant results due to the small sample size and the lack of enough shifts from period  $t$  to  $t+1$  and hence are omitted.

<sup>3</sup> The probability of staying in underemployment or in adequate employment are implicitly calculated. Since our interest is on the transitions we consider these as the base category.

and the same rule would apply to the other scenarios, namely: (a) being out of the labour force relative to underemployment  $\exp(X_i\beta_{02})$ ; (b) being in underemployment relative to adequate employment  $\exp(X_i\beta_{10})$ ; and (c) being out of the labour force relative to adequate employment  $\exp(X_i\beta_{12})$ .

Following the hypotheses presented above, the vector of covariates ( $x_i$ ) indicates the three dimensions that are expected to affect any labour market related move: socio-demographic characteristics, labour market characteristics (occupation and industry), and region. Education, which serves as a proxy for skills, is differentiated into three levels: less than high school (as the omitted category), high school and more than high school. Other socio-demographic variables are the age of the worker and age squared, marital status, gender and the interaction of gender with the presence of children below 5 years of age. Market characteristics are denoted by the type of occupation ranging from less skilled individuals to professionals (6 categorical variables). Dummies for four industry groups are also included: (1) resource based activities; (2) manufacturing; (3) construction, distribution and transport; and (4) service and financial sector as the omitted category. Finally, dummy variables for each province are used to capture the state of the local labour market, as is the inclusion of the rural dummy. Year dummies are also included to adjust for employment trends across all regions.

Later, we estimate residence-specific models to ascertain whether the determinants of upward or downward employment transitions significantly differ between rural and urban areas. Thus, we redefine the multinomial model such that:

$$\lambda_{ijk}(x_i) = \frac{\exp(\beta'_{jk}x_i + \delta_{jk}x_id_i)}{\sum_{m=0,1,2} \exp(\beta'_{jm}x_i + \delta_{jm}x_id_i)} \quad (3)$$

where  $d_i$  is the rural residence dummy variable (equal to one if individual  $i$  is a resident in a rural area in year  $t$ ). The parameter vector  $\beta$  measures the impact of the explanatory variables on the probability of moving from employment state  $j$  in year  $t$  to any of the other two categories  $k$  in year  $t+1$  for the urban sample. The vector  $\delta$  measures the extent of the rural effect for each of the explanatory variables with the overall impact of the explanatory variables in the rural sample given by  $\beta + \delta$ . The significance of the rural effect for each of the relevant issues can be tested by the hypothesis  $H_0: \delta = 0$  on each of the corresponding coefficients. These residence-specific models permit the calculation of the predicted transitions for rural individuals supposing they live in an urban area, thereby allowing another comparison between rural and urban labour market performance. The probability (or the *relative risk ratio*) that a rural individual in underemployment in year  $t$  will enter adequate employment in year  $t+1$  to relative staying in underemployment is  $\exp[\mathbf{X}_i(\beta_{01} + \delta_{01})]$ , whereas if this same individual lived in an urban area that probability would be  $\exp[\mathbf{X}_i\beta_{01}]$ . The same reasoning applies to the other transitions.

#### 4. Data and Definitions

##### *Data description and definitions*

The data is derived from the first four years (1993-1996) of the Survey of Labor and Income Dynamics (SLID). This consists of a longitudinal household survey conducted by Statistics Canada of a national representative sample of approximately

15,000 households containing a total of around 31,000 individuals aged 16 and over. The survey is designed to capture changes in the economic well being of individuals and households over time and contains the detailed information on adults within households needed to operationalise the different states of employment hardship and many socio-demographic correlates of employment hardship. Individuals originally selected for the sample are interviewed once or twice a year, as is any person who lives with the original respondent. From this data a balanced panel was drawn of individuals aged between 18 or more in 1993 and 60 or less in 1996 that provided complete information at each of the four interview dates. This sample consisted of 10,479 individuals, of which 24 percent were classified as living in rural areas.

The SLID sample is drawn using a stratified, multi-stage design using probability sampling. The principal stratification of the sample takes place by province, economic regions, and urban and rural areas. Primary sampling units were selected in different ways depending upon whether the relevant part of the stratum was deemed to be urban or rural. The definition of the rural and urban samples is based upon the concept of the relevant geographically limited labour market rather than a simple population based measure. The Large Urban sample (henceforth the urban sample) is composed of Census metropolitan areas and Census Agglomeration (CMA/CA) containing large urban areas, together with adjacent urban and rural areas that have a high degree of economic and social integration with that urban area (Howatson, 1995). The Rural and Small Town sample (henceforth the rural sample) is composed of Non-CMA and Non-CA areas.

