

**Self-Employment Dynamics and Self-Employment Trends:  
A Study of Canadian Men and Women, 1982-1998**

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**Abstract:**

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 16 waves of the Survey of Consumer Finances between 1982 and 1998, 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 retention rates in self-employment. For men, most is attributable to a decrease in the stability of paid employment. Self-employment thus rose both in secularly improving (women's) and deteriorating (men's) labour markets. JEL codes: J23, J16

## 1. Introduction

Between 1982 and 1998 the number of self-employed Canadians between the ages of 25 and 54 increased by 119 percent, compared to a 53 percent increase in paid employment.<sup>1</sup> What explains this increase in self-employment? In this paper we shed some light on this question by examining hitherto-unexploited data on flows into and out of 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 1998. 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 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 paid employment to nonemployment increased substantially. Because non-employed men are more likely than wage-and-salary-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 either men's or women's transition 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. In Section 3 we describe the data and present 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 matrices. Section 5 performs a number of decompositions identifying which transition rates played key roles in explaining changes in these steady-state 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 use data only on the *stock* of self-employed individuals (e.g. Blau (1987), Fairlie and Meyer (1998) for the US; Lin, Yates and Picot (1998a) for Canada, Schuetze (2000) for the US and Canada; and Blanchflower (2000) for a variety of OECD countries). These studies use shift-share and regression techniques to attribute changes in stocks to a variety of possible causes, including shifting demographic composition of the labour force, tax laws, and general economic conditions, with rather mixed conclusions. For example, Schuetze argues that the general level of income taxation helps explain why Canada's self-employment rate is higher, and increasing more rapidly than the US rate. Blau (1987) finds that changes in industry mix cannot explain much of the recent rise in US self-employment. These and other similar studies are surveyed Kuhn (2000) and Blanchflower (2000); they do not examine data on flow rates into and out of self-employment.

A much smaller number of studies use data on self-employment flows (e.g. Evans and Leighton 1989, Meyer 1990 and Alba-Ramirez 1994 for the US; Lin, Yates, and Picot 1998b and Moore and Mueller 1998 for Canada). For the most part, these studies are descriptive in nature, simply documenting the flow patterns that exist at a point in time in a particular country. Partly because these are early studies of flows, and partly because of a lack of large panel data sets with consistent self-employment information over long periods, they do not attempt to use changes in flow patterns as a way of understanding the causes of secular changes in self-employment stocks. There are only two exceptions of which we are aware. Lin, 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 exception is a study of British self-employment, by Blanchflower and Freeman

(1994). Similar to our results, they find no increase in the transition rate from employment to self-employment, and an increase in transitions from self-employment to unemployment, for men between 1979 and 1990. The substantial increase in British male self-employment over this period, they argue, must therefore reflect other factors, such as deteriorating labour markets.

### **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 collected for the survey years 1982 to 1998. 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.<sup>2</sup> All samples are restricted to individuals aged 25 to 54; we focus on this age group because it is less likely to be affected by secular increases in school attendance in early retirement. Workers in primary industries are excluded in order to abstract from ongoing employment declines in agriculture and fishing which affect self-employment statistics. 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 1990-1998 surveys with 169 thousand men and 188 thousand women. Comparing these two periods, aggregate labour market conditions in Canada were quite similar. The average unemployment rate among Canadians aged 25 to 54 in our "1980's" period was 8.4 percent, versus 8.7 percent in the 1990's.<sup>3</sup>

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 mutually-exclusive states: "employed" (but not self-employed) (E), "self-employed" (S), or "not employed" (N).<sup>4</sup>

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, 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 "wage-and-salary-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 probably takes 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.<sup>5</sup>

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 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 paid- 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 factor 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 equal. 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.<sup>6</sup>

Table 1 documents the main phenomenon we are attempting to explain-- increasing self-employment rates among both men and women between the 1982 and 1998 SCF surveys. Over this period, the number of self-employed men and women rose by 93 and 178 percent respectively, compared to increases in paid work of 37 and 75 percent respectively. As a percentage of all employment, these statistics translate into an increase in men's self-employment rate from 8.08 to 11.05 percent, and in women's from 5.02 to 7.77 percent.<sup>7</sup>

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.<sup>8</sup> 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 12.5 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-- 32.5 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 2 percentage points between the 1980's and

1990's. Finally, most men and women leaving self-employment re-enter into wage and salary employment. Given exit, both male and female exiters 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 and tend to be slightly 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 the distribution across education categories for men entering self-employment was similar to the same distribution for the total population of men. 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, or “steady-state” distribution is the fraction of the population that would

occupy each of these three labour market states if the transition matrix  $\mathbf{P}$  applied to annual transition rates indefinitely; it thus summarizes the long-run implications of any given transition matrix. The ergodic distribution is calculated as the eigenvector  $\mathbf{q}$  associated with the unit eigenvalue such that:

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

By definition,  $\mathbf{q}$  must sum to one, and is so normalized.<sup>9</sup> 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 relatively well-- differing by less than two percentage points 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 3.6 percentage points or 84 percent among women between the two periods as compared to 2 percentage points or 24 percent among men.

