Rising Self-Employment in the Midst of High Unemployment: An Empirical Analysis of Recent Developments in Canada

by

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Abstract

This paper highlights recent developments in self-employment in Canada and explores its relationship to unemployment/full-time paid-employment. There are now two and a half million Canadians working at their own businesses, amounting to 16.2% of the total labour force or accounting for 17.8% of total employment. In the first eight years of the 1990s, self-employment on average expanded by 4.1% per year, contributing to over three out of four new jobs the economy has created. Entry and exit data demonstrate that there are substantial flows into and out of this sector of the economy. Gross flows into and out of self-employment as the main labour market activity averaged nearly half a million per year between 1982 and 1994, amounting to 42% of the total self-employed population.

The fixed-effects modelling results show a statistically significant but empirically small negative (positive) relationship between self-employment and unemployment (full-time paid- employment). This conclusion holds true across different data sources, for different time periods, for different measures and definitions, for different empirical samples, and across various estimating techniques. There is also a statistically significant but empirically small negative (positive) relationship between exits out of self-employment and unemployment (full-time paid- employment). It appears that a host of non-cyclical factors are behind the recent surge in self-employment.

1. Introduction

In 1997, nearly two and a half million Canadians reported working at their own businesses, more than doubled the number twenty years ago. Self-employed workers now amount to 16.2% of the total labour force, up from 11.5% two decades ago. Now, one out of 5.6 workers engages themselves in one form of entrepreneurial pursuit or another, compared to one in 8.1 workers twenty years ago. During the first eight years of the 1990s, self-employment on average expanded by 4.1% per year, accounting for over three out of four new jobs the economy has created.

This unprecedented growth in Canadians' entrepreneurial endeavour in the 1990s, especially in contrast to the very slow pace of paid-employment expansion (a mere 0.2% per annum) and persistently high unemployment, has sparked increasing interest in self-employment and its relationship to labour market hardships. Are people being "pushed" into self-employment because they cannot find paid employment or do they "pull" themselves into it because they enjoy all the comparative advantages associated with being their own boss (e.g., independence, flexible work schedule)? Are these jobs stable in the sense that once in people tend to remain self-employed for a relatively long period of time, implying low levels of turnovers, especially exits; or is self-employment simply a stop-gap that people use until they find a paid job, implying significant entry and exit movements? Answers to questions such as these are important if we are to understand the functioning of this sector of the economy and its vast implications.

This paper attempts to address the first question --- do labour market hardships "push" people into self-employment at the aggregate level? Issues surrounding the second question on the entry and exit dynamics of self-employment will be dealt with in a companion paper at the individual level. Here we first employ data extracted from the monthly Labour Force Survey (LFS) of Statistics Canada to examine the cyclical fluctuations of self-employment and explore its association with unemployment/full-time paid employment. We then use annual longitudinal data developed from the T1 files of Revenue Canada to investigate the extent of self-employment entries and exits and explore their relationships to unemployment/full-time paid employment.

The paper adds to the literature in a number of aspects. First, despite numerous recent reports documenting trends of self-employment (e.g., Gauthier and Roy (1997), Statistics Canada (1997)) and a few individual-level studies (e.g., Schuetze (1998), Bernhardt (1994), Whitfield and Wannell (1991)), there exists a lack of work in the Canadian literature exploring the relationship between self-employment and labour market hardships at the aggregate level. To the best of our knowledge, this is the first paper looking at this aggregate relationship for Canada.

Second, unemployment is commonly used as the only labour market cycle indicator in studying the relationship between self-employment and labour market hardships. But, does the observed relationship hold when alternative labour market cycle indicators are used? In addition to unemployment, we also use full-time paid-employment as another labour market cycle indicator. And the findings indeed hold true regardless which labour market cycle indicator is used.

Third, the majority of the existing literature studies this relationship in the context of self-employment rates. However, self-employment levels as well as rates are determined not only by the stock but also by entry and exit flows. We therefore also document the extent of self-employment entries and exits and explore their relationships to unemployment/full-time paid employment. And the findings hold true whether self-employment rates or entry rates are used.

Finally, we perform a large number of robustness tests. Our empirical analysis uses different data sources, different time periods, different measures and definitions of self-employment, different empirical samples, and various estimating techniques. And the findings hold true in all of these dimensions.