As discussed earlier, the measure of underemployment is a useful one to classify different kinds of employment hardship. It goes beyond the limited measure of

unemployment (being out of the job and looking for one), to include the working poor as well as discouraged, part-time, and seasonal workers with marginal or unstable labour-market attachments. We follow Salinas' (1982) definition of underemployment and refer to the inability of the labour-force participants to earn poverty-level wages and salaries<sup>4</sup> (125 percent of poverty-level income) through their labour-market activity over the previous year (see also Nord, 1989 for further empirical applications of the concept). Further, a labour force participant is defined as a non-student adult aged between 18 and 60 who has been employed or seeking employment for at least 15 weeks over the previous year. The SLID data set provides a useful poverty-level threshold defined by the Canadian Government (i.e., Low-Income Cut-off –LICO). The exact level of the threshold is based on data from the Canadian family expenditure survey and varies by household and community size, the latter being extremely important to us due to the geographical component of our study as it alleviates/mitigates the cost-of-living problem (Noreau, 1997). The concept of underemployment then, provides a comprehensive and detailed way to assess the level of, and dynamics in, employment hardship in the Canadian population.

### *Descriptive Analysis*

Selected characteristics of workers (both underemployed and adequately employed) are presented in Table 1. Slightly more than half of the sample was adequately employed both in rural and urban areas with a larger proportion being underemployed in

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<sup>4</sup> Self-employed are also included. The strong presence of self-employed (e.g., farmers) in rural areas justifies its inclusion in this study.

the rural sample (32%) versus the urban households (26.5%). In general, underemployed and adequately employed workers show interesting differences across both regions. A greater concentration of underemployment is found among the younger age categories, those with less education, and the most un-skilled occupations. In addition, the underemployed tend to consist of a higher proportion of female workers, particularly those with young children which may indicate that family responsibilities affect women employment decisions.

The rural underemployed are differentiated from their urban counterparts and the adequately employed sample in several respects. First, they are the less educated group as 42% have less than a high school education as compared to 25% or less of the workers in the other three categories. The rural underemployed also tend to be concentrated in the less-skilled occupations and working in resource-based activities. The proportion of underemployed rural women is lower than that of urban ones, and the same applies to rural women with young children. This may be because rural women are more likely to drop out the labour force than to remain underemployed. These differences in socio-demographic and labour market characteristics of the underemployed workforce, and particularly in rural areas, are ultimately reflected in their annual earnings and hourly wages that are significantly less than those adequately employed.

The mobility between employment states for individuals in rural versus urban areas is indicated in Table 2 by the 'average' movements over the 3 years (1994-1996) of individuals into and out of adequate employment<sup>5</sup>. The estimated Markov transition

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<sup>5</sup> Note that because of the definition of employment hardship is based on previous year poverty threshold, we lose 1993 year for the rest of the paper.



matrices (StataCorp 1997, p. 652) in Table 2 provide little evidence that rural individuals are more likely to suffer employment hardship than their urban counterparts. In the rural sample, 78% of those underemployed in given year were still in underemployment the following year. In contrast, 17% moved to adequate employment, and the remaining approximately 5% per cent were no longer in the labour force. The mobility of those designated as underemployed in year  $t$  is practically identical over the rural and urban sub-samples. The null hypothesis that regional location (rural vs. urban) is independent of employment state in the previous period for the underemployed can be rejected at the 27% significance level which provides little support for the hypothesis that overall mobility from the underemployment category differs over the two sub-samples.

However, for individuals who are adequately employed in a given year there is a significant difference in the transitions to other employment states between the rural and urban households. A lower proportion of the rural sample (90%) remains in the adequate employment category the following year as compared to the urban sample (93%). In addition, there is a greater probability that an adequately employed individual will move into underemployment in the rural area (9%) versus 6% for someone in an urban area. Statistically, the two distributions are significantly different (at 1 percent), providing strong evidence that overall mobility from the adequately employed category differs over the rural and urban samples.