A number of observations with regard to the estimated transition matrices warrant mention here.<sup>10</sup> In the 1980's, men's retention rate in self-employment, i.e. the proportion of self-employed men who remain self-employed one year later, was much higher than women's (at 82 versus 65 percent respectively). While the self-employment retention rate (SS) rose for both men and women between the 80's and 90's, the increase for women was much larger in magnitude, almost eliminating the gender gap with new retention rates at 83 and 80 percent respectively. Most of this change was due to declining women's exit rates from self-employment, since entry rates into self-employment (ES and NS) remained relatively stable for both men and women.

There is also evidence that job 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. As we shall argue below, this deterioration in men's paid employment opportunities appears to play a key role in their increased rate of self-employment.

## **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 of, and the transition rates between, employment in the wage and salary sector and non-employment.

The decompositions are carried out as follows. First, we allow one or more elements of interest in the 1980's transition matrix to take their values in the 1990's transition matrix. The ergodic distributions resulting from this newly formed transition matrix and the associated steady-state self-employment rate are then calculated. The fraction of the overall change in the steady-state rate of self-employment 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). Before considering the results, one consideration in defining the various counterfactuals we examine below is worth noting. 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 alone. When the “thought experiment” under consideration involves changing two elements of a column to their 1990's levels, we therefore also adjust the third to maintain the summation 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.<sup>11</sup>

The results of the above procedures are presented in Table 4.<sup>12</sup> The first row of this table reports the overall predicted change in the steady-state rates of self-employment. Rows two through five give decomposition results that allow various combinations of self-employment entry and exit rates to change. For example, row 2 changes all the transition rates into and out of self-employment (four in total: two entry rates –ES and NS-- and two exit rates –SE and SN–) from their 1980's to their 1990's levels. Rows 3 and 4 consider entry and exit rates separately, while row 5 changes only the retention rate in self-employment (SS) –adjusting the other two elements in column 2 of the transition matrix as discussed earlier to preserve adding-up. Rows six to eight conduct similar exercises involving transitions between paid employment and nonemployment.

As one might have expected from Table 3, changes in entry- and exit rates from self-employment do a very good job of explaining women’s increased self-employment rates between the 1980's and 1990's in Canada: row 2 of Table 4 indicates that, together, changes in these probabilities alone generate an increase in the steady-state self-employment rate that is actually slightly (15%) greater than the actual increase that occurred. As rows 3-5 make clear, much more

of this is due to the sharp decline in women's exit rates from self-employment than to the much smaller increases in entry rates. Declining self-employment exit rates alone account for 86 percent of the total change in women's steady-state self-employment rates observed. In contrast, looking at rows 6-8 of Table 4, changing transition patterns between the wage-and-salary sector and nonemployment had almost no effect on women's steady-state self-employment rate. In fact, these results suggest that women's steady-state rate of self-employment would have fallen somewhat if only their transition probabilities between E and N had changed.<sup>13</sup>

For men, the story emerging from Table 4 is more complex. According to Table 3, men's entry rates into self-employment actually fell slightly between the 80's and 90's; thus in row 3 they predict a small decrease in men's self-employment rates. As noted, men did however experience a small decline in exit rates from self-employment between the 80's and 90's; this decline in exit rates predicts an increase in men's steady-state self-employment rate of about 40 percent of what actually occurred. Combining the offsetting effects of the small declines in entry and exit rates in row 2 of Table 4, only about a quarter of men's actual self-employment increase can be explained. Instead, as anticipated, most of the action for men takes place in rows 6-8 of Table 4, involving transitions among paid employment and nonemployment. Most telling is row 6: men's increased "job loss" rates (transitions from E to N), together with the increased time it took them to find new paid jobs (decreased transitions from N to E), explain almost three-quarters of men's actual increase in self-employment. The mechanism behind this is simple: in both the 1980's and 1990's, non-employed men were about three times more likely to become self-employed than were men who were working for pay. In the context of our simple Markov model, an increase in the steady-state stock of nonemployed men thus translates into an increase in the steady-state stock of self-employed men as well.

## **6. The Role of Changing Demographics**

One might argue that the changes in transition probabilities, and the resulting changes in 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.<sup>14</sup> Summary statistics for the different sub-populations used in estimation are included in appendix table B1 and the parameter estimates from multinomial logits are in table B2.

