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Labour Market Outcomes:

A Cross-National Study

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McMaster University

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Self-Employment Dynamics and Self-Employment Trends: A Study of Canadian Men and Women, 1982-1995

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Self-employment has risen dramatically in Canada, accounting for a disproportionate share of job growth since the 1980's. Using hitherto-unexploited information on labour force transitions from 13 waves of the Survey of Consumer Finances between 1982 and 1995, we show that the changes in transition patterns underlying these increases were very different for women and men. For women, most of the increase in self-employment is attributable to an increase in their retention rates in self-employment. For men, most is attributable to a decrease in the stability of paid employment, i.e. a rise in transitions from employment to non-employment. This generates an increase in self-employment because non-employed men are much more likely than employed men to enter self-employment. Changes in demographic characteristics account for very little of these altered transition probabilities. Somewhat paradoxically, self-employment thus rose both in secularly improving (women's) and deteriorating (men's) labour markets, due to different changes in the underlying transition processes.

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(1) Introduction

Between 1982 and 1995 the number of self-employed Canadians between the ages of 25 and 54 increased by 70 percent, compared to a 45 percent increase in paid employment.¹ What explains this increase in self-employment? In this paper we shed some light on this question by examining hitherto-unexploited data on the dynamics of in- and outflows from self-employment over this time period. Data on flows provide clues on the causes of change that are not available by examining stocks alone, because they describe the mechanisms by which individuals become, or cease to be, self-employed, and allow us to examine how these mechanisms have changed over time.

The data used in this paper are the Surveys of Consumer Finances for the years 1982 to 1995. These files contain standard labour force data for the week prior to the survey, as well as supplemental data on the previous year's work experience and income. As a result, we are able to observe individuals in contiguous years, giving us a 2-year panel for each individual. We analyze the dynamics of self-employment as a Markov process among three labour force states: employment in the wage-and-salary sector (E), self-employment (S), and not employed (N). The Markov model allows us to easily compute steady-state self-employment rates associated with the transition processes observed at any point in time, and to decompose changes in these steady-state rates into portions attributable to various changes in the transition matrix.

Our main findings are as follows. First, as we might expect, the steady-state rate of self-employment increased between the 1980's and 1990's for both women and men, though by more

¹These figures, like all those in the current paper, exclude individuals working in primary industries. Self-employment refers to an individual's main job, and to unincorporated businesses only. Primary industries consist of agriculture, forestry, fisheries and mining.

for women. Second, perhaps surprisingly, the process by which these rates increased was quite different. Between the 1980's and 1990's, prime-age men's transition rates from employment to nonemployment increased substantially. Because non-employed men are more likely than employed men to become self-employed, this can account for most of the increase in the steady-state rate of male self-employment. In contrast, the steady-state rate of self-employment among women rose primarily because of decreased exit from self-employment, and (of somewhat less importance) a rise in entry into self-employment.

The association of men's increased self-employment with a decrease in the permanence of paid jobs, and of women's increased self-employment with higher survival rates in self-employment, suggests, more broadly, that men's behavioural changes were, in part, a response to a secular deterioration in labour market conditions, while women were responding to an improving market. Supporting evidence for this view is provided by two further results in our paper. First, multinomial logit analysis of the key transition probabilities identified above shows that changes in observable demographic characteristics, such as age, education, and immigration, cannot explain the changes in these probabilities between the 1980's and 1990's. This leaves room for other factors, such as general labour market conditions, to play a central role. Second, we present evidence on secular changes in the *quality* of new self-employment opportunities, measured by three labour market outcomes –earnings, hours, and the presence of employees-- for individuals who have been self-employed for less than a year. All three indicators show a deterioration for men and an improvement for women between the 1980's and 1990's.

The remainder of this paper is organized as follows. Section 2 briefly reviews the existing literature on the determinants of self-employment levels and flows. Section 3 describes the data, and presents simple descriptive statistics on self-employment entrants and leavers. Section 4 presents the basic transition matrices, by period and gender, and computes steady-state rates of self-employment based on these probabilities. Decompositions of the steady-state rates of self-employment are performed in Section 5, identifying *which* changes in transition rates played key roles in explaining steady state changes in self-employment rates. In Section 6 we use a multinomial logit model to assess the effect of demographic changes on these key probabilities. Section 7 presents supporting evidence on trends in the quality of new self-employment opportunities, and Section 8 concludes.

(2) Previous Literature

Most previous studies of self-employment trends focus exclusively on secular changes in the *stock* of self-employed individuals (e.g. Blau (1987), Fairlie and Meyer (1998) for the US; Lin, Yates and Picot (1998a) and Schuetze (1998) for Canada; Blanchflower (1998) for a variety of OECD countries). These studies focus on a variety of possible causes, including shifting demographic composition of the labour force, tax laws, and general economic conditions, with rather mixed conclusions. A much smaller number of studies focus on flows in addition to stocks (e.g. Evans and Leighton 1989, Meyer 1990 and Alba-Ramirez 1991 for the US; Lin, Yates, and Picot 1998b and Moore and Mueller 1998 for Canada). These studies tend largely to be descriptive of the dynamics of self-employment and generally do not attempt to explain

secular trends in self-employment.² This is partly due to the lack of panel data on self-employment that is consistent over long periods; it is unfortunate however, because changes in process, or flows, might contain important clues regarding the underlying causes of these secular changes in stocks.

(3) Data and Descriptive Statistics

As mentioned, we draw the 2-year panel data used in this paper from a series of microdata files from Canada for the years 1982 to 1995. The microdata files are taken from the Canadian Surveys of Consumer Finances (SCF's) which are conducted in April of each year and contain standard labour force data for approximately 75 thousand individuals per year. All samples are restricted to individuals aged 25 to 54; we focus on this group because it is less likely to be affected by secular increases in school attendance and a tendency to retire earlier. To facilitate the examination of long-run secular changes, and to increase parameter precision (transitions into and out of self-employment are relatively rare events), we pool all the surveys corresponding to the 1980's, and those for the 1990's, and simply compare the two periods to each other. Thus we work with four separate data files-- two data files comprising the 1982-1989 surveys, with 104 thousand observations on men and 118 thousand observations on women; and two data files comprising the 1990-1995 surveys with 118 thousand men and 132 thousand women. Both of these periods roughly include a relative "trough" in the business cycle as well as a relative "peak". Overall, however, employment prospects in the 1990's in Canada were

²Lin, Yates and Picot (1998b) present some aggregate provincial statistics on changes in self-employment flows between 1981 and 1995 in Canada. The main focus of their analysis is however on the cyclical properties of these flows, i.e. on the effects of short-run fluctuations in various business cycle measures, net of time trends. The only other attempt to use flow data to understand longer-run changes in self-employment stocks of which we are aware is a study of British self-employment, by Blanchflower and Freeman (1994)

somewhat worse than the 1980's. The average unemployment rate among Canadians aged 25 to 54 in the 1980's was about 10 percent versus 10.5 percent in the 1990's.