The paper proceeds as follows. The next section highlights recent developments in self-employment. Besides using the most currently available data (February 1998 at the time of writing), we also borrow from two recent reports by Gauthier and Roy (1997) and Statistics Canada (1997). Section 3 empirically investigates the relationship between self-employment and unemployment/full-time paid-employment: 3.1 provides a brief literature review; 3.2 examines the relationship between the self-employment rate and the unemployment rate/full-time paid-employment rate; and 3.3 documents the extent of self-employment entries and exits and explores their relationships to unemployment/full-time paid-employment. Finally, Section 4 concludes the paper by offering a brief discussion of a series of non-cyclical factors that may be behind the recent surge of self-employment.

2. Recent Developments in Self-Employment

2.1. Increasing Importance in the 1990s

Over the past twenty years, the self-employment sector has substantially expanded, its growth significantly outpaced that of paid-employment, and its importance in the Canadian economy steadily increased. This is true whether one looks at its volume, its annual growth rate, its incidence (i.e., the proportion of the labour force being self-employed), its share of total employment, or its contribution to total job creation (see Tables 1 and 2).

- In 1997, nearly 2.5 million Canadian workers reported being their own boss, more than doubled the number in 1976 (a little over 1.2 million). In comparison, the number of paid-employees rose by merely one-third (from 8.6 million to 11.5 million) during the same period.

- Between 1976 and 1997, self-employment expanded on average by 3.5% per year while paid-employment experienced a much slower annual average growth rate of only 1.4%.

- In 1997, self-employed workers amounted to 16.2% of the Canadian labour force, a sharp increase by 40.9% from 1976 (at 11.5%). In contrast, the paid-employment rate (i.e., paid-employment as a proportion of the labour force) steadily declined throughout the same period from 81.4% to 74.6%, a drop of over 8%.

- Twenty years ago, one in eight workers reported working at their own businesses. By 1997, self-employed workers accounted for 17.8% of total employment --- that is one out of 5.6 workers being self-employed.

- Between 1976 and 1997, total employment expanded by a little under 4.2 million jobs (or 42.6%). Of this net total job growth, nearly 1.3 million or 30.8% were created in the self-employed sector, although self-employment on average accounted for only 14.4% of total employment throughout this period.

The 1990s have seen the important role of self-employment in the Canadian labour market increasingly strengthened. This is evident by all the measures considered above.

- During the 1980s, the number of self-employed workers rose by 23.7% but the pace of paid-employment growth was not too far behind (at 17.2%). In the first eight years of the 1990s, however, self-employment expanded by nearly one-third (31.7%) while there was very little gain in paid-employment (1.6%).

- On average, the self-employment growth rate accelerated to 4.1% a year during the first eight years of the 1990s from 2.4% per annum in the 1980s. In contrast, the average annual paid-employment growth rate substantially slowed down to 0.2% in the 1990s from 1.9% in the previous decade.

- Self-employed workers amounted to 14.2% of the labour force in the 1990s, up from 12.6% in the 1980s. In comparison, the average paid-employment rate dropped to 75.8% from 78.0% during the same period.

- On average, 15.8% of all workers reported being their own bosses in the 1990s --- that is one in 6.3 workers being self-employed. In the previous decade, only 13.9% or one out of 7.2 workers reported working at their own businesses.

- In the first eight years of the 1990s, the labour market expanded by a total of 775 thousand jobs (5.9%). Of this net total job growth, over three-quarters (nearly 600 thousand or 77.2%) were created in the self-employed sector. This phenomenal contribution to job creation in the 1990s from self-employment is unprecedented. During the previous decade, the economy created a total of over 2 million new jobs (a gain of 18.1%) but expansion in self-employment contributed to less than one out of six new jobs created. The overwhelming majority (82.7%) of this net job creation was accounted for by growth in the paid-employment sector.

2.2. Changing Nature of Business

Breaking the self-employed population down into those with paid help (employers) and those without paid help (own account) reveals striking differences in the growth trends of self-employment in the 1980s and 1990s. During the 1980s, total self-employment grew by 347 thousand jobs. Nearly two-thirds of this growth were accounted for by business owners who also hired paid help (Table 3). Suppose, very conservatively, a self-employed employer hired just one paid employee, the growth of self-employed employers in the 1980s should have also created the minimum of 228 thousand paid jobs. This has undoubtedly contributed to the strong growth of paid-employment during the expansion years of the 1980s.