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.<sup>15</sup> 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 2.7 percent of the actual change for men and a decline of 3.9 percent for women.<sup>16</sup>

What explains these (small) predicted declines in the steady-state rates of self-employment, due to demographic shifts? To shed some light on this phenomenon, we focus our attention on the predicted changes in those transition probabilities which, in the last section, we showed played the most important roles in explaining steady-state changes. For men, recall that the pivotal changes in transition rates were those between paid employment and nonemployment, and note that the decline in paid 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 slightly. 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 (see columns 1 and 2 of Appendix Table B2) should have reduced the transition rate into nonemployment from wage and salary employment. Increasing education

should also have raised the transition out of non-employment to both paid employment and self-employment (see column 5). Therefore, for men, the main demographic shifts (in age, education, and immigrant status) have predicted effects that (more importantly) work in the “wrong” direction—tending to increase the stability of paid employment and hence reduce steady-state self-employment.

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 a larger predicted increase in size of the wage and salary sector, which results in a small *decline* in the predicted steady-state rate of self-employment as a fraction of the total working population. Thus, for women, the main reason demographic shifts do not help explain their rise in self-employment is that these shifts increased both the wage-and-salary-employed *and* the self-employed population at the expense of the non-employed. The net effect on the self-employment *rate* amounts to a small negative effect. A more likely culprit for the secular rise in self-employment among Canadian women would be an unobserved, trended factor that has a stronger positive effect on self-employment than on paid employment such as total labor market experience might be one such factor.<sup>17</sup>

### **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.<sup>18</sup> 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 1990-1998 periods, the employment-to-population ratio of prime age (25-54) men fell, from 86.5 to 83.3 percent. That of women rose, from 62.9 to 69.6 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 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 could reflect both changes in technology favourable to that kind of self-employment, or declines in the

quality of new self-employment opportunities.<sup>19</sup> However, it is interesting that 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 13 percentage points between the 1980's and 1990's compared to a 6 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 nature of self-employment among men is changing.<sup>20</sup> 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 less abundant.<sup>21</sup>

## **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 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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### Footnotes

lead footnote. We thank the Canadian International Labour Network (CILN) for financial assistance. CILN is a major research initiative of the Social Sciences and Humanities Research Council of Canada and McMaster University.

1. These figures, like all those in the current paper, exclude individuals working in primary industries, i.e. agriculture, forestry, fisheries and mining. Self-employment refers to an individual's main job, and to unincorporated businesses only.
2. The SCF survey is representative of the Canadian population, outside the Territories and not in the armed forces. (Later years actually include full-time armed forces members but we exclude these for consistency with earlier years). Aside from the age and industry restrictions discussed below, the only other persons excluded from our sample were unpaid family workers, as these do not fall neatly into any of the "paid employed", "self-employed" or "non-employed" categories used in this paper. They are very few in number.
3. Despite these overall similarities, one might wonder whether differences in the severity of the recessions early in both decades might account for most of our results. To address this issue, we replicated all our main analysis (up to and including Table 4) for the two "recovery" periods 1985-1989 and 1993-1998 only. The results are very similar, and are available from the authors on request.
4. We 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 decline in precision with which each transition rate—some of which are quite rare—was measured. Note also that our data treat incorporated self-employed persons, because they are paid a salary, as working for pay. Fortunately, while the incorporated

make up about forty percent of the total self-employed, this fraction remained quite constant during the 1980's and 1990's; both incorporated and unincorporated self-employment rates rose (see Schuetze 2000).

5. The results reported here use  $1/4$ , but –in part because negative incomes are relatively rare-- the results are highly insensitive to the value used. For instance, in the 1994 survey, 491 of the 3905 individuals with self-employment income reported a negative amount; in most cases these losses were very small in magnitude.

6. These 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.

7. Alternatively, we could define the self-employment rate as a fraction of the entire labour force, or of the entire population in the age range considered here (25-54). For most of the exercises conducted in this paper (including the calculation of steady-state self-employment rates and the decomposition of changes therein) we replicated the analysis for the latter definition. These results are very similar, and are available from the authors on request.

8. While we shall speak in terms of “self employment entrants” as a fixed group of individuals, recall that some individuals in our data are assigned to “source” probabilistically, thus a given person could contribute a “fraction” of an observation to, say, both the entrant and “stayer” populations.

9. To calculate  $q$  in practice, we first substitute into (1) the requirement that each column sum to one. This leaves two linear equations in two unknowns, which are easily solved using Cramer's

rule.

10. Due to differences in samples, definitions, and in the number of labour market states examined, it is not straightforward to compare our transition matrices to those in other studies. For example, Fairlie (1999) reports an annual ES transition rate of .0395 for white male household heads aged 16-54 in the PSID between 1968 and 1989. This is much higher than our estimate for Canada, but Fairlie's sample includes highly-mobile workers under 25, defines all individuals with *any* self-employment activity as self-employed, and excludes individuals who transit into nonemployment from the at-risk population. His SE transition rate of .1851 is more similar to ours. Evans and Leighton (1989) report self-employment entry rates ranging from .0097 to .0268 for white men in the NLSYM. Most values exceed our estimate of about 1 percent, but their statistics apply to a small sample in which no individual is over age 40.