These data offer a number of advantages over other Canadian data sets that might be used to analyse self-employment dynamics. First, because they contain data for the week prior to the survey as well as supplemental data on the previous year's work experience and income, they enable us to estimate annual gross flows between labour force states. In addition, because the surveys are highly consistent in sampling design and questionnaire structure over many years, we are able to examine changes in these flows over time to evaluate the causes of secular changes in self-employment. Finally, the surveys allow us to observe a number of individual characteristics, such as education and place of birth, which are not measured in administrative data sets.

One peculiarity of using the SCF to study labour force dynamics is the fact that labour force status is not measured the same way in two years for which we observe each individual. For the week prior to the survey, the respondent is asked to report whether or not he or she was employed. If the individual was employed, he or she was asked whether in their "main job" he/she was self-employed or employed in the wage and salary sector. Using this information we assign each individual to one of three states: "employed" (but not self-employed) (E), "self-employed" (S), or "not employed" (N).³

For the calendar year prior to the survey, no direct question about self-employment in one's "main job" is asked. Instead, we have data on the number of weeks worked in the year,

³We did some preliminary work using a four-state model that distinguished unemployment from nonparticipation. After some experimentation, we concluded that the extra insight provided by such a model was not warranted by the very substantial increase in complexity. (Moving to a four-state model yields a sixteen-element, rather than a nine-element transition matrix, with some of its elements –due to small sample sizes-- quite imprecisely measured.)

plus information on the amount and source of income in that year, and use this to impute whether the individual was self-employed or a wage and salary earner in his/her "main job". For the vast majority of individuals in our sample, assigning them a labour market status on the basis of this information is straightforward: most respondents either worked the full year or not at all, and had only one source of labour market income: wage and salary earnings or self-employment income. For part-year workers and those with multiple sources of labour market income, we proceeded as follows. First, we assigned to each individual a probability of working (being either "employed" or "self-employed") equal to the number of weeks worked divided by 52. Second, we allocated those weeks of work to self-employment or wage-and-salary employment according to the relative amounts of income earned from each. Thus each part-year worker, and each individual with multiple earned income sources, contributes more than one observation to our data, with the weights assigned to each observation given by our estimate of the probability they were in the corresponding labour market state in a randomly selected week during the previous year.

Clearly, there are some potential problems with the above approach. For example, in some instances self-employment income is negative. While this should still be interpreted as time in self-employment, it is likely to take less time to lose money than to earn it. We address this problem by recasting negative self-employment income as its absolute value times some fraction.⁴ Another issue is seasonality: one week in April (the survey week) may not be representative of an entire year. Like the preceding issue however, this will primarily affect the *level* of self-employment transition rates at a point in time. Because the definitions of both

⁴The results reported here use 1/4, but –because negative incomes are relatively rare– the results are highly insensitive to the value used. For instance, in the 1994 survey only 491 of the over 34 thousand individuals reporting earned income had negative self-employment earnings.

previous- and current-year self-employment are the same across all years of the SCF, these issues should not materially affect our estimates of how transition matrices changed over time, which are our main interest in this paper.

A final issue is whether to allocate self- versus regular employment probabilities strictly in proportion to relative incomes from each: wages in the two jobs may not be equal. Further, if strict proportionality is used, an individual who, throughout the entire year, worked both part-time in the self-employment sector and full-time in the wage and salary sector would be designated as self-employed in their “main job” for some fraction of the previous year, but would never be so classified according to the “survey week” definition. In the results reported here we correct for these measurement differences by utilizing the fact that our two-year panels overlap. The (year-specific) proportionality measure used to allocate individuals between paid- and self-employment in the results reported here is the one that forces self-employment rates by either of our two measures *for the same year* to be the same. The details of this procedure are provided in Appendix A; it is worth noting however that this correction is made only to refine our main estimates. Indeed, when we replicated our main analysis for the population of individuals with only one source of income in the previous year, the results were virtually unchanged, indicating a lack of sensitivity to the assumptions made to allocate individuals with multiple sources of income between self- and paid-employment.⁵

Table 1 documents the main phenomenon we are attempting to explain-- increasing self-

⁵These results are available from the authors. The insensitivity they demonstrate essentially results from two factors, one of which is the rarity of individuals with both self-employment and other employment income. For instance, in 1994 only 1604 individuals of the over 34 thousand individuals reporting earned income had both forms of income. The other factor, again, is the fact that these measurement issues primarily affect levels at a point in time, not (because they are consistent across surveys) changes over time.

employment rates among both men and women between the 1982 and 1995 SCF surveys. Over this period, the number of self-employed men and women rose by 54 and 108 percent respectively, compared to increases in paid work of 30 and 64 percent respectively.

The first two rows of Table 2 describe the source states of new inflows into self-employment, the destinations of those who leave self-employment, and (for comparison) the distribution of the entire population across labour market states. While most entrants to self-employment worked in the wage and salary sector in the previous year, entrants were more likely to be non-employed than the total population. This was particularly true of men: The fraction of men who were not employed prior to entering self-employment was 9 percentage points higher than the population average in the 1980's and grew to 12 percentage points in the 1990's. Also of interest, however, are the trends in the relative sources of men and women entering self-employment. A larger fraction of men entering self-employment in the 1990's came from non-employment relative to the 1980's-- 32 percent in the 1990's versus 25 percent in the 1980's. The opposite was true of women entering self-employment. The fraction of women entering self-employment from non-employment actually fell by 3 percentage points between the 1980's and 1990's. Finally, most men and women leaving self-employment re-enter into wage and salary employment. Likely because of a decline in labour market conditions in the 1990's, however, they were more likely to enter non-employment in the 1990's than in the 1980's.

The remainder of Table 2 simply gives the distributions of three populations –self-employment entrants, self-employment leavers, and the total population, across demographic categories. Thus it appears that most Canadians entering self-employment are married, have no children, are Canadian born and tend to be younger than the population as a whole. There are

some interesting gender differences however. For example, relative to the overall population, the self-employment sector attracted more highly educated women, while men entering self-employment tended to be less educated. Also, women entering self-employment were more likely than the population as a whole to have children while the opposite was true of men.

(4) Transition Matrices

Table 3 reports the probability matrices \mathbf{P} that summarize the transition rates among self-employment, wage-and-salary employment, and nonemployment in our samples. Elements (p_{ij}) of each 3x3 matrix give the empirical probability that an individual in state i at time t (the year preceding the survey) is in state j at time $t+1$ (the survey week). We report separate \mathbf{P} matrices by gender and period (1980's versus 1990's), a total of four in all. Asterisks indicate which of the elements in the 1990's matrix are significantly different at the five percent level from the relevant 1980's elements. Table 3 also reports the ergodic distribution of individuals across these three states under the assumption that the transitions among the labour force states are governed by a Markov process, i.e. that there is no state dependence-- each p_{ij} depends only on the current state and not on history. This ergodic distribution is calculated as the eigenvector \mathbf{q} associated with the unit eigenvalue such that:

$$(1) \quad \mathbf{P} \mathbf{q} = \mathbf{q}$$

By definition, \mathbf{q} must sum to one, and is so normalized. Finally, Table 3 also reports a steady-state rate of self-employment for each transition matrix, which is simply the proportion of time a representative individual spends in self-employment over the proportion of time spent in all forms of employment, as implied by the ergodic distribution across states.