This strong growth of self-employed employers has very much reversed so far in the 1990s, accounting for only about 10% of the total 458 thousand self-employed jobs gained between 1996 and 1989. Nine-tenths of the newly self-employed in the 1990s were entrepreneurs working on their own without hiring any paid help. This explains to a large extent the slow pace of paid-employment growth in the 1990s.

2.3. Provincial Variations

The importance of self-employment in the labour market substantially varies across provinces. The proportion of the labour force working on their own businesses is much higher in PEI and the western provinces (Manitoba, Saskatchewan, Alberta and British Columbia). The self-employment rate is all above the national average in these provinces. The highest rate is observed in Saskatchewan at the average of 24% per year during the 1990s, more than double the lowest in Newfoundland at 11.5% (Table 4). The share of total employment accounted for by self-employment tells a very similar story --- all above the national average in these provinces again. The lowest share is observed in New Brunswick at the average of 13.5% per annum during the 1990s, slightly over half of the highest share observed in Saskatchewan at 25.7% --- that is, one out of four workers in Saskatchewan reported working for themselves during the 1990s. These provincial variations are likely the results of the different industrial structures across the provinces. The agricultural and primary sectors, in which self-employment is known to be more prevalent, are relatively more important in PEI and western Canada than in other provinces.

Self-employment growth as well as its contribution to total job creation also varies significantly across the provinces. British Columbia leads the country, averaging 6.6% per year in the first eight years of the 1990s. Annual average self-employment growth rates in Alberta and Ontario were also above the national average during the 1990s. Saskatchewan and PEI experienced the slowest annual expansion in self-employment, average 0.3% and 2.0% per year, respectively.

By 1997, paid-employment in Newfoundland, Nova Scotia, Quebec and Ontario had not yet recovered to the level of 1990. Total employment gains in these provinces between 1990 and 1997 were all created in the self-employment sector (Newfoundland's total employment lost ground during this period but self-employment grew by 3,300 jobs). In other provinces, self-employment's contribution to total job creation in the 1990s ranged from one-third in PEI to two-thirds in Manitoba. The only exception is Saskatchewan where the self-employment sector lost 700 jobs in the 1990s.

2.4. Variations by Gender, Age, Industry and Occupation

Detailed analysis of self-employment variations by gender, age, industry and occupation is provided in Gauthier and Roy (1997) and Statistics Canada (1997). The following highlights the main findings.[1]

- Self-employment is substantially more prevalent among men than women. In 1996, one in five employed men reported working at their own business, compared to one in eight employed women. However, recent years have seen self-employment grew faster among women than men. As a result, men's share of the self-employed population declined to 66% in 1996 from 74% twenty years ago.

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[1] Average earnings of the self-employed as a whole are about 10% lower than that of wage and salary workers. Self-employment earnings are more polarized and there are substantial differences between those with and without paid help, between men and women, and across various age groups. Weekly hours of the self-employed are around 15% more than that of paid workers. Hours of work of the self-employed are also more polarized and there are again substantial differences by type of businesses, gender and age. See Statistics Canada (1997) for more details on earnings and hours of the self-employed.

- The age structure of the self-employed tends to be older than that of paid-employees. In 1996, a quarter of the self-employed was under the age of 35, compared to 45% of paid-employees. In contrast, those aged 55+ accounted for 19% of the self-employed but only 8% of paid-employees. The likelihood of being self-employed also increases sharply with age. In 1996, 7% of all workers under the age of 25 were self-employed, compared with 28% among those between the ages of 55 to 64. The positive relationship between self-employment and age likely reflects the fact that it takes time to build the experience, resources as well as skills associated with owning and operating a business.

- Self-employment is concentrated among some industrial sectors. In 1996, wholesale and retail trade, business services, personal and household services accounted for over half of all self-employed workers. Agriculture and construction employed nearly another quarter of them.

- The role of self-employment varies considerably from one industry to another --- predominant in some but nearly non-existent in others. In 1996, self-employment amounted to nearly two-thirds of all employment in agriculture, and fishing and trapping; approximately one-third of all employment in business services, construction, insurance and real estate, and personal and household services. In contrast, the self-employed accounted for only around 5% of all workers in manufacturing, and about 3% in educational services and communications and utilities.

- Self-employment is also concentrated among certain occupations. In 1996, nearly half of all self-employed workers were sales people, service providers and agricultural workers.

- Like the case in some industries, certain occupations are dominated by self-employment. In 1996, over 60% of the total workforce in farming and fishing occupations, nearly 40% in artistic occupations and about 30% in sales and construction occupations reported working at their own businesses. At the low end, under 5% of those in educational occupations, less than 3% of clerical workers and under 1% of material handlers were self-employed.