11. While 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.

12. Results 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.

13. This may result from women's increased labour force participation over this period. See the discussion of men below for an illustration of how an decreased stock of nonemployed persons can reduce the equilibrium self-employment rate.

14. 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.

15. Note that, when we make these "counterfactual" predictions, we apply the 1980's coefficients

to the entire 1990's sample, not (as is often the case: e.g. Oaxaca 1973) to just a fictitious, single “average” person from this period. This avoids the problem of the nonlinear logit function not passing through the means of the data (see Greene 1997, p. 883).

16. We 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.

17. 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 indistinguishable from an experience effect.

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

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

20. In 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.

21. Our 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.

## 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 ( $\alpha$ ) 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  $\alpha=\alpha^*$  such that:  $\frac{\sum_{\alpha' \leq \alpha^*} \alpha' \beta w}{\sum_{\alpha' \leq \alpha^*} \beta w}$  equals the rate of self-employment in the second sample (where  $w$  is the sample weight, and  $\beta$  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  $\alpha < \alpha^*$ ) and as "wage-and-salary" time if the fraction is above the cutoff ( $\alpha=1$  if  $\alpha > \alpha^*$ ). Then the probability of being self-employed in any week for an individual is  $\beta(1-\alpha)$ . We lose the first year of data because of the matching process.

## Appendix B: Multinomial Logit Data and Results

<b>Appendix Table B1</b>								
<b>Descriptive Statistics: Samples Used In Multinomial Logit Regression</b>								
MEN					WOMEN			
80's			90's		80's		90's	
Mean	Standard	Mean	Standard	Mean	Standard	Mean	Standard	
	Deviation		Deviation		Deviation		Deviation	
<b>Wage and Salary Employed at Time t</b>								
age	37.506	8.327	38.291	8.133	36.956	8.227	38.164	8.068
ed (<=8yrs)	0.108	0.310	0.052	0.222	0.079	0.270	0.039	0.194
(9-10 yrs)	0.132	0.338	0.104	0.305	0.112	0.316	0.076	0.265
(11-13yrs)	0.326	0.469	0.392	0.489	0.367	0.482	0.380	0.485
(post-sec)	0.095	0.293	0.079	0.269	0.091	0.287	0.084	0.278
(post-sec dip)	0.151	0.358	0.165	0.371	0.189	0.392	0.234	0.423
(university)	0.189	0.392	0.203	0.402	0.162	0.368	0.187	0.389
single	0.149	0.356	0.192	0.393	0.153	0.360	0.155	0.362
married	0.799	0.400	0.747	0.435	0.734	0.442	0.738	0.439
div/wid/sep	0.052	0.222	0.061	0.239	0.113	0.317	0.107	0.309
immigrant	0.198	0.398	0.183	0.387	0.196	0.397	0.179	0.383
yrs since mig	3.783	8.910	3.543	9.138	3.703	8.720	3.473	8.998
child (0-6)	0.279	0.448	0.252	0.434	0.215	0.411	0.221	0.415
child (7-17)	0.400	0.490	0.335	0.472	0.401	0.490	0.359	0.479
N	90,207		141,511		79,317		137,120	
<b>Self-Employed at Time t</b>								
age	39.217	8.056	39.869	7.866	38.387	8.009	39.578	7.657
ed (<=8yrs)	0.142	0.350	0.236	0.236	0.085	0.279	0.042	0.199
(9-10 yrs)	0.139	0.346	0.113	0.316	0.131	0.337	0.093	0.289
(11-13yrs)	0.298	0.457	0.363	0.481	0.350	0.477	0.357	0.479
(post-sec)	0.076	0.266	0.077	0.266	0.096	0.295	0.084	0.277
(post-sec dip)	0.123	0.329	0.149	0.356	0.152	0.359	0.199	0.399
(university)	0.221	0.415	0.239	0.427	0.185	0.389	0.226	0.418
single	0.132	0.338	0.154	0.361	0.090	0.286	0.119	0.325
married	0.816	0.388	0.773	0.419	0.791	0.406	0.781	0.414
div/wid/sep	0.053	0.223	0.073	0.261	0.119	0.324	0.099	0.299
immigrant	0.229	0.420	0.210	0.408	0.217	0.412	0.174	0.379
yrs since mig	4.743	9.927	4.303	10.036	4.202	9.297	3.679	9.537
child (0-6)	0.260	0.439	0.259	0.438	0.235	0.424	0.254	0.435
child (7-17)	0.435	0.496	0.357	0.479	0.464	0.499	0.407	0.491
N	8,516		14,518		4,729		9,051	
<b>Non-Employed at Time t</b>								
age	36.714	8.891	37.871	8.682	38.097	8.704	38.574	8.492
ed (<=8yrs)	0.244	0.429	0.157	0.364	0.200	0.400	0.131	0.337
(9-10 yrs)	0.186	0.389	0.174	0.379	0.185	0.388	0.161	0.368
(11-13yrs)	0.273	0.445	0.352	0.478	0.355	0.478	0.387	0.487
(post-sec)	0.086	0.281	0.084	0.278	0.073	0.259	0.083	0.276
(post-sec dip)	0.104	0.306	0.115	0.319	0.112	0.316	0.139	0.346
(university)	0.107	0.309	0.117	0.322	0.076	0.265	0.099	0.299
single	0.321	0.467	0.359	0.479	0.075	0.263	0.128	0.334
married	0.586	0.493	0.542	0.498	0.820	0.384	0.746	0.435
div/wid/sep	0.093	0.291	0.099	0.299	0.105	0.307	0.126	0.332
immigrant	0.176	0.381	0.214	0.409	0.170	0.375	0.208	0.406
yrs since mig	2.704	7.436	3.081	8.141	3.072	8.141	3.286	8.492
child (0-6)	0.202	0.402	0.178	0.383	0.345	0.476	0.339	0.474
child (7-17)	0.279	0.449	0.231	0.421	0.520	0.500	0.424	0.494
N	28,398		48,435		62,361		82,630	