Interestingly, the steady-state rates of self-employment in Table 3 approximate the actual self-employment rates quite well-- differing by less than one percentage point in all cases. As one might expect, the steady-state rates of self-employment rose for both men and women between the 1980's and 1990's. Also as one might expect, the increase was more dramatic among women than men. The steady-state rate of self-employment rose by 2.4 percentage points or 56 percent among women between the two periods as compared to 1 percentage point or 10 percent among men.

A number of observations with regard to the estimated transition matrices warrant mention here. In general, men's retention rate in self-employment, i.e. the proportion of self-employed men who remain self-employed one year later, is larger than women's. In addition, women's retention rate in non-employment, at almost 81 percent, is much higher than men's (63 percent in the 1980's and 70 percent in the 1990's). Trends in exit and entry rates to self-employment also varied greatly between men and women. Exit rates (SN and SE) among men either rose slightly or remained stable while these same rates fell for women. Further, the self-employment retention rate (SS) rose significantly for women and remained stable for men. At the same time, entry rates into self-employment (ES and NS) remained stable for both men and women.

There is also evidence that employment opportunities outside of the self-employment sector deteriorated for men and improved for women. For instance, men's retention rate in the wage and salary sector (EE) fell between the 1980's and 1990's, as did the proportion of males who exited non-employment for employment in the wage and salary sector (NE). In comparison, these proportions actually rose slightly among women. In addition, exit from the wage and salary

sector to non-employment (EN) and the retention rate among those not employed (NN) rose substantially among men but fell for women.

(5) Decompositions

In this section we ask which of the changes in the elements of the transition matrices, identified in the last section, can account for the secular rise in self-employment. The elements or groups of elements we examine are as follows. We start with the obvious potential determinants: changes in entry rates to, and exit rates from, self-employment. Next, we examine changes in labour market opportunities outside of the self-employment sector as these can also affect equilibrium self-employment rates. Here, we look at the durations and the transition rate between employment in the wage and salary sector and non-employment.

The decompositions are carried out as follows. We allow the particular elements of interest in the transition matrix pertaining to the 1980's to take on the probability value in the relevant 1990's transition matrix. By definition, each of the columns of the transition matrix must sum to one. Therefore, one cannot simply change one element in any given column and still maintain this requirement. Our approach when a single element in a column was to be changed to the 1990's probability, was to change that element to the 1990's level but maintain the ratio of the other two probabilities in that column.⁶ The ergodic distributions resulting from the newly formed transition matrix and the associated steady-state self-employment rate were then calculated. The fraction of the overall change in the steady-state rate of self-employment

⁶While not ideal this method seems preferable to changing the entire column to the new (1990's) level. Changing various combinations of elements, in our view, provides more insights into the various possible causal mechanisms at work.

attributable to the change in any element(s) of the transition matrix is then estimated as the difference between the steady-state rate associated with the newly formed transition matrix and the rate for the 1980's, divided by the total predicted change between the two periods (i.e. when all the elements of the matrix are changed to the 1990's level). These estimates are presented in Table 4.⁷ The first row of this table reports the overall predicted change in the steady-state rates of self-employment, rows two to five give the decomposition results allowing self-employment entry and exit rates to change, and rows six to eight give decomposition results for changes in the transitions between wage and salary employment and nonemployment.

It appears that, for Canadian males, changes in the probabilities of entering and exiting self-employment directly from/to the other two labour force states had little impact on the secular rise in the steady-state rate of self-employment. In fact, rows two to five of Table 4 suggest that if the only changes in the transition matrix between the 1980's and 1990's had been the probabilities of exiting and entering self-employment, the steady-state rate of self-employment would have declined. Both a decline in the entry rate and an increase in the exit rate contribute to this hypothetical decline. Instead, the factors which appear to have played the largest role in the sectoral rise in male self-employment rates are those elements which determine whether an individual is employed in the wage and salary sector or not employed at all. For instance, the rise in the probability of exiting the wage and salary sector into non-employment and the decline in the probability of entering the wage and salary sector from non-employment (row six of the table) account for 183 percent of the increase in the steady-state rate of self-employment between

⁷Results are also generated for the sample of individuals with only one of self-employment or wage and salary income in the previous year (available from the authors) and are very similar to those presented in table 4.

the two periods. Also, allowing the retention rate in wage and salary work and non-employment to adjust to the 1990's level accounts for 190 percent of the rise.⁸

The explanation for the rise in steady-state self-employment among women is more straightforward. For women, increased entry and decreased exit from self-employment are the two most important causes for the secular rise in self-employment. Together, entry and exit (row 2) account for 112 percent of the rise in the steady-state rate of self-employment between the two periods for women. As row four of the table shows, nearly all of that 112 percent rise can be attributed to a decline in exits from self-employment combined with an increase in the duration of self-employment. Surprisingly, unlike for men, changing transition patterns between the wage-and-salary sector and nonemployment had almost no effect on the steady-state self-employment rate for women. In fact, Table 4 suggests that the steady-state rate of self-employment would have fallen somewhat if only the transition probabilities between E and N had changed. This seems likely to be a result of the increase in labour force participation experienced by women over this period.

(6) The Role of Changing Demographics

One might argue that the changes in transition probabilities, and the resulting changes in

⁸It may be worth noting that this predicted increase in the male self-employment *rate* can be further decomposed into a portion due to a changing numerator (i.e the number of self-employed persons) and denominator (the total number of employed persons). The two have somewhat distinct interpretations. For example, in the latter case, self-employment rates can increase in poor labour markets without any increase in the number of self-employed persons, simply because self-employed people are less likely to “lay themselves off”. When we performed this decomposition, we found that nearly 60 percent of the increase is due to increase self-employment (the first mechanism) while the remaining 40 percent is due to decreased wage and salary employment. For this analysis we allowed only changes in the ergodic distribution that result from changing the flows between wage and salary employed and not employed to their 1990's level. This allowed us to isolate the two mechanisms described above from the negative effects of direct entry and exit on time spent in self-employment.

steady-state self-employment rates analyzed in the last section, are simply an artifact of the changing demographic mix of the Canadian labour force. After all, the age distribution, education mix, and immigrant share of the population changed substantially over this period; perhaps these shifts account for most of the observed changes we find.