While the information given in Table 2 provides a picture of the extent of overall employment mobility, it assumes mobility is identical for all individuals. However, the probabilities of moving between employment states will vary across individuals due to individual characteristics, such as education level, and market characteristics. To control

these effects, it is necessary to statistically model the transition process, so we can find out the extent to which these residential differences can be accounted for by other observable characteristics. In the remainder of the paper we endeavour to do this.

## 5. Empirical Results

The next stage of the analysis examines the factors that influence the transition from one employment status to another using a multinomial logit framework. The effects of the sampling design used by the SLID data and in particular, the clustering, stratification and unequal selection probabilities means that for analysis it cannot be assumed that the sample is drawn from independent and identical distributions. If the assumption of a randomly drawn sample were valid, estimation of equations (1) –(4) could use the standard maximum likelihood estimator for the multinomial logit model. However, the complex sample design means that these equations must be estimated using a pseudo–maximum likelihood estimator otherwise the Type I error rates would be substantially above their nominal level  $\alpha$ . While the estimates of the parameters  $\beta$ ,  $\gamma$  and  $\delta$  generated are therefore not efficient, they are consistent and the estimator of the associated covariance matrix is robust (Eltinge and Sribney 1997). In the pseudo-maximum likelihood function, it is assumed that sample clusters are independent, while within cluster correlation is not specified but may be of any general form. Hence, although not explicitly modelled the correlation which will occur between observations of the same individual over time are accounted for within this approach (Lehtonen and Pahkinen, 1994). Finally, the use of this estimation technique does preclude the use of

the likelihood ratio test so that any joint hypothesis test results must be calculated from an adjusted Wald test procedure (Eltinge and Sribney, 1997).

The estimated results of the multinomial logit model are presented in Table 3. The first column presents the relative risk ratios (RRR) of entering underemployment in year  $(t+1)$  from adequate employment in year  $t$ . As expected, the chances of entering underemployment diminish at an increasing rate with age. The higher the education level the less likely individuals are to make a transition into underemployment (as opposed to the reference category, which is less than a high school education). In addition, and as anticipated, women are significantly more likely to move into underemployment than their male counterparts, especially if there are young children in the household.

In terms of labour market characteristics, individuals with high skill occupations are less likely to slide into underemployment. Further, compared to those adequately employed in service/financial sector (omitted category), those in manufacturing are significantly less likely to (roughly 40 per cent) fall into underemployment, which is consistent with the documented higher presence of low-paid, unstable, more discontinuous jobs in the service sector (Nord, 1989). There are also differences by regions with residents from British Columbia, the Prairies, Quebec and the Maritimes being significantly more likely to move out of adequate employment as compared to individuals from Ontario, which is expected due to the relative economic prosperity in the province of Ontario<sup>6</sup>.

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<sup>6</sup> More disaggregated analysis at province level was also undertaken, however results did not differ significantly for these presented here.

Concentrating now on the rural effect, the estimated parameter on the rural dummy indicates that, other things equal, individuals living in rural areas are significantly more likely (approximately 30%) to enter underemployment than their urban counterparts. Therefore, even after controlling for socio-demographic and labour market characteristics, the rural disadvantage observed in Table 2 remains.

The relative risk ratios of entering adequate employment for those who left underemployment are in Column 2 of Table 3. Age has a weak (albeit insignificant) increasing effect on the probability of entering adequate employment from underemployment. Higher levels of education are associated with increasing transition rates to adequate employment. Marriage increases the probability of moving into adequate employment and, surprisingly being female with young children also increases the transition rate into adequate employment although at a lower rate ( $RRR = 1.557$ ) than moving into underemployment from adequate employment ( $RRR = 3.792$ ). However, being a single female significantly decreases the likelihood of entering adequate employment. Additionally, higher skill, professional jobs are associated with increasing transition rates to adequate employment, as does employment in manufacturing (as opposed to employment in service and financial sector). As for the regional dummies, only those people in the Maritimes are significantly less likely to move up to adequate employment than people from Ontario.

If we now consider rural differences, we find that, after controlling for differences in observed characteristics, individuals living in rural areas are significantly more likely (approximately 30 %) to move from underemployment into adequate employment from one year to the next than their urban counterparts. Given the raw transitions results in

Table 2 indicated no significant difference in overall mobility from underemployment, this is a somewhat surprising result. Further, as both entry and exit rates to and from underemployment are higher in the rural sample, this suggests that the “persistence” of rural underemployment is likely to be less but the extent of cycling between underemployment and adequate employment seems higher in rural areas.