3. Self-Employment and Labour Market Hardships

This section empirically investigates, at the aggregate level, the relationship between self-employment and unemployment/full-time paid-employment. We employ cross-sectional data extracted from the monthly Labour Force Survey (LFS) of Statistics Canada. Then we use longitudinal data developed from the annual T1 files of Revenue Canada to document the extent of self-employment entries and exits and investigate their relationships to unemployment/full-time paid-employment. But first, let's turn to the literature for a brief review.

3.1. What do we know from Economic Theory and Existing Empirical Evidence?

Theoretical predictions on the relationship between self-employment and labour market hardships are inconclusive; existing empirical evidence is equally inconclusive.[2] Economic theories on the determinants of self-employment can be generally categorized into two contrasting schools,

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[2] The body of literature is enormous. This brief review highlights only recent work relevant to the central issue addressed here, the relationship between self-employment and labour market hardships.

according to their respective central assumption on the role of unemployment (e.g., Aronson (1991), Casson (1991, 1982), Holmes and Schmitz (1990), Rosen (1983), Kihlstrom and Laffont (1979)). The so-called "recession push" school of theories assumes that self-employment is largely opportunistic and argues that self-employed workers are not endowed with special abilities that differentiate them from paid-workers but instead are merely responding to the environmental circumstances in which they find themselves in a particular place or at a particular time. It would easily follow from this view that self-employment is positively associated with unemployment as it is argued that people who would otherwise prefer to work in paid-employment are "pushed" into establishing their own business ventures because they cannot find suitable paid-employment opportunities.

Empirical evidence supporting this hypothesis is abundantly available, at the individual as well as aggregate level. For example, Schuetze (1998) models the probability of being self-employed in Canada and the U.S. and finds that the male self-employment rate in both countries is positively correlated with the unemployment rate.[3] Comparing self-employment across OECD countries and over time, Acs, Audretsch and Evans (1994) conclude that self-employment rate increases with the unemployment rate, either on a current or five-year lagged basis. Examining the determinants of entry into self-employment in Spain and the U.S., Alba-Ramirez (1994) shows that the duration of unemployment significantly increases the probability of becoming self-employed for both countries. Evans and Leighton (1989a) report that unemployed individuals are more likely than people who are working to become self-employed. Highfield and Smiley (1987) examine the quarterly change of new incorporations in the United States and conclude that increases in the rate of new business incorporations are positively correlated with increases in the unemployment rate.

Opposite to the "push" hypothesis is the commonly known "entrepreneurial pull" school of theories, which assumes entrepreneurs as individuals with particular abilities and argues that self-knowledge of these particular abilities motivates them to engage in risk-taking entrepreneurial pursuit. Since self-employment is the simplest form of entrepreneurship, it would naturally follow from this hypothesis that there is no relationship between self-employment and unemployment. Even a negative relationship is possible as it is often argued that high unemployment reduces the incentives to enter self-employment for two considerations. First, when macroeconomic conditions are unfavourable and unemployment is high, people are less likely to enter self-employment knowing that the business has a higher probability of failure. Second, during periods of high unemployment, offers of paid employment opportunities are less frequent and individuals are less likely to enter self-employment knowing that the probability of finding other employment is low if the venture fails.

Empirical evidence supporting this view is also plentifully reported. For instance, Blanchflower and Oswald (1998) report that local unemployment rate has a negative impact on the probability of being self-employed. Taylor (1996) suggests self-employment appears to become a more attractive proposition when there is the safety net of paid-employment available in case of failure and is not a response to high unemployment levels. Abell, Khalaf and Smeaton (1995) note that regional unemployment rates have a negative impact on the propensity to enter self-employment and a

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[3] This is the only recent Canadian work we can find that investigates determinants of individual self-employment decisions and shows that self-employment is positively associated with unemployment. Bernhardt (1994) and Whitfield and Wannell (1991) are similar individual-level studies but while Bernhardt does not examine the effects of unemployment, Whitfield and Wannell find little evidence that hardships push people into self-employment. To the best of our knowledge, no work has examined the relationship between self-employment and unemployment in Canada at the aggregate level.

positive impact on the propensity to exit. Several studies summarized in Storey (1991) find that the rate of new business formations is the lowest in regions with the highest unemployment rate. Whitfield and Wannell (1991) report little evidence that hardships "push" people into self-employment --- higher paid workers are more likely to make the transition from paid-employment to self-employment; workers who voluntarily quit their jobs are more likely to become self-employed than those who were involuntarily laid off from their jobs; those who experienced shorter spells of unemployment are more likely to enter self-employment. Blau (1987) explores the determinants of male self-employment rate for the United States at the aggregate level and reports that non-cyclical factors such as changes in technology, industrial structure, tax rates, and social security retirement benefits have contributed to the increase in self-employment.