To assess this hypothesis, in this section we estimate a series of multinomial logit models of transition rates, and use these models to assess the affect of changing demographics on both the transition rates themselves and the resulting ergodic self-employment rate. While we present results for all nine elements of each transition matrix, in our discussion we focus mainly on those elements identified in the last section as key elements; namely, increased transitions from wage and salary employment to nonemployment among men, and decreased exit rates from self-employment among women

In more detail, our approach is as follows. First, using the data pertaining to the 1980's we estimate a model of time $t+1$ choice among the three labour force states on various demographic characteristics by multinomial logit for men and women, separately. The demographic variables include age and age squared, a set of dummy variables for education, marital status, immigration status, the presence of younger children (aged 0-6) and older children (aged 7-17) as well as the number of years since migration. We condition on the observed labour force state at time t ; the estimation technique is thus applied separately to each column of the transition matrices for the 1980's.⁹ Summary statistics for the different sub-populations used in estimation are included in appendix table B1 and the parameter estimates from multinomial

⁹ Because we observe the time t labour force state for individuals probabilistically (described in section 2) we include all individuals with non-zero probabilities of being in a given state at time t in the estimation and use the probabilities as weights.

logits are in tables B2, for men, and B3, for women.

Second, we compute predicted transition matrices for the 1990's using the parameter estimates from the 1980's and allowing the demographic variables to change to their 1990's levels. From the predicted transition matrices we compute estimates of the steady-state rates of self-employment. Thus, differences between the actual 1980's transition matrices and steady-state rates of self-employment and those that are predicted for the 1990's arise solely because of changes in demographics between the two periods. These results are presented in Table 5.

Table 5 suggests that differences in demographic composition between the two periods do not explain much of the changes in the transition probabilities, nor in the corresponding ergodic distributions and steady-state rates of self-employment that we observe among Canadian men and women between the 1980's and 1990's. In fact, the predicted changes in the steady-state rates of self-employment that arise from changes in the demographics suggest that the steady-state rates would have fallen, though only slightly, if *only* demographics (and nothing else) had changed between the 1980's and 1990's. Adjusting for changes in demographics predicts a decline equal to 4.1 percent of the actual change for men and a decline of 4.6 percent for women.¹⁰

We focus now on the predicted changes in those transition probabilities which played a key role in the secular changes in self-employment in order to understand the predicted declines in the steady-state rates of self-employment resulting from demographic shifts in the labour force. For men, recall that the pivotal changes in transition rates were those between

¹⁰We also check this analysis by "back-casting", i.e. estimating the multinomial logit models using the 1990's data and examining the changes in the probability matrices resulting from allowing the demographics to revert back to their 1980's levels. While this analysis attributes a small rise in the steady-state rates of self-employment to changes in demographics, the fraction attributed to changes in demographics, as in the "forecasting" exercise reported in the paper, was minor. These results are available from the authors on request.

employment and nonemployment, and note that the decline in employment retention rates we observed in the actual transition matrices is not predicted by changes in demographics. The model actually predicts the opposite; that wage and salary employment stability should have improved. This is due to increases in the age and education of the sample, together with declines in the fraction who are immigrants, all of which should have reduced the transition rate into nonemployment from wage and salary employment, and raised the transition rate from nonemployment into wage and salary employment. Therefore, it is unlikely that changes in demographic composition explain the secular rise in self-employment among Canadian men.

For women, whose demographic changes (e.g. increasing age and education) were similar to men's, one might expect that these changes should explain at least some of their increases in self-employment duration. In fact, the model does predict that durations in, and exit rates from, self-employment would have improved as a result of changes in demographics. The newly formed ergodic distribution also predicts a slight increase, on average, in time spent in self-employment by women in the 1990's. However, this is offset by relatively larger predicted improvements in the wage and salary sector, which results in a small *decline* in the predicted steady-state rate of self-employment. Therefore, as for men, changes in demographic mix do not provide an obvious explanation for women's increasing self-employment rate. A more likely culprit for the secular rise in self-employment among Canadian women is some unobserved, trended factor, such as a general improvements in women's labour market, reflected in rising experience, qualifications, and earnings.¹¹

¹¹ While individual-specific measures of actual labour market experience are not available in the SCF, we were able to compute cohort-specific trends in labour force experience among women over this period in these data. Essentially, they follow a linear time trend, indicating that any unexplained time trend might be empirically

(7) Job Characteristics of the Newly Self-Employed

A number of researchers have suggested that recent increases in self-employment are, in part, attributable to new opportunities opened up by technology that makes self-employment more feasible than it once was.¹² In contrast, we have argued that, at least for Canadian men, one of the main causes for the rise in self-employment is a long-term decline in the opportunities available to them in the wage and salary sector. If this is the case, then one might expect the quality of men's new self-employment jobs in the 1990's to have deteriorated. Also, given our interpretation that the increase in self-employment among women is likely caused by improving market conditions and human capital, one would not expect to find such a deterioration in new self-employment jobs among women. In this section we present some evidence on changing labour market conditions for men and women in the 1980's versus 1990's, and examine three measures of the "quality" of self-employment opportunities at our disposal to see whether this is indeed the case.

Turning first to relative labour market conditions for men and women, there does indeed seem to be evidence of a "twist" in conditions against men. Between the 1982-1989 and 1990-1995 periods, the employment-to-population ratio of prime age (25-54) men fell, from 86.3 to 83.4 percent. That of women rose, from 63.4 to 69.2 percent. A similar story holds for unemployment rates: looking at business cycle troughs in each of the two periods to abstract from cyclical effects, men's unemployment rose between the two periods, from 9.7 percent in

indistinguishable from an experience effect

¹²See, for example, Farber (1997) which uses US data and Gauthier and Roy (1997) which uses Canadian data.

1983, to 10.7 percent in 1992. Women's unemployment rate peaked at 10 percent in 1984, but only at 9.7 percent in 1993. Thus, aggregate statistics paint a picture of an improving labour market for women, and a deteriorating one for men.

Tables 6 and 7 compare three measures of job quality for newly self-employed men and women, respectively, to two reference groups: those with longer job tenures in self-employment, and individuals employed in all sectors, for the two periods. The three measures of self-employment quality are the fraction of new self-employment opportunities with paid help, that are full-time, and that pay high wages. According to Table 6, both men and women who are self-employed are increasingly "own-account", in other words without paid help. This change is especially evident among the newly self-employed (those with tenure under a year), and could reflect both changes in technology favourable to that kind of self-employment, or declines in the quality of new self-employment opportunities.¹³ More interestingly, however, the increase in own account self-employment over this period is significantly larger among men than women, especially among the newly self-employed: the fraction of newly self-employed men who are own account increased by more than 12 percentage points between the 1980's and 1990's compared to a 5 percentage point increase for newly self-employed women. Trends in own-account self-employment are therefore consistent with the notion that declining market opportunities played a larger role in men's increasing self-employment than in women's.

A second job "quality" measure, usual hours worked per week, also suggests that the

¹³These findings support those found in Gauthier and Roy (1997).

nature of self-employment among men is changing.¹⁴ There was a substantial increase in the fraction of men in both sectors working "part-time" (fewer than 30 hours per week) and a decline in the fraction working "full-time" (more than 30 hours) between the 1980's and 1990's. At the same time, the fraction of women who were "full-time" remained stable. There was, however, an increase in the fraction of self-employed women working more than 40 hours and a decline in those working less than 20 hours. This is also consistent with the notion that declining market opportunities played a larger role in men's increasing self-employment than in women's.