The last two columns of Table 3 present the relative risk ratios of transitions out of the labour force from each type of employment. Although these findings should be interpreted carefully as sample sizes are small, they suggest that the likelihood of dropping out of the labour force from adequate employment in the previous year significantly decreases with age. We also find that women with children are significantly more likely to leave the labour force as are semi-skilled workers compared to unskilled ones. As for the underemployed sample in year  $t$ , education decreases the transitions from this category to out of the labour force. Women in general and those with young children are more likely to leave the labour force. Lastly, living in a rural area and being underemployed in period  $t$  significantly reduces the likelihood of exiting the labour force.

As hypothesized, the findings suggest that the lower the education level for an individual worker, the greater the probability of moving into underemployment. Also, for those workers with adequate employment, women are more likely to enter underemployment or drop out of the labour force than their male counterparts, especially if family responsibilities exist. Further, workers in high-skill occupations have lower chances of exiting the labour market or entering underemployment relative to unskilled workers. Finally, place of residence (rural/urban dichotomy) also seems strongly related to the likelihood of labour market mobility. Living in a rural area significantly increases

the likelihood of entering underemployment from an adequate job. We also found how the rural underemployed are more likely to remain so than to drop out of the labour force as compared to their urban counterparts. However, living in a rural area does not simply "disadvantage" workers as previous work has suggested. Rather, because rural individuals who are underemployed are also more likely than those in urban areas to get an adequate job than remain underemployed, mobility between underemployment and adequate employment states appears higher in rural areas. Thus, after controlling for socio-demographic and labour market characteristics, there does seem to be a regional component to labour market mobility but its character is somewhat different from prior expectations.

We move on now into our second question and search for significant differences between rural and urban individuals in the determinants of labour force transitions. To determine whether the effects of the socio-economic (supply) and labour market (demand) covariates ( $x_i$ ) differ by rural/urban residence, we re-estimated the transition equations (1-4) separately for rural and urban residents. The results of the regional specific models presented in Table 4 include significance tests for the differences in coefficients between the rural model and the urban one<sup>7</sup>. In general, across the two samples, the explanatory variables have no significant differences on the probability of making any of the transitions between employment states.

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<sup>7</sup> The statistical significance of coefficient differences across urban-rural models is computed by dividing the absolute difference in the logistic regression coefficients by the square root of the sum of their respective squared standard errors.

We hypothesized earlier that education was expected to have less of an impact on the transitions out of underemployment in rural areas. The urban underemployed have a higher chance of entering adequate employment the higher their education level as compared to those in rural areas (but these differences are not statistically significant). Also, a high school education reduces the probability of the urban underemployed dropping out of the labour force to a greater extent than for the rural underemployed. We do observe for the rural adequately employed sample, that the highest the level of education does not necessarily lower the chances of entering underemployment. However, as high school level adequately employed workers in rural areas are roughly 52% less likely to enter underemployment ( $RRR = e^{\hat{\beta} + \hat{\delta}} = e^{-0.738} = 0.477$ ), whereas the probability decreases to 40% when we consider more than high school level ( $RRR = e^{-0.514} = 0.598$ ). Thus, there is weak evidence that education levels in rural areas have a lower impact on the transitions out of underemployment than in urban areas.

Further, we also hypothesized a significantly different effect of gender in rural areas. Accordingly, we find that rural women are significantly less likely than their male counterparts to enter adequate employment ( $RRR = e^{-1.145} = 0.318$ ), and this likelihood significantly differs from urban women ( $RRR = e^{-0.728} = 0.482$ ) at a 10% significance level (columns 3 and 4 Table 4 –Other Demographic characteristics section). Further, underemployed urban women are more likely to drop out of the labour force than their rural counterparts (albeit not significant). Thus, though women seem equally likely to enter underemployment (columns 1 and 2 Table 4) both in rural and urban areas, rural women seem significantly more likely to remain underemployed than moving back into adequate employment or dropping out of the labour force. The presence of young

children does not seem to especially constrain rural women as compared to their urban counterparts.