There is also evidence supporting both schools of thought. Acs, Audretsch and Evans (1994) argue that unemployment can affect self-employment both positively (as high unemployment reduces the average alternative opportunity cost of entering self-employment) and negatively (as high unemployment indicates a depressed economy in which the revenues that entrants into self-employment might expect are depressed). As a result, the net relationship between self-employment and unemployment depends on which effect dominates. Using UK time series data from 1959 to 1991 and applying the techniques of stochastic optimal control to the problem of choosing the optimal balance between self-employment and paid employment, Parker (1996) concludes that his findings provide evidence in favour of both the "push" and "pull" hypotheses.

In short, both theoretical predictions and existing empirical evidence are inconclusive regarding the relationship between self-employment and unemployment. We now turn to our empirical investigation of this relationship for Canada.

3.2. Self-Employment Rate and Unemployment/Full-Time Paid-Employment Rate

There has been renewed interest in the relationship over the past few years, largely sparked by two major observations. First, self-employment has been on the rise dramatically in Canada throughout the 1990s and at the same time, unemployment and the unemployment rate have remained persistently high. This may have led to the perception that high unemployment "pushes" people into self-employment. As well, the parallel diverging trends between Canadian and U.S. self-employment and unemployment may have further strengthened the perception that self-employment is positively associated with unemployment. However, observations based on a particular short period may lead to misleading conclusions. To more vigourously explore the relationship between self-employment and labour market hardships, we use data for a longer period covering all phases of the business cycle.

The assessment of this relationship can be done either from the raw data or through regression analysis. An inspection of the raw data reveals a strong upward time trend but very little cyclical fluctuations of self-employment between 1976 and 1997 (see Figure 1).

To more systematically summarize the relationship between self-employment and labour market hardships, we turn to regression analysis. Monthly Labour Force Survey data from January 1976 to February 1998 is pooled across the 10 provinces, giving rise to a total of 2,660 observations. Let subscript i denotes province (i = 1, 2, ……, 10) and t denotes monthly series (t = 1, 2, ……, 266), the basic pooled model is given in Equation (1):

$$SERATE_{it} = \beta_0 + \beta_1 CYCLE_{it} + \beta_2 PARTRATE_{it} + \mu_{it}, \qquad (1)$$

where the dependent variable $SERATE_{it}$ is the monthly provincial rate of self-employment; the explanatory variables include a labour market cycle indicator ($CYCLE_{it}$) --- the monthly provincial unemployment rate or the monthly provincial full-time paid-employment rate (defined as full-time paid-employment as a percentage of the labour force),[4] and the monthly provincial labour force participation rate ($PARTRATE_{it}$);[5] and μ_{it} is the error term, assumed to be either cross-sectionally heteroskedastic but independent and time-wise autoregressive (usually referred to as partial pooling) or cross-sectionally correlated and time-wise autoregressive (usually referred to as full pooling).[6]

This basic model imposes both the intercept (β_0) and slopes (β_1 and β_2) to be uniform across all cross-sectional units and over all time periods. To allow the intercept to vary across provinces, 9 provincial dummy variables are entered in the regression as additional explanatory variables (Ontario being the omitted case). And to allow intercept variations over each time period, period dummy variables are usually used as additional regressors.[7] However, to separate longer-term time trend from seasonality (month-to-month variations), we enter a dummy variable indicating time trend[8] and 11 monthly dummy variables as additional regressors (January being the omitted case) rather than entering a total of 265 period dummy variables. Therefore, the modified covariance model for empirical estimation is reformulated as Equation (2):

$$SERATE_{it} = \gamma_0 + \gamma_1 CYCLE_{it} + \gamma_2 PARTRATE_{it} + \gamma_3 {}'PROVINCE_i$$
$$+ \gamma_4 TIME + \gamma_5 {}'MONTH_m + \varepsilon_{it}, \qquad (2)$$

where $PROVINCE_i$ denotes the 10 provinces; TIME is the dummy variable indicating time trend calculated on an annual basis (i.e., TIME = 1 for 1976, 2 for 1977, ..., 23 for 1998); $MONTH_m$ denotes the 12 months in a year (m = 1, 2, ..., 12); everything else remains the same as in Equation (1).