Table 7 reports average weekly wages for short and longer tenure men and women in both the self-employment and wage and salary sectors for the 1980's and 1990's. For men, both self-employed and wage and salary earners' wages declined between the two periods, but the decline in self-employment earnings, particularly for the more recently self-employed, was substantially larger than the same decline in the wage and salary sector. This is starkly contrasted by a comparatively large increase in weekly wages among self-employed women relative to women earning a wage and salary. Clearly, women's new self-employment opportunities improved over this period, while men's worsened. Women's increased self-employment thus seems a natural response to improved opportunities. Men's self-employment rates increased despite declining qualities of self-employment opportunities, because wage-and-salary opportunities also became less attractive, and because fewer were employed at all.¹⁵

¹⁴In general, of course, high hours of work do not necessarily indicate a good job. They may however help distinguish genuine active businesses from "stopgap" activities.

¹⁵Our evidence for men is also strongly inconsistent with the notion that increased self-employment consists to a substantial degree of voluntary "contracting out" of jobs to the same individuals who once did the same job in the wage-and-salary sector. In such situations, one might expect wages to *increase* to compensate for the loss in fringe benefits such as dental and pension plans.

(8) Conclusions

The evidence presented here clearly shows that the changes in the underlying labour force flows which have led to a secular increase in Canadian self-employment between the 1980's and 1990's are significantly different for men and women. Declining opportunities in wage and salary employment between the two periods appear to have had a large impact on male self-employment rates and virtually no impact on women's. In contrast, most of the secular rise in self-employment among women is associated with declining exit rates from self-employment, i.e. increased duration. This interpretation is supported by three indicators of the quality of new self-employment opportunities –hours, wages and the presence of employees–, all of which show an improvement for women (relative to wage and salary opportunities) and a deterioration for men.

If, as our results suggest, Canadian men were indeed “pushed” into self-employment in the 1990's by a secular decline in paid employment opportunities, our results may have some interesting implications for economic policy. For example, self-employment assistance plans offered by the Unemployment (now Employment) Insurance system, rather than creating high-quality new opportunities, may simply be adding to the stock of unemployed men already crowding into the self-employment sector in response to declining opportunities in regular paid employment.

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Table 1
CANADIAN EMPLOYMENT TRENDS 1982-1995: Men and Women Aged 25-54

Year	MEN			WOMEN			TOTAL		
	Rate	# Self-Employed	# Wage/Salary	Rate	# Self-Employed	# Wage/Salary	Rate	# Self-Employed	# Wage/Salary
1982	8.08	308,270	3,507,690	5.02	134,110	2,534,950	7.32	442,380	6,042,640
1983	8.42	317,720	3,457,320	5.43	150,350	2,619,750	7.70	468,070	6,077,070
1985	8.37	331,710	3,631,420	6.84	207,340	2,822,040	8.35	539,050	6,453,460
1986	9.01	370,340	3,740,510	4.21	136,650	3,109,610	7.40	506,990	6,850,120
1987	8.61	363,340	3,854,460	4.87	164,400	3,208,020	7.47	527,740	7,062,480
1988	8.82	383,491	3,966,676	4.83	174,331	3,437,111	7.53	557,822	7,403,787
1989	8.50	375,724	4,043,312	4.75	177,923	3,567,259	7.27	553,647	7,610,571
1990	8.59	385,585	4,104,205	5.39	211,199	3,705,920	7.64	596,784	7,810,125
1991	9.27	410,246	4,017,396	5.62	221,921	3,728,414	8.16	632,167	7,745,810
1992	9.47	413,552	3,955,136	5.32	210,019	3,734,388	8.11	623,571	7,689,524
1993	9.41	424,916	4,091,814	5.53	221,696	3,786,373	8.21	646,612	7,878,187
1994	10.17	469,614	4,148,796	6.67	273,345	3,826,264	9.32	742,959	7,975,060
1995	9.43	473,413	4,547,520	6.27	278,633	4,168,168	8.63	752,046	8,715,688
% Change 1982-1995	17%	54%	30%	25%	108%	64%	18%	70%	44%
*Notes:	1) Calculations based on series of SCF data files using sample weights 2) Self-employed excludes owner/operators of incorporated businesses 3) Sample is restricted to those employed in non-primary industries								

Table 2
Characteristics of Self-Employment Entrants and Leavers

	Entrants				Leavers				Total Population			
	Men		Women		Men		Women		Men		Women	
	80's	90's	80's	90's	80's	90's	80's	90's	80's	90's	80's	90's
Source/Destination (%)												
Wage & Sal	75.2	68.0	61.4	64.0	74.3	70.6	68.4	62.6	84.5	79.9	62.2	67.4
Not Employ	24.8	32.0	38.6	36.0	25.7	29.4	31.6	37.4	15.5	20.1	37.8	32.6
Age (%)												
25-34	41.6	39.6	43.2	39.0	42.5	37.0	41.3	36.8	42.0	38.6	42.5	38.4
35-44	34.9	39.2	37.3	38.7	35.4	36.7	36.4	38.5	33.9	35.8	33.6	36.1
45-54	23.6	21.3	19.6	22.3	22.2	26.3	22.3	24.7	24.1	25.6	23.9	25.5
Education (%)												
8yrs or less	13.8	5.4	9.0	4.1	11.9	6.5	9.2	6.2	12.8	7.6	12.5	7.4
9-10 yrs	17.0	13.5	14.7	9.2	13.7	13.8	14.5	13.1	13.9	12.4	14.0	11.0
11-13 yrs	29.1	38.9	33.0	37.6	28.4	35.6	35.6	38.3	31.7	39.1	36.2	39.4
some post	8.9	9.2	10.1	9.4	10.3	8.6	9.3	8.7	9.2	8.1	8.4	8.5
post-second	14.1	13.9	15.9	20.3	19.0	16.2	15.2	16.4	14.3	14.3	15.9	18.7
university	17.1	19.1	17.4	19.5	21.6	19.3	16.2	17.3	18.1	18.5	13.0	15.0
Marital Status (%)												
single	17.4	24.9	8.4	10.5	17.1	19.3	9.6	11.8	17.0	21.1	12.1	14.1
married	74.5	65.7	81.3	78.6	74.4	73.2	76.7	77.7	77.3	72.4	76.9	74.6
div/wid/sep	8.0	9.5	10.3	10.9	8.5	7.5	13.7	10.5	5.7	6.5	11.0	11.4
Number of Young Children (aged <7) (%)												
none	74.2	75.4	67.0	67.1	71.9	70.8	72.4	66.7	73.3	75.1	73.5	73.4
one	15.8	13.5	19.0	19.2	16.8	17.9	15.6	22.0	16.7	15.1	16.9	16.5
two	8.6	9.8	11.8	10.6	9.5	9.1	10.1	10.0	8.7	8.3	8.3	8.5
three +	1.4	1.2	2.2	3.2	1.9	2.3	1.9	1.3	1.4	1.5	1.3	1.6
Number of Older Children (aged 7-17) (%)												
none	61.0	71.9	47.2	59.8	60.8	65.9	50.1	54.6	61.3	67.4	55.2	61.4
one	19.8	13.8	23.8	20.5	19.3	17.1	21.6	20.7	18.4	16.3	22.1	20.0
two	13.5	10.5	20.3	15.0	15.3	13.0	20.1	17.6	15.0	12.6	16.8	14.4
three +	5.7	3.9	8.7	4.7	4.7	4.0	8.3	7.1	5.3	3.7	5.9	4.2