Lastly, we consider the greater presence of secondary/low-skill job types in rural areas to increase labour force instability among rural workers. Looking at columns 1 and 2 –Occupation section, we observed how the higher the level of skills the less likely workers are to slip into underemployment, however this relationship is less strong among rural workers (although not significant). This might be a weak evidence of the suspected greater instability in rural areas, which seems supported with the results in columns 5 and 6 where rural worker seem far more likely to drop out of the labour force than urban ones (not significant difference except for semi-professional, technical and middle management). Further, underemployed workers seem less likely to drop out of the labour force in rural areas than their urban counterparts, and they are less likely to enter adequate employment than urban workers at the higher level of skill occupations (i.e., professional and semi-professional, technical and middle management) although results are not significantly difference between the two groups.

To judge the empirical significance of differences in the responses across the rural and urban sample, we use the estimated urban and rural coefficients from Table 4 to calculate predicted transition probabilities for the rural sample. The values using the urban coefficients may be interpreted as the average predicted transition probabilities for the rural sample if rural behaviour were identical to urban ones. Hence, comparing these predicted values with the predictions using the estimated rural coefficients provides a method of measuring the overall impact of rural-urban differences while controlling for observed characteristics.



The results in Table 5 (rows 3 and 4) show that while the average predicted probability of moving into underemployment from adequate employment for the rural sample is 12%, if urban conditions applied the average transition probability would fall to approximately 9%. Similarly, the probability of remaining in adequate employment would rise for the average rural individual in an urban market. However, the probability of remaining underemployed would rise while the chances of moving into adequate employment would fall from 21% for the average rural resident to 17% if that same individual was in an urban labour market.

## **6. Summary and Conclusions**

Employment status is intricately linked to poverty and economic well-being. Previous studies have examined the influence of socio-economic (supply) and labour market (demand) characteristics on the likelihood of employment. This study contributes to the literature by considering a more comprehensive concept of employment hardship and the factors influencing the probability of moving into and out of underemployment. Particular emphasis is placed on the previously unexamined regional differences in labour mobility given the policy concerns surrounding the "rural disadvantage" facing workers in non-urban areas. The size and time series nature of the Canadian Survey of Labor and Income Dynamics (SLID) allows for the empirical testing of these previously unexamined issues dealing with the influences on the transitions into and out of employment states. The results indicate that after controlling for socio-demographic and labour market characteristics, rural adequately employed workers are significantly more

likely to enter underemployment than urban ones. Surprisingly however, once they are underemployed, they have a higher probability of re-entering adequate employment the following period, suggesting that the extent of cycling between underemployment and adequate employment seems higher in rural areas. We also found that the rural underemployed are more likely to remain underemployed than to drop out of the labour force as compared to their urban counterparts which may be a sign of the different labour market characteristics in rural areas. Further, we also found weak evidence that education level in rural workers has less of an impact on the probability out of underemployment than in urban areas. In addition, women are significantly less likely than their male counterparts to enter adequate employment, and this effect is more pronounced in rural areas. Rural women are significantly more likely to remain underemployed than to move back into adequate employment or drop out of the labour force. The presence of young children does not seem to especially constrain employment for rural women as compared to their urban counterparts. Overall, our findings seem to corroborate the apparently more precarious position of rural individuals in terms of labour market transition in and out of adequate employment, which should be taken into account when evaluating employment hardship in rural Canada.

## REFERENCES

- Bane Mary J. And David T. Ellwood. 1986. Slipping into and out of poverty: The dynamics of spells. *Journal of Human Resources*, 21, 1-23.
- Bluestone, Barry and Bennett Harrison. 1982. *The Deindustrialization of America*. New York: Basic Books.
- Bryden, John and Ray Bollman. 2000. Rural employment in industrialised countries. *Agricultural Economics*, 22, 185-197.
- Clark, Willian A. and Suzanne Davis Withers. 1999. Changing Jobs and Changing Houses: Mobility Outcomes of Employment Transitions. *Journal of Regional Science*, 39, 653-673.
- Clogg, Clifford C. 1979 *Measuring Underemployment: Demographic Indicators for the United States*. New York: Academic Press.
- Devine, T. J., and N. M. Keifer. 1993. The empirical status of job search theory. *Labor Economics* 1, 3-24.
- Dickie, Mark and Shelby Gerking. 1998. Interregional wage disparities, relocations costs and labor mobility in Canada. *Journal of Regional Science*, 38, 61-87
- Doeringer, P.B. 1984. Internal labor markets and paternalism in rural areas In Osterman, P., (ed.) *Internal Labor Market*, Cambridge: MIT. pp.272-289
- Eltinge, J. and W. Sribney. 1997. Some basic concepts for the design based analysis of complex survey data. *STB 31*, (1997): 208-212. College Station, TX: Stata Corporation.
- Howatson, I. and I. Earl. 1995. *A New Approach to Non-CMA/CA areas*. Statistics Canada, Working Paper N. 31.