In Equation (2), while the slopes (γ_1, γ_2) remain common for all provinces and all time periods, the intercept now varies across provinces and over time. For instance, the intercept for the special case of Ontario in January 1976 is equal to ($\gamma_0 + \gamma_4$); and for the general case of Province i in Month m of Year y is equal to ($\gamma_0 + \gamma_{3i} + \gamma_4*Time + \gamma_{5m}$).[9]

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[4]   The unemployment rate is commonly used in the literature as the labour market cycle indicator. But, does the observed relationship hold when alternative indicators are used? To test the robustness of estimates across various indicators, we also use the full-time paid-employment rate and similar results are obtained.

[5]   Although the unemployment rate (full-time paid-employment rate) and the labour force participation rate both fluctuate cyclically and are negatively (positively) correlated, they are different cyclical indicators and each has different impacts on self-employment. To more precisely examine the impacts of the unemployment rate, we want to control for the impacts of labour force participation. However, dropping it from the regression does not empirically make much difference --- the magnitude of the coefficient on the unemployment rate (full-time paid-employment rate) only changes very slightly.

[6]   See Kmenta (1971:508-514) for more details on the error term structure.

[7]   This is known as the covariance model. That is, each cross-sectional unit and each time period are characterized by their own special intercept, see Kmenta (1971:516-17) for more details.

[8]   A strong upward time trend is confirmed when a series of year dummy variables are used instead of a single time dummy variable. When the time trend is dropped from the regression, the magnitude of the coefficient on the key explanatory variable (Urate or FTPE rate) only changes marginally.

[9]   This is usually known as the fixed effects model --- a set of given intercepts are assumed for each cross-sectional unit and each time period. When a single intercept is postulated and the differential intercepts are merged with the error term, the model becomes the so-called random

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The model is estimated for men and women combined as well as separately. Table 5 reports sample statistics and the full pooling Generalized Least Squares (GLS) regression results on the fixed effects model Equation (2) for the variable of interest, the unemployment/full-time paid-employment rate, correcting for cross-sectional correlation and time-wise autoregression.[10] The men and women combined results reveal a statistically significant but empirically small negative relationship between self-employment and unemployment. On average, a 1% increase in the unemployment rate is found to be associated with 0.05% decrease in the overall self-employment level and 0.06% decrease in the overall self-employment rate, after controlling for labour force participation, time trend and provincial as well as month-to-month variations.[11]

The men and women separate results largely confirm the above findings, with the only difference lying in the magnitudes of this negative relationship --- men's self-employment is more negatively responsive to unemployment than women's. The self-employment level elasticity with respect to the unemployment rate is -0.048 for men compared to -0.029 for women; and the self-employment rate elasticity with respect to the unemployment rate is -0.051 for men compared to -0.032 for women.

The men and women combined results also reveal a statistically significant but empirically small positive relationship between self-employment and full-time paid employment. On average, a 1% increase in the full-time paid-employment rate is found to be associated 0.135% rise in the overall self-employment rate with standard error of 0.014, after controlling for labour force participation, time trend and provincial as well as month-to-month variations. The men and women separate results largely confirm the above findings again, with the difference that the coefficient for women is negative but statistically insignificant. Men's self-employment rate elasticity with respect to the full-time paid-employment rate is 0.153 with standard error of 0.039.

Thus, there is a statistically significant but empirically small negative (positive) relationship between self-employment and unemployment (full-time paid employment). To further explore the relationship, we turn to analysis of self-employment entries and exits.

3.3. Self-Employment Entries and Exits and Labour Market Hardships

Entries into and exits out of self-employment are calculated from longitudinal data developed from the annual T1 files of Revenue Canada for 1981 to 1995, based on 10% random samples.[12] Thanks to the availability of sources of earnings, self-employment is categorized into three groups to explore robustness across different definitions. These three groups are: 1) those for whom self-employment earnings are their main source of earnings in a year --- this is the closest to the Labour

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effects or error component model. See Johnston (1984:396-407) for more details on the specifications and assumptions of the fixed effects vs random effects model.