Table 2 (Continued)

	Entrants				Leavers				Total Population			
	Men		Women		Men		Women		Men		Women	
	80's	90's	80's	90's	80's	90's	80's	90's	80's	90's	80's	90's
Years Since Immigration (%)												
Canadian brn	78.2	81.5	82.6	82.9	83.9	78.3	80.7	83.7	80.2	81.2	81.2	81.4
0-5 yrs	2.9	5.6	2.1	3.8	1.4	5.7	2.0	3.6	2.8	4.4	2.6	4.4
6-10 yrs	2.9	0.4	2.7	1.8	3.1	1.8	4.0	1.2	2.7	1.3	2.7	1.2
11-20 yrs	5.6	4.6	4.8	3.0	5.4	6.3	5.0	3.8	5.8	4.6	5.6	4.8
21-50 yrs	10.5	8.0	7.8	8.5	6.3	7.9	8.3	7.8	8.5	8.4	7.9	8.1

1. All values calculated using SCF data files
2. Some columns may not sum to 1 because of rounding error.

Table 3
Transition Matrices, Ergodic Distributions and Steady-State Rates of
Self-Employment: 1980's v.s. 1990's, males and females

Men

Probability Matrix 1980's				Probability Matrix 1990's			
E_t	S_t	N_t		E_t	S_t	N_t	
0.9184	0.1487	0.3121	E_{t+1}	0.9002*	0.1489	0.2608*	E_{t+1}
0.0116	0.8180	0.0338	S_{t+1}	0.0103	0.8121	0.0357	S_{t+1}
0.0701	0.0332	0.6541	N_{t+1}	0.0895*	0.0390	0.7035*	N_{t+1}
Ergodic Distribution 1980's				Ergodic Distribution 1990's			
E	0.7602			E	0.6983		
S	0.0783			S	0.0802		
N	0.1615			N	0.2215		
Steady-State Self-Employment Rate = 0.0933				Steady-State Self-Employment Rate = 0.1031			
Change in Steady-State Self-Employment Rate 1990's-1980's = 0.0097							

Women

Probability Matrix 1980's				Probability Matrix 1990's			
E_t	S_t	N_t		E_t	S_t	N_t	
0.8984	0.2695	0.1708	E_{t+1}	0.9043*	0.1589*	0.1778*	E_{t+1}
0.0089	0.6482	0.0127	S_{t+1}	0.0087	0.7790*	0.0146*	S_{t+1}
0.0927	0.0823	0.8164	N_{t+1}	0.0869*	0.0621*	0.8076*	N_{t+1}
Ergodic Distribution 1980's				Ergodic Distribution 1990's			
E	0.6372			E	0.6470		
S	0.0282			S	0.0458		
N	0.3346			N	0.3072		
Steady-State Self-Employment Rate = 0.0424				Steady-State Self-Employment Rate = 0.0661			
Change in Steady-State Self-Employment Rate 1990's-1980's = 0.0237							

Note: * denotes change in element p_{ij} 1990's-1980's is statistically significant at the five percent level

Table 4
Decomposition of Change in the Canadian Steady-State (S-S) Rate of Self-Employment

Elements Changed	Men				Women			
	S-S Rate 1980's	S-S Rate 1990's	Change S-S Rate	Percent Explained	S-S Rate 1980's	S-S Rate 1990's	Change S-S Rate	Percent Explained
All Elements	0.0933	0.1031	0.0097	100	0.0424	0.0661	0.0237	100
S-E Entry and Exit (ES,SE,NS,SN)	0.0933	0.0868	-0.0065	-66	0.0424	0.0690	0.0266	112
S-E Entry (ES,NS)	0.0933	0.0892	-0.0041	-42	0.0424	0.0443	0.0019	8
S-E Exit (SN,SE,SS*)	0.0933	0.0908	-0.0025	-26	0.0424	0.0661	0.0237	100
S-E Duration (SS)	0.0933	0.0906	-0.0027	-28	0.0424	0.0659	0.0235	99
W&S-Non-Employ Transitions (EN,NE)	0.0933	0.1112	0.0179	183	0.0424	0.0408	-0.0016	-7
W&S Non-Employ Duration (EE,NN)	0.0933	0.1118	0.0185	190	0.0424	0.0400	-0.0024	-10
All W&S Non (EN, NE,EE,NN,ES*,NS*)	0.0933	0.1058	0.0125	128	0.0424	0.0424	0.0000	0

1. For a description of how the values are calculated refer to the text.
2. * denotes elements that took on their 1990 value because of requirement to sum to one.

Table 5
Adjusted Transition Matrices, Ergodic Distributions and Steady-State Rates of
Self-Employment: 1980's v.s. 1990's, males and females

Men

Probability Matrix 1980's				Predicted Probability Matrix 1990's			
E_t	S_t	N_t		E_t	S_t	N_t	
0.9184	0.1487	0.3121	E_{t+1}	0.9194	0.1512	0.3257	E_{t+1}
0.0116	0.8180	0.0338	S_{t+1}	0.0116	0.8168	0.0359	S_{t+1}
0.0701	0.0332	0.6541	N_{t+1}	0.0689	0.0320	0.6384	N_{t+1}
Ergodic Distribution 1980's				Predicted Ergodic Distribution 1990's			
E	0.7602			E	0.7679		
S	0.0783			S	0.0787		
N	0.1615			N	0.1534		
Steady-State Self-Employment Rate = 0.0933				Steady-State Self-Employment Rate = 0.0929			
Predicted Change in Steady-State Self-Employment Rate 1990's-1980's = -0.0004							
Percent of Actual Change Predicted by Allowing X's to Change to 1990's Levels = -4.1%							

Women

Probability Matrix 1980's				Predicted Probability Matrix 1990's			
E_t	S_t	N_t		E_t	S_t	N_t	
0.8984	0.2695	0.1708	E_{t+1}	0.9038	0.2659	0.1905	E_{t+1}
0.0089	0.6482	0.0127	S_{t+1}	0.0087	0.6565	0.0139	S_{t+1}
0.0927	0.0823	0.8164	N_{t+1}	0.0875	0.0776	0.7956	N_{t+1}
Ergodic Distribution 1980's				Predicted Ergodic Distribution 1990's			
E	0.6372			E	0.6721		
S	0.0282			S	0.0291		
N	0.3346			N	0.2988		
Steady-State Self-Employment Rate = 0.0424				Steady-State Self-Employment Rate = 0.0415			
Predicted Change in Steady-State Self-Employment Rate 1990's-1980's = -0.0010							
Percent of Actual Change Predicted by Allowing X's to Change to 1990's Levels = -4.2%							