- Hsueh, Sheri, and Marta Tienda. 1994. Race and labor force instability. Pp. 95–100 in 1993 Proceedings of the Annual Meetings of the American Statistical Association, Social Statistics Section, pp. 95–100, American Statistical Assoc., Washington, DC.
- Jensen, Leif, and D.J. Eggebeen. 1994. Nonmetropolitan poor children and reliance on public assistance. *Rural Sociology*, 59, 45-65.
- Jensen, Leif, Findeis, Jill L, Hsu, Wan-Ling and Jason P. Schachter. 1999. Slipping into and out of underemployment: Another disadvantage for nonmetropolitan workers? *Rural Sociology* 64, 417-438.
- Lehtonen, Risto and Erkki Pahkinen 1994 Practical methods for design and analysis of complex surveys. New York: John Wiley.
- Lichter, Daniel T. and Janice Costanzo. 1987. Nonmetropolitan underemployment and labor force composition. *Rural Sociology*, 52, 329-344.
- Lichter, Daniel T. 1989. The Underemployment of American Rural Women: Prevalence, Trends, and Spatial Inequality. *Journal of Rural Studies*, 5, 199-208.
- Lichter, Daniel T. and David Landry. 1991. “Labor force transitions: the stratification of male and female workers” in Althausen R. and M. Wallace (eds.) *Research in Social Stratification and Mobility*. Vol. 10. Greenwich, CT: JAI Press. pp. 73-87
- McLaughlin, D.M. and L. Perman. 1991. Returns vs. Endowments in the Earnings attainments process for metropolitan and nonmetropolitan men and women. *Rural Sociology* 56, 339-365.
- Moen, Phyllis. 1985. “Continuities and Discontinuities in Women’s Labor Force Activity” In G.H. Elder ed., *Life Course Dynamics: Trajectories and Transitions, 1968-1980*. Ithaca, N.Y.: Cornell University Press, pp.113-55.

- Neumark D, Polsky D, Hansen D. 1999. Has job stability declined yet? New evidence for the 1990s. *Journal of Labor Economics* 17 (4): S29-S64, Part 2
- Nord, Stephen. 1989. The relationships among labor-force participation, service-sector employment , and underemployment. *Journal of Regional Science*, 29, 407-421.
- Noreau, Natalie, Webber, Marianne, Giles, Phil and Alison Hale. 1997. *Crossing the Low Income Line*. Statistics Canada. Catalogue No. 97-11.
- Salinas, Patricia W. 1982. Longevity of Individual Low Income Employment in Growing and Declining Metropolitan Areas. *Journal of Regional Science*, 22, 367-371.
- Sheets, R. G., Stephen Nord, and John J. Phelps. 1987. *The Impact of Service Industries on Underemployment in Metropolitan Economies*. Lexington, MA: Lexington Books.
- Stabler, Jack C. 1999. Rural America: A challenge to regional scientists. *Annals of Regional Science*, 33, 1-14.
- STATA CORP. 1997. *Stata Statistical Software : Release 5.0 (Reference Manuals)*.,TX: Stata Corporation.
- Statistics Canada. 1999. *Survey of Labor and Income Dynamics: Microdata User's Guide*. Ottawa, Canada.
- Tigges, Leann M. and Deborah M. Tootle. 1990. Labor supply, labor demand, and men's underemployment in rural and urban labor markets. *Rural Sociology* 55, 328-356.