**Appendix Table B2**

Multinomial Logit Coefficients from Employment State Model

	Men						Women					
	"Source" State = E		"Source" State = S		"Source" State = N		"Source" State = E		"Source" State = S		"Source" State = N	
	Outcome = E	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)	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	-0.001 (0.000)	-0.001 (0.001)	-0.003 (0.001)	-0.004 (0.001)	0.000 (0.000)	-0.002 (0.001)	-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)	0.300 (0.045)	0.602 (0.137)	-0.037 (0.226)	-0.118 (0.193)	0.445 (0.045)	0.452 (0.112)	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)	0.791 (0.041)	0.810 (0.125)	0.822 (0.217)	0.573 (0.193)	0.702 (0.041)	0.637 (0.104)	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)	0.906 (0.055)	0.906 (0.158)	0.196 (0.258)	-0.230 (0.226)	0.445 (0.057)	0.602 (0.141)	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)	1.201 (0.052)	1.289 (0.141)	1.213 (0.272)	0.665 (0.249)	1.065 (0.051)	1.014 (0.125)	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)	1.695 (0.056)	1.796 (0.137)	1.796 (0.275)	1.313 (0.255)	1.210 (0.051)	1.122 (0.127)	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	0.514 (0.040)	0.296 (0.109)	0.463 (0.213)	0.482 (0.194)	0.635 (0.038)	0.800 (0.101)	-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	-0.009 (0.060)	0.192 (0.156)	0.296 (0.282)	-0.387 (0.259)	0.042 (0.057)	0.528 (0.134)	-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	-0.394 (0.063)	-0.337 (0.160)	-0.465 (0.378)	-0.276 (0.351)	0.475 (0.055)	-0.216 (0.147)	-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	0.022 (0.003)	0.026 (0.007)	0.030 (0.018)	0.040 (0.017)	-0.004 (0.003)	0.029 (0.007)	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)	-0.011 (0.035)	-0.034 (0.088)	0.101 (0.185)	-0.049 (0.173)	-0.170 (0.037)	0.002 (0.088)	-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)	0.060 (0.034)	0.137 (0.082)	0.246 (0.163)	0.036 (0.151)	0.103 (0.035)	0.155 (0.082)	-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	-1.273 (0.312)	-5.289 (0.820)	-3.700 (1.568)	-4.090 (1.427)	-0.542 (0.302)	-7.261 (0.791)	-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	90,206		8,515		28,398		79,317		4,728		62,361	
R Squared	0.037		0.034		0.056		0.031		0.013		0.052	