[10] See White (1993:245-54) for more details on the estimation techniques. Very similar results are obtained from the partial pooling GLS model, correcting for cross-sectional heteroskedasticity and time-wise autoregression but assuming cross-sectional independence. In addition, Ordinary Least Squares (OLS) regressions also produce very similar qualitative results.

[11] Several other specifications were estimated including the unemployment rate (full-time paid-employment rate) lagged for one month, three months, six months or a year as additional regressors. They were not significant and hence not included in the final specification.

[12] Self-employment levels are the number of individuals who report earnings from self-employment in their personal income tax returns; self-employment entries are the number of individuals who report earnings from self-employment in a year but not the previous; self-employment exits are the number of individuals who report earnings from self-employment in a year but not the next; self-employment rates are self-employment levels as % of the labour force obtained from LFS; self-employment entry rates are self-employment entries as % of the labour force obtained from LFS; and self-employment exit rates are self-employment exits as % of the self-employed level obtained from T1 files.

Force Survey definition; 2) those with self-employment earnings only --- the most restrictive; and 3) those with any self-employment earnings --- the least restrictive.

The following presentation and discussion of results focus on the first measure, that is, for individuals for whom self-employment earnings are their main source of earnings.[13] Levels of self-employment indeed confirm the findings in the previous section --- a strong upward time trend but very little cyclical fluctuations.[14] There are significant flows into and out of self-employment. On average, over a quarter of a million personal income taxes filers (equivalent to 22.4% of the self-employed population) started their own business ventures every year, from which they derived their main earnings. Meanwhile, over two hundred thousand self-employed workers (or 19.7%) ended their entrepreneurial pursuit as their primary source of earnings. Gross flows into and out of self-employment averaged nearly half a million per year between 1982 and 1994, amounting to 42% of the total self-employed population (Table 6).

Figure 2 presents self-employment entry and exits rates between 1981 and 1995. While entry into self-employment exhibited little cyclical variations during this period, exits out of self-employment demonstrated a strong counter-cyclical pattern.

To further summarize the relationship between self-employment flows and labour market cycles, we again turn to regression analysis by estimating the following pooled cross-section time-series fixed effects model:

$$SE_{it} = \alpha_0 + \alpha_1 CYCLE_{it} + \alpha_2 PARTRATE_{it} + \alpha_3 'PROVINCE_i + \alpha_4 TIME + \nu_{it}, \quad (3)$$

where the dependent variable SE_{it} is the annual provincial self-employment rate or entry rate or exit rate; the explanatory variables are again the labour market cycle indicator ($CYCLE_{it}$), either the annual provincial unemployment rate or the annual provincial full-time paid-employment rate, the annual provincial labour force participation rate ($PARTRATE_{it}$), $PROVINCE_i$ denoting the 10 provinces, TIME indicating time trend (i.e., TIME = 1 for 1981, 2 for 1982, ……, 15 for 1995); and ν_{it} is the error term, assumed to be cross-sectionally correlated and time-wise autoregressive.

As before, the model is estimated for men and women combined as well as separately. Table 7 reports sample statistics and the Generalized Least Squares (GLS) regression results on Equation (3) for the unemployment/full-time paid-employment rate. The men and women combined results on the self-employment rate as well as the entry rate confirm the above conclusion that there is a statistically significant but empirically small negative (positive) relationship between self-employment and unemployment (full-time paid-employment). A 1% rise in the unemployment rate is found to be associated with 0.044% decline in the overall rate of self-employment with standard error of 0.009 and 0.178% decline in the entry rate into self-employment as the primary labour market activity with standard error of 0.03. And a 1% rise in the full-time paid-employment rate is found to be associated with 0.34% increase in the overall rate of self-employment with standard

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[13] All three measures produce very similar qualitative results, which are available upon request.

[14] Trends of self-employment are highly comparable between the two sources of data. There are of course differences in the exact levels between the two. One is monthly survey, the other annual administrative. Also, the LFS uses weekly hours of work to determine main jobs from secondary ones; whereas in the T1 we can only rely on annual earnings. In other words, for a multiple jobholder (concurrent or sequential) the main job by hours of work may not be the case if earnings are used instead, especially for those who have both self-employment and paid employment. For example, those who report paid employment earnings and negative self-employment earnings in a year will not be picked up by this definition in the T1 data regardless of hours of work.

error of 0.07 and 1.14% increase in the entry rate into self-employment as the primary labour market activity with standard error of 0.2.