**TABLE 1: Socio-Economic Characteristics of Canadian Workers aged 18-60**  
**by employment status and place of residence**

Group	Underemployment		Adequate employment	
	Rural	Urban	Rural	Urban
<b>Age Group</b>				
< 25	7.07	5.49	2.2	0.9
25-34	25.55	27.82	21.55	19.47
35-44	32.86	31.78	38.58	37.51
>44	34.52	34.91	37.68	42.03
<b>Education</b>				
Less High School	41.69	24.09	24.17	15.00
High School	19.25	20.67	18.99	16.07
More High School	39.06	55.24	56.84	68.93
<b>Other Demographic Characteristics</b>				
% Women	57.59	61.36	32.06	36.12
% Married	77.58	69.52	81.48	77.86
% Women with young children	11.31	13.11	5.3	5.9
<b>Occupation</b>				
Professional	2.86	4.61	11.59	18.14
Semi-Professional, Technical	5.37	7.42	9.29	11.78
Middle management				
Supervisor	8.94	12.73	19.00	19.32
Skilled, Worker employee, Farmer	10.88	15.37	19.25	20.74
Semi-skilled worker	31.54	34.15	18.71	15.58
Unskilled-worker	40.41	25.73	22.17	14.43
<b>Industry</b>				
Resource based activities	16.78	3.30	13.20	3.69
Manufacturing	12.89	10.58	19.26	19.59
Construction, Distribution and Transport	31.72	36.93	28.56	28.65
Service and Financial sector	38.60	49.20	38.98	48.07
Total Earnings (inc. self-employed)	9978.92	12493.1	36058.38	44378.59
Hourly wages (employees only)	10.28	10.72	17.48	20.38
N <sup>a</sup>	4304	5047	6192	10767
	(31.73)	(26.50)	(51.54)	(57.4)

<sup>a</sup> The remainder of the sample was out of the labour force in year  $t$  (16.73% for urban and 16.10% for rural)

**TABLE 2: Transitions from labour force states (%)**

<i>State Period t</i>		<i>State Period t+1</i>		
		<b>Underemp</b>	<b>Ad. Emp</b>	<b>Out LF</b>
<b>Underemployment</b>	<i>Rural</i>	78.5	16.95	4.55
	<i>Urban</i>	77.87	16.31	5.82
	$\chi^2(2) = 13.52$ ( <i>p</i> -value 0.2724)			
<b>Adequate Employment</b>	<i>Rural</i>	8.57	90.03	1.4
	<i>Urban</i>	5.85	92.94	1.21
	$\chi^2(2) = 45.615$ ( <i>p</i> -value 0.0008)			

**TABLE 3**  
**Multinomial Logistic Regression for Transition**  
**From one employment Type to another**  
**(Relative Risk Ratios -  $e^{\beta}$ )**

Independent Variable	Entering	Entering	Exiting the Labour Force	
	<u>Underemploy- ment</u>	<u>Adequate Employment</u>	From Adequate Employment	From Underemploy- ment
<b>Age Variables</b>				
Age	0.826**	1.056	0.700**	1.004
Age Square	1.002**	0.999*	1.005**	1.000
<b>Education</b>				
High School	0.684**	1.190	0.972	0.463**
More High School	0.712**	1.494**	0.778	0.437**
<b>Other Demographic Characteristics</b>				
Female	1.557**	0.429**	1.342	2.134**
Married	1.001	1.278	1.348	0.930
Women with young children	3.792**	1.557**	6.400**	3.249**
<b>Occupation</b>				
Professional	0.206**	3.014**	0.942	0.260**
Semi-Professional, Technical Middle management	0.344**	2.672**	0.717	0.731
Supervisor	0.571**	1.981**	1.730	0.500
Skilled, Worker employee, Farmer	0.606**	1.768**	1.188	0.673
Semi-skilled worker	0.711**	0.973	2.051**	0.430**
<b>Industry</b>				
Resource based activities	0.894	0.845	0.9601	0.717
Manufacturing	0.631**	1.850**	0.904	1.604
Construction, Distribution and Transport	1.008	1.051	0.384**	0.919
<b>Regional Variables</b>				
British Columbia	1.461*	1.275	0.707	0.511*
Prairies	1.418**	0.848	0.875	0.474**
Quebec	1.476**	0.808	1.100	0.605**
Maritimes	1.480**	0.546**	1.568	0.730
Rural Dummies <sup>a</sup>	1.322**	1.321**	1.151	0.664**
<b>N Moved</b>	824	973	146	306
<b>% of Sample<sup>b</sup></b>	6.45	16.48	1.25	5.48

<sup>a</sup> Likelihood ratio test of joint significance of the rural dummies was undertaken in both regressions. The results indicate that the variables were significant at  $p < 0.1$

<sup>b</sup> It refers to the percentage of people within certain employment type in time t that move to another employment type in time (t+1).