\* Numbers in Parenthesis are Standard Errors, omitted outcome is Non-Employment

**Table 1: CANADIAN EMPLOYMENT TRENDS 1982-1998: Men and Women Aged 25-54**

Year	MEN			WOMEN			TOTAL		
	Rate	Number of Self-Employed	Number of Wage/Salary	Rate	Number of Self-Employed	Number of Wage/Salary	Rate	Number of Self-Employed	Number of Wage/Salary
1982	8.08	308,270	3,507,690	5.02	134,110	2,534,950	6.82	442,380	6,042,640
1983	8.42	317,720	3,457,320	5.43	150,350	2,619,750	7.15	468,070	6,077,070
1985	8.37	331,710	3,631,420	6.84	207,340	2,822,040	7.71	539,050	6,453,460
1986	9.01	370,340	3,740,510	4.21	136,650	3,109,610	6.89	506,990	6,850,120
1987	8.61	363,340	3,854,460	4.87	164,400	3,208,020	6.95	527,740	7,062,480
1988	8.82	383,491	3,966,676	4.83	174,331	3,437,111	7.01	557,822	7,403,787
1989	8.50	375,724	4,043,312	4.75	177,923	3,567,259	6.78	553,647	7,610,571
<b>Average 1982-1989</b>	<b>8.54</b>	<b>350,085</b>	<b>3,743,055</b>	<b>5.14</b>	<b>163,586</b>	<b>3,042,677</b>	<b>7.04</b>	<b>513,671</b>	<b>6,785,733</b>
1990	8.59	385,585	4,104,205	5.39	211,199	3,705,920	7.10	596,784	7,810,125
1991	9.27	410,246	4,017,396	5.62	221,921	3,728,414	7.55	632,167	7,745,810
1992	9.47	413,552	3,955,136	5.32	210,019	3,734,388	7.50	623,571	7,689,524
1993	9.41	424,916	4,091,814	5.53	221,696	3,786,373	7.59	646,612	7,878,187
1994	10.17	469,614	4,148,796	6.67	273,345	3,826,264	8.52	742,959	7,975,060
1995	9.43	473,413	4,547,520	6.27	278,633	4,168,168	7.94	752,046	8,715,688
1996	10.45	535,021	4,584,330	7.88	363,144	4,246,303	9.23	898,165	8,830,633
1997	10.92	570,956	4,656,012	8.18	378,274	4,245,733	9.64	949,230	8,901,745
1998	11.05	595,974	4,799,229	7.77	373,399	4,434,029	9.50	969,373	9,233,258
<b>Average 1990-1998</b>	<b>9.86</b>	<b>475,475</b>	<b>4,322,715</b>	<b>6.51</b>	<b>281,292</b>	<b>3,986,177</b>	<b>8.29</b>	<b>756,767</b>	<b>8,308,892</b>
<b>% Change 1982-1998</b>	<b>37%</b>	<b>93%</b>	<b>37%</b>	<b>55%</b>	<b>178%</b>	<b>75%</b>	<b>39%</b>	<b>119%</b>	<b>53%</b>

**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
<b>Source/Destination (%)</b>												
Wage & Sal	75.2	67.5	61.4	63.9	74.3	67.6	68.4	60.3	84.5	80.0	62.2	68.0
Not Employ	24.8	32.5	38.6	36.1	25.7	32.4	31.6	39.7	15.5	20.0	37.8	32.0
<b>Age (%)</b>												
25-34	41.6	37.4	43.2	36.6	42.5	37.3	41.3	36.1	42.0	37.2	42.5	37.0
35-44	34.9	38.3	37.3	39.3	35.4	35.7	36.4	37.5	33.9	36.2	33.6	36.5
45-54	23.6	24.3	19.6	24.0	22.2	27.0	22.3	26.4	24.1	26.6	23.9	26.6
<b>Education (%)</b>												
8yrs or less	13.8	4.9	9.0	3.3	11.9	5.8	9.2	5.2	12.8	7.0	12.5	6.8
9-10 yrs	17.0	12.3	14.7	8.6	13.7	12.6	14.5	11.6	13.9	11.6	14.0	10.3
11-13 yrs	29.1	38.4	33.0	35.7	28.4	36.7	35.6	38.9	31.7	38.7	36.2	38.1
some post	8.9	9.0	10.1	8.5	10.3	8.1	9.3	9.1	9.2	8.0	8.4	8.4
post-second	14.1	15.6	15.9	22.8	19.0	15.4	15.2	17.7	14.3	15.5	15.9	20.3
university	17.1	19.9	17.4	21.2	21.6	21.5	16.2	17.6	18.1	19.2	13.0	16.1
<b>Marital Status (%)</b>												
single	17.4	24.8	8.4	11.1	17.1	19.8	9.6	11.7	17.0	21.7	12.1	14.5
married	74.5	65.7	81.3	77.8	74.4	73.1	76.7	77.3	77.3	71.5	76.9	74.2
div/wid/sep	8.0	9.5	10.3	11.1	8.5	7.1	13.7	11.0	5.7	6.8	11.0	11.3
<b>Number of Young Children (aged &lt;7) (%)</b>												
none	74.2	77.5	67.0	69.4	71.9	71.7	72.4	68.2	73.3	76.0	73.5	74.1
one	15.8	12.7	19.0	17.2	16.8	17.6	15.6	20.4	16.7	14.8	16.9	16.2
two	8.6	8.5	11.8	10.7	9.5	8.7	10.1	9.9	8.7	7.9	8.3	8.2
three +	1.4	1.3	2.2	2.7	1.9	1.9	1.9	1.5	1.4	1.4	1.3	1.5
<b>Number of Older Children (aged 7-17) (%)</b>												
none	61.0	72.2	47.2	60.2	60.8	66.4	50.1	56.0	61.3	68.0	55.2	61.8
one	19.8	13.6	23.8	19.8	19.3	17.0	21.6	19.2	18.4	16.0	22.1	19.8
two	13.5	10.4	20.3	15.2	15.3	12.3	20.1	18.3	15.0	12.3	16.8	14.2
three +	5.7	3.8	8.7	4.9	4.7	4.3	8.3	6.5	5.3	3.6	5.9	4.2