Table 6
Employment Characteristics by Job Tenure: Self-Employed v.s. All Employed

	Self-Employed				All Employed			
	1980's		1990's		1980's		1990's	
	Less than 1 year	More than 1 year	Less than 1 year	More than 1 year	Less than 1 year	More than 1 year	Less than 1 year	More than 1 year
Year's Self-Employed								
MEN								
Self-Employment Type (%)								
Own Account	70.69	57.11	82.81	64.43	----	----	----	----
With Paid Help	29.31	42.89	17.19	35.57	----	----	----	----
Usual Hours Worked Per Week (%)								
Less than 20	9.32	12.14	12.37	15.56	5.23	14.63	8.50	19.69
20-30 hours	7.76	5.33	10.41	7.05	3.99	1.49	6.04	2.04
31-40 hours	39.10	32.47	35.74	31.55	63.52	59.84	57.75	53.63
41+ hours	43.81	50.06	41.48	45.84	27.26	24.04	27.70	24.64
WOMEN								
Self-Employment Type (%)								
Own Account	79.25	70.16	84.28	74.81	----	----	----	----
With Paid Help	20.75	29.84	15.72	25.19	----	----	----	----
Usual Hours Worked Per Week (%)								
Less than 20	38.28	42.38	35.04	35.73	25.27	36.75	25.53	35.33
20-30 hours	12.07	9.70	15.30	12.83	14.27	8.08	15.18	8.83
31-40 hours	25.20	21.95	23.55	24.91	50.31	47.65	47.62	49.96
41+ hours	24.45	25.98	26.12	26.53	10.16	7.52	11.66	8.88

* Fractions generated using sample weights.

Table 7
Average Real Weekly Wages by Sector and Job Tenure
1980's v.s. 1990's, Men and Women, Separately (1994 dollars)

	Men			Women		
	1980's	1990's	Percentage Change	1980's	1990's	Percentage Change
Self-Employed 1-5 years	561.16	511.28	-9%	249.01	306.34	23%
Self-Employed More than 5 years	660.59	644.19	-2%	275.08	325.82	18%
Wage and Salary 1-5 years	728.90	707.04	-3%	434.97	464.67	7%
Wage and Salary More than 5 years	831.84	824.55	-1%	499.41	526.45	5%

* Self-employment wages were calculated as reported net annual income from non-farm self-employment divided by weeks worked in the previous year. Those with negative net self-employment income were included. Similar results were obtained when those with negative net self-employment income were dropped from the sample.

* Wages for wage-and-salary earners were calculated by dividing annual reported income from wages and salaries by weeks worked.

Appendix A: Defining the “main job” in the pre-survey year

The two-year panels overlap. So, for any given year (say 1994) we observe information for the entire year for one sample of individuals (the 1995 survey) and for the week prior to the survey for a second sample (the 1994 survey). Because both samples are random draws from the entire population the expected average characteristics of the samples should be the same. Therefore, we rank individuals based on the fraction of income from wages and salaries (α) in the first sample. Based on this ranking we partition the sample such that the probability of self-employment in any week of that survey year is equal to the rate in the week prior to the survey in April of that same year. In other words, we select an α^* such that: $\frac{\sum_j \alpha_j^c w_j}{\sum_j w_j}$ equals the rate of self-employment in the second sample (where w is the sample weight, and \sum is the total number of weeks worked divided by 52). We then assign individuals' time in employment as "self-employed" if their fraction of income from wage and salaries is less than the cutoff value (replace $\alpha^*=0$ if $\alpha^* < 0$) and as "wage-and-salary" time if the fraction is above the cutoff ($\alpha^*=1$ if $\alpha^* > 1$). Then the probability of being self-employed in any week for an individual is $\alpha(1-\alpha^*)$. We lose the first year of data because of the matching process.

Appendix B: Multinomial Logit Data and Results

Appendix Table B1								
Descriptive Statistics: Samples Used In Multinomial Logit Regression								
	MEN				WOMEN			
	80's		90's		80's		90's	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Wage and Salary Employed at Time t								
age	37.506	8.327	38.055	8.141	36.956	8.227	37.883	8.049
ed (<=8yrs)	0.108	0.310	0.057	0.231	0.079	0.270	0.043	0.202
(9-10 yrs)	0.132	0.338	0.112	0.315	0.112	0.316	0.083	0.276
(11-13yrs)	0.326	0.469	0.400	0.490	0.367	0.482	0.396	0.489
(post-sec)	0.095	0.293	0.081	0.273	0.091	0.287	0.086	0.280
(post-sec dip)	0.151	0.358	0.153	0.360	0.189	0.392	0.218	0.413
(university)	0.189	0.392	0.197	0.398	0.162	0.368	0.175	0.380
single	0.149	0.356	0.188	0.391	0.153	0.360	0.152	0.359
married	0.799	0.400	0.754	0.431	0.734	0.442	0.740	0.439
div/wid/sep	0.052	0.222	0.058	0.235	0.113	0.317	0.108	0.311
immigrant	0.198	0.398	0.182	0.386	0.196	0.397	0.181	0.385
yrs since mig	3.783	8.910	3.569	9.127	3.703	8.720	3.535	9.036
child (0-6)	0.279	0.448	0.259	0.438	0.215	0.411	0.224	0.417
child (7-17)	0.400	0.490	0.341	0.474	0.401	0.490	0.363	0.481
N	90,207		99,526		79,317		96,087	
Self-Employed at Time t								
age	39.217	8.056	39.613	7.806	38.387	8.009	39.172	7.605
ed (<=8yrs)	0.142	0.350	0.069	0.253	0.085	0.279	0.055	0.229
(9-10 yrs)	0.139	0.346	0.121	0.326	0.131	0.337	0.099	0.299
(11-13yrs)	0.298	0.457	0.366	0.482	0.350	0.477	0.361	0.480
(post-sec)	0.076	0.266	0.078	0.268	0.096	0.295	0.087	0.282
(post-sec dip)	0.123	0.329	0.139	0.346	0.152	0.359	0.179	0.383
(university)	0.221	0.415	0.228	0.420	0.185	0.389	0.219	0.414
single	0.132	0.338	0.144	0.351	0.090	0.286	0.118	0.323
married	0.816	0.388	0.789	0.408	0.791	0.406	0.783	0.413
div/wid/sep	0.053	0.223	0.067	0.249	0.119	0.324	0.099	0.299
immigrant	0.229	0.420	0.210	0.407	0.217	0.412	0.172	0.377
yrs since mig	4.743	9.927	4.323	9.982	4.202	9.297	3.651	9.382
child (0-6)	0.260	0.439	0.277	0.448	0.235	0.424	0.271	0.444
child (7-17)	0.435	0.496	0.373	0.484	0.464	0.499	0.421	0.494
N	8,516		9,967		4,729		5,844	
Non-Employed at Time t								
age	36.714	8.891	37.505	8.651	38.097	8.704	38.330	8.483
ed (<=8yrs)	0.244	0.429	0.170	0.376	0.200	0.400	0.141	0.348
(9-10 yrs)	0.186	0.389	0.181	0.385	0.185	0.388	0.168	0.374
(11-13yrs)	0.273	0.445	0.358	0.479	0.355	0.478	0.393	0.488
(post-sec)	0.086	0.281	0.083	0.276	0.073	0.259	0.082	0.274
(post-sec dip)	0.104	0.306	0.100	0.299	0.112	0.316	0.125	0.330
(university)	0.107	0.309	0.107	0.310	0.076	0.265	0.092	0.288
single	0.321	0.467	0.350	0.477	0.075	0.263	0.120	0.325
married	0.586	0.493	0.555	0.497	0.820	0.384	0.754	0.431
div/wid/sep	0.093	0.291	0.095	0.294	0.105	0.307	0.126	0.332
immigrant	0.176	0.381	0.204	0.403	0.170	0.375	0.198	0.398
yrs since mig	2.704	7.436	2.941	7.943	3.072	8.141	3.233	8.460
child (0-6)	0.202	0.402	0.187	0.390	0.345	0.476	0.351	0.477
child (7-17)	0.279	0.449	0.234	0.423	0.520	0.500	0.429	0.495
N	28,398		33,916		62,361		58,920	