Omitted categories: Less than High School, Ontario, Unskilled Worker, Service and Financial sector, 1996.

\*  $p < 0.1$

\*\*  $p < 0.05$



**TABLE 4**  
**Log-likelihood parameter estimates for transition from one employment type to another – specific rural/urban estimates**

Independent Variable	Entering Underemployment		Entering Adequate Employment		Exiting the Labour Force			
	From Adequate Employment		From Underemployment		From Adequate Employment		From Underemployment	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
<b>Age Variables</b>								
Age	-0.214**	-0.159**	0.070	0.028	-0.257*	-0.545**	-0.016	0.062
Age squared	0.002**	0.002**	-0.001	-0.0005	0.004**	0.007**	0.001	-0.0002
<b>Education</b>								
High school only								
	-0.144	0.738**	0.250	0.075	0.007	-0.167	-0.933**	-0.112
More than high school								
	-0.222	-0.514**	0.475**	0.292**	-0.332	-0.249	-0.934**	-0.359
<b>Other Demographic Characteristics</b>								
Female		0.415**	-0.728**	-	0.052	0.812*	0.966**	0.194*
	0.443**			1.145**				
Married	-0.058	0.189	0.326*	-0.028	0.366	0.231	-0.095	0.067
Women w/ children	1.476**	0.904**	0.389*	0.571**	2.276**	0.514*	1.283**	0.799**
<b>Occupation</b>								
Professional	-1.595**	-1.596**	1.160**	0.752	-0.640	1.985**	-1.58**	-0.543
Semi-Professional, Technical Middle management Supervisor								
	-1.067**	-1.146**	1.038**	0.721*	-0.839*	1.539**	-0.158	-0.984
Skilled, Worker employee, Farmer								
	-0.661**	-0.286	0.547**	1.175**	0.401	1.309*	-0.588	-3.226**
Semi-skilled worker								
	-0.533**	-0.423*	0.508**	0.746**	0.049	0.886	-0.342	-0.794
Industry								
Resource based activities								
	-0.433**	-0.168	-0.099	0.209	0.521	1.628**	-0.913**	-0.744**
Manufacturing								
	-0.329	-0.074	-0.356	-0.293	-1.341**	1.170**	-0.004	-0.763*
Construction, Distribution and Transport								
	-0.398**	-0.639**	0.592**	0.693**	-0.290	0.666	0.573	0.197
Regional Variables								
British Columbia								
	0.046	-0.154	0.191	-0.336*	-0.969**	-0.914	0.072	-0.662*
Prairies								
	0.482*	0.013	0.061	1.022**	-0.207	-0.615	-0.752*	-0.384
Quebec								
	0.412**	0.141	-0.308*	0.186	0.074	-0.639	-0.917**	-0.157
Maritimes								
	0.388	0.394	-0.199	-0.265	0.094	-0.039	-0.524*	-0.234
N Moved								
	0.465**	0.220	-0.582**	-0.559**	0.712*	-0.098	-0.621**	0.250
	577	427	659	522	130	72	216	179

\*  $p < 0.05$ \*\*  $p < 0.1$ ☛ Coefficient significantly different from that for urban areas at  $p < 0.1$

**TABLE 5**  
**Average Predicted Probabilities**  
 (Using Rural and Urban Coefficients for Rural Characteristics  
 - Standard Errors in brackets)

<i>Period t</i>	<i>Estimated Coefficients used</i>	<b>Underemployment</b>	<b>Adequate Employment</b>	<b>Out of the Labour Force</b>
	<i>Rural</i>	0.7371 (0.0035)	0.2177 (0.0039)	0.0451 (0.0007)
<b>Underemployment</b>	<i>Urban</i>	0.7676 (0.0023)	0.1705 (0.0026)	0.0618 (0.0011)
	<i>Rural</i>	0.1213 (0.0018)	0.8647 (0.0017)	0.0139 (0.000)
<b>Adequate Employment</b>	<i>Urban</i>	0.0929 (0.0015)	0.8873 (0.0017)	0.0196 (0.0005)