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

	<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.9184	0.1487	0.3121	<b>E<sub>t+1</sub></b>	
0.0116	0.8180	0.0338	<b>S<sub>t+1</sub></b>	
0.0701	0.0332	0.6541	<b>N<sub>t+1</sub></b>	

Ergodic Distribution 1980's

<b>E</b>	0.7602
<b>S</b>	0.0783
<b>N</b>	0.1615

**Steady-State Self-Employment Rate = 0.0933**

Probability Matrix 1990's

	<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.9050*	0.1264*	0.2556*	<b>E<sub>t+1</sub></b>	
0.0103*	0.8350*	0.0369	<b>S<sub>t+1</sub></b>	
0.0847*	0.0386	0.7075*	<b>N<sub>t+1</sub></b>	

Ergodic Distribution 1990's

<b>E</b>	0.6956
<b>S</b>	0.0910
<b>N</b>	0.2134

**Steady-State Self-Employment Rate = 0.1157**

**Change in Steady-State Self-Employment Rate 1990's-1980's = 0.0224**

**Women**

Probability Matrix 1980's

	<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.8984	0.2695	0.1708	<b>E<sub>t+1</sub></b>	
0.0089	0.6482	0.0127	<b>S<sub>t+1</sub></b>	
0.0927	0.0823	0.8164	<b>N<sub>t+1</sub></b>	

Ergodic Distribution 1980's

<b>E</b>	0.6372
<b>S</b>	0.0282
<b>N</b>	0.3346

**Steady-State Self-Employment Rate = 0.0424**

Probability Matrix 1990's

	<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.9097*	0.1374*	0.1750	<b>E<sub>t+1</sub></b>	
0.0092	0.8019*	0.0169*	<b>S<sub>t+1</sub></b>	
0.0811*	0.0606*	0.8081*	<b>N<sub>t+1</sub></b>	

Ergodic Distribution 1990's

<b>E</b>	0.6518
<b>S</b>	0.0553
<b>N</b>	0.2930

**Steady-State Self-Employment Rate = 0.0782**

**Change in Steady-State Self-Employment Rate 1990's-1980's = 0.0358**

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	0.1157	0.0224	100	0.0424	0.0782	0.0358	100
S-E Entry and Exit (ES,SE,NS,SN)	0.0933	0.0991	0.0058	26	0.0424	0.0837	0.0413	115
S-E Entry (ES,NS)	0.0933	0.0902	-0.0031	-14	0.0424	0.0485	0.0061	17
S-E Exit (SN,SE,SS*)	0.0933	0.1024	0.0091	41	0.0424	0.0733	0.0309	86
S-E Duration (SS)	0.0933	0.1020	0.0087	39	0.0424	0.0730	0.0306	85
W&S-Non-Employ Transitions (EN,NE)	0.0933	0.1099	0.0166	74	0.0424	0.0402	-0.0022	-6
W&S Non-Employ Duration (EE,NN)	0.0933	0.1069	0.0136	61	0.0424	0.0379	-0.0045	-13
All W&S Non (EN, NE ,EE,NN,ES*,NS*)	0.0933	0.1054	0.0121	54	0.0424	0.0453	0.0029	8

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

<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.9184	0.1487	0.3121	<b>E<sub>t+1</sub></b>
0.0116	0.8180	0.0338	<b>S<sub>t+1</sub></b>
0.0701	0.0332	0.6541	<b>N<sub>t+1</sub></b>

Predicted Probability Matrix 1990's

<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.9209	0.1510	0.3262	<b>E<sub>t+1</sub></b>
0.0116	0.8173	0.0361	<b>S<sub>t+1</sub></b>
0.0674	0.0317	0.6377	<b>N<sub>t+1</sub></b>

Ergodic Distribution 1980's

<b>E</b>	0.7602
<b>S</b>	0.0783
<b>N</b>	0.1615

Predicted Ergodic Distribution 1990's

<b>E</b>	0.7709
<b>S</b>	0.0788
<b>N</b>	0.1504

**Steady-State Self-Employment Rate = 0.0933**

**Steady-State Self-Employment Rate = 0.0927**

**Predicted Change in Steady-State Self-Employment Rate 1990's-1980's = -0.0006**

Percent of Actual Change Predicted by Allowing X's to Change to 1990's Levels = -2.7%