Appendix Table B2 (Men)

Regression Results Employment State Choice Model: Multinomial Logit

	Employment State at Time t = E		Employment State at Time t = S		Employment State at Time t = N	
	Coefficient Outcome = E	Coefficient Outcome = S	Coefficient Outcome = E	Coefficient Outcome = S	Coefficient Outcome = E	Coefficient Outcome = S
age	0.114 (0.017)	0.100 (0.044)	0.238 (0.084)	0.335 (0.076)	-0.029 (0.016)	0.178 (0.042)
age squared	-0.001 (0.000)	-0.001 (0.001)	-0.003 (0.001)	-0.004 (0.001)	0.000 (0.000)	-0.002 (0.001)
Ed (9-10 yrs)	0.300 (0.045)	0.602 (0.137)	-0.037 (0.226)	-0.118 (0.193)	0.445 (0.045)	0.452 (0.112)
(11-13yrs)	0.791 (0.041)	0.810 (0.125)	0.822 (0.217)	0.573 (0.193)	0.702 (0.041)	0.637 (0.104)
(post-sec)	0.906 (0.055)	0.906 (0.158)	0.196 (0.258)	-0.230 (0.226)	0.445 (0.057)	0.602 (0.141)
(post-sec dip)	1.201 (0.052)	1.289 (0.141)	1.213 (0.272)	0.665 (0.249)	1.065 (0.051)	1.014 (0.125)
(university)	1.695 (0.056)	1.796 (0.137)	1.796 (0.275)	1.313 (0.255)	1.210 (0.051)	1.122 (0.127)
married	0.514 (0.040)	0.296 (0.109)	0.463 (0.213)	0.482 (0.194)	0.635 (0.038)	0.800 (0.101)
div/wid/sep	-0.009 (0.060)	0.192 (0.156)	0.296 (0.282)	-0.387 (0.259)	0.042 (0.057)	0.528 (0.134)
immigrant	-0.394 (0.063)	-0.337 (0.160)	-0.465 (0.378)	-0.276 (0.351)	0.475 (0.055)	-0.216 (0.147)
yrs since mig	0.022 (0.003)	0.026 (0.007)	0.030 (0.018)	0.040 (0.017)	-0.004 (0.003)	0.029 (0.007)
child (0-6)	-0.011 (0.035)	-0.034 (0.088)	0.101 (0.185)	-0.049 (0.173)	-0.170 (0.037)	0.002 (0.088)
child (7-17)	0.060 (0.034)	0.137 (0.082)	0.246 (0.163)	0.036 (0.151)	0.103 (0.035)	0.155 (0.082)
constant	-1.273 (0.312)	-5.289 (0.820)	-3.700 (1.568)	-4.090 (1.427)	-0.542 (0.302)	-7.261 (0.791)
N	90,206		8,515		28,398	
R Squared	0.037		0.034		0.056	

* Numbers in Parenthesis are Standard Errors

Leftout Outcome is Non-Employment

Appendix Table B3 (Women)

Regression Results Employment State Choice Model: Multinomial Logit

	Employment State at Time t = E		Employment State at Time t = S		Employment State at Time t = N	
	Coefficient Outcome = E	Coefficient Outcome = S	Coefficient Outcome = E	Coefficient Outcome = S	Coefficient Outcome = E	Coefficient Outcome = S
age	0.222 (0.016)	0.171 (0.055)	0.057 (0.078)	0.189 (0.073)	0.031 (0.015)	0.211 (0.051)
age squared	-0.003 (0.000)	-0.002 (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.001 (0.000)	-0.003 (0.001)
Ed (9-10 yrs)	0.269 (0.049)	0.411 (0.165)	-0.204 (0.236)	-0.025 (0.216)	0.510 (0.044)	0.431 (0.148)
(11-13yrs)	0.692 (0.043)	0.420 (0.150)	0.135 (0.212)	0.285 (0.196)	0.908 (0.039)	0.618 (0.132)
(post-sec)	0.674 (0.056)	0.668 (0.182)	0.064 (0.268)	0.411 (0.246)	1.028 (0.051)	0.946 (0.166)
(post-sec dip)	0.976 (0.050)	0.357 (0.174)	0.514 (0.250)	0.598 (0.234)	1.295 (0.045)	1.236 (0.145)
(university)	1.115 (0.054)	1.000 (0.168)	0.835 (0.257)	0.966 (0.242)	1.512 (0.048)	1.559 (0.149)
married	-0.324 (0.044)	0.226 (0.163)	-0.026 (0.220)	0.316 (0.208)	-0.047 (0.042)	-0.035 (0.145)
div/wid/sep	-0.252 (0.056)	0.166 (0.197)	0.069 (0.262)	0.033 (0.248)	0.136 (0.052)	0.034 (0.180)
immigrant	-0.276 (0.059)	-0.667 (0.211)	0.033 (0.287)	-0.089 (0.269)	0.240 (0.050)	-0.445 (0.179)
yrs since mig	0.018 (0.003)	0.028 (0.009)	-0.008 (0.013)	0.004 (0.012)	-0.005 (0.002)	0.030 (0.008)
child (0-6)	-0.508 (0.031)	-0.202 (0.103)	-0.154 (0.155)	-0.123 (0.145)	-0.719 (0.028)	-0.171 (0.091)
child (7-17)	-0.146 (0.029)	0.389 (0.092)	0.033 (0.134)	-0.216 (0.125)	-0.031 (0.025)	-0.101 (0.082)
constant	-2.391 (0.299)	-6.663 (1.019)	-0.170 (1.467)	-2.399 (1.370)	-1.791 (0.274)	-8.064 (0.937)
N	79,317		4,728		62,361	
R Squared	0.031		0.013		0.052	

* Numbers in Parenthesis are Standard Errors

Leftout Outcome is Non-Employment

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