**Women**

Probability Matrix 1980's

<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.8984	0.2695	0.1708	<b>E<sub>t+1</sub></b>
0.0089	0.6482	0.0127	<b>S<sub>t+1</sub></b>
0.0927	0.0823	0.8164	<b>N<sub>t+1</sub></b>

Predicted Probability Matrix 1990's

<b>E<sub>t</sub></b>	<b>S<sub>t</sub></b>	<b>N<sub>t</sub></b>	
0.9061	0.2652	0.1934	<b>E<sub>t+1</sub></b>
0.0086	0.6590	0.0141	<b>S<sub>t+1</sub></b>
0.0854	0.0758	0.7925	<b>N<sub>t+1</sub></b>

Ergodic Distribution 1980's

<b>E</b>	0.6372
<b>S</b>	0.0282
<b>N</b>	0.3346

Predicted Ergodic Distribution 1990's

<b>E</b>	0.6803
<b>S</b>	0.0291
<b>N</b>	0.2905

**Steady-State Self-Employment Rate = 0.0424**

**Steady-State Self-Employment Rate = 0.0411**

**Predicted Change in Steady-State Self-Employment Rate 1990's-1980's = -0.0014**

Percent of Actual Change Predicted by Allowing X's to Change to 1990's Levels = -3.9%

**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	
Year's Self-Employed	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
<b>MEN</b>								
<b>Self-Employment Type (%)</b>								
<b>Own Account</b>	<b>70.69</b>	<b>57.11</b>	<b>83.56</b>	<b>68.21</b>	----	----	----	----
<b>With Paid Help</b>	<b>29.31</b>	<b>42.89</b>	<b>16.44</b>	<b>31.79</b>	----	----	----	----
<b>Usual Hours Worked Per Week (%)</b>								
<b>Less than 20</b>	<b>9.32</b>	<b>12.14</b>	<b>12.06</b>	<b>15.01</b>	<b>5.23</b>	<b>14.63</b>	<b>8.29</b>	<b>18.10</b>
<b>20-30 hours</b>	<b>7.76</b>	<b>5.33</b>	<b>9.80</b>	<b>7.49</b>	<b>3.99</b>	<b>1.49</b>	<b>6.24</b>	<b>2.37</b>
<b>31-40 hours</b>	<b>39.10</b>	<b>32.47</b>	<b>35.44</b>	<b>30.42</b>	<b>63.52</b>	<b>59.84</b>	<b>57.84</b>	<b>54.67</b>
<b>41+ hours</b>	<b>43.81</b>	<b>50.06</b>	<b>42.70</b>	<b>47.08</b>	<b>27.26</b>	<b>24.04</b>	<b>27.63</b>	<b>24.86</b>
<b>WOMEN</b>								
<b>Self-Employment Type (%)</b>								
<b>Own Account</b>	<b>79.25</b>	<b>70.16</b>	<b>85.74</b>	<b>78.24</b>	----	----	----	----
<b>With Paid Help</b>	<b>20.75</b>	<b>29.84</b>	<b>14.26</b>	<b>21.76</b>	----	----	----	----
<b>Usual Hours Worked Per Week (%)</b>								
<b>Less than 20</b>	<b>38.28</b>	<b>42.38</b>	<b>33.18</b>	<b>34.51</b>	<b>25.27</b>	<b>36.75</b>	<b>24.64</b>	<b>31.68</b>
<b>20-30 hours</b>	<b>12.07</b>	<b>9.70</b>	<b>15.44</b>	<b>13.28</b>	<b>14.27</b>	<b>8.08</b>	<b>15.54</b>	<b>9.45</b>
<b>31-40 hours</b>	<b>25.20</b>	<b>21.95</b>	<b>25.68</b>	<b>24.87</b>	<b>50.31</b>	<b>47.65</b>	<b>48.00</b>	<b>49.54</b>
<b>41+ hours</b>	<b>24.45</b>	<b>25.98</b>	<b>25.71</b>	<b>27.34</b>	<b>10.16</b>	<b>7.52</b>	<b>11.82</b>	<b>9.33</b>

\* 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 (1997 dollars)

	Men			Women		
	1980's	1990's	Percentage Change	1980's	1990's	Percentage Change
<b>Self-Employed 1-5 years</b>	579.33	537.78	-7%	257.07	327.98	28%
<b>Self-Employed More than 5 years</b>	681.99	663.25	-3%	283.97	371.25	31%
<b>Wage and Salary 1-5 years</b>	752.55	719.18	-4%	449.08	480.34	7%
<b>Wage and Salary More than 5 years</b>	858.80	849.36	-1%	515.58	557.14	8%

\* 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.