The men and women separate results again largely confirm the above findings, with differences only lying in the magnitudes of estimates. Women's self-employment entry rate is substantially more negatively (positively) responsive to the unemployment (full-time paid-employment) rate than men's. The entry rate elasticity with respect to the unemployment rate is –0.289 with standard error of 0.038 for women compared to –0.06 with standard error of 0.024 for men; and the entry rate elasticity with respect to the full-time paid-employment rate is 1.808 with standard error of 0.112 for women compared to 0.455 with standard error of 0.189 for men.

The data also reveal a statistically significant but empirically small negative (positive) relationship between self-employment exits and unemployment (full-time paid-employment). A 1% rise in the unemployment rate is found to be associated with 0.14% decrease in the overall exit rate with standard error of 0.011. There is little gender differential. And a 1% rise in the full-time paid-employment rate is found to be associated with 0.985% increase in the overall exit rate with standard error of 0.09. Men's self-employment exits are significantly more positively responsive to full-time paid-employment than women's --- the exit rate elasticity with respect to the full-time paid-employment rate is 1.152 with standard error of 0.113 for men compared to 0.69 with standard error of 0.132 for women.

4. Summary and Discussion

This paper has highlighted recent developments in self-employment and explored its relationship to labour market hardships. There are now two and a half million Canadians working at their own businesses, amounting to 16.2% of the total labour force or accounting for 17.8% of total employment. In the first eight years of the 1990s, self-employment on average expanded by 4.1% per year compared to a mere 0.2% in paid-employment, contributing to over three out of four new jobs the economy has created. This phenomenal growth and contribution to new job creation is unprecedented. During the previous decade, self-employment grew by an average of 2.4% per annum but annual growth in the paid-employment sector was not far behind at 1.9%; self-employment expansion contributed to less than one out of six new jobs created --- the overwhelming majority (82.7%) of new job creation was accounted for by growth in the paid-employment sector.

An examination of the nature of business ventures reveals striking different patterns of self-employment growth between the 1980s and 1990s. During the 1980s, total self-employment grew by 347 thousand jobs. Nearly two-thirds of this growth were accounted for by business owners who also hired paid help. This has undoubtedly contributed to the strong growth of paid-employment during the expansion years of the 1980s. This strong growth of self-employed employers has very much reversed so far in the 1990s, accounting for only about 10% of the total 458 thousand self-employed jobs gained between 1996 and 1989. Nine-tenths of the newly self-employed in the 1990s were entrepreneurs working on their own without hiring any paid help. This explains to a large extent the slow pace of paid-employment growth in the 1990s.

There are substantial variations of self-employment by province, gender, age, industry as well as occupations. This is true whether one looks at its volume, its annual growth rate, its incidence, its share of total employment, or its contribution to total job creation.

Entry and exit data demonstrate that there are substantial flows into and out of this sector of the economy. Gross flows into and out of self-employment as the main labour market activity averaged nearly half a million per year between 1982 and 1994, amounting to 42% of the total self-employed population.

Regression results show a statistically significant but empirically small negative (positive) relationship between self-employment and unemployment (full-time paid-employment). This finding holds true across different data sources, for different time periods, for different measures (the rate or entry rate of self-employment) and definitions (any or mostly or only self-employment), for different empirical samples (men and women jointly or separately), and across various estimating techniques. The data also reveals a statistically significant but empirically small negative (positive) relationship between exits out of self-employment and unemployment (full-time paid-employment).

So, what are the likely forces behind the recent surge in Canadians' entrepreneurial endeavour? It is not surprising that the level of self-employment is much higher now than twenty years ago simply because the size of the population and labour force has expanded. Today's labour force is nearly one and a half of the size two decades ago (see Appendix). But what explains the continuous increase in the recent self-employment rate? It appears that a host of non-cyclical factors may be at work.

Demographic Changes

The age structure of the Canadian labour force has been increasing significantly over the last two decades. Youth's (15-24 years of age) share of the labour force steadily declines from over 26% in 1976 to 15% by 1997. According to a number of studies summarized in Acs, Audretsch and Evans (1994), self-employment increases with age, although at a diminishing rate. This is commonly explained by the fact that financial resources and experience usually accumulate with age, which in many cases translate into physical capital required to start up a new business and skills required to successfully manage a business. As well, age often increases one's personal contacts and community networking, which often translate into social capital that can influence the success of a business. Hence, it should not be surprising to expect that the increase in the age structure of the Canadian labour force has positively contributed to the recent surge in self-employment.

Widely used as a measure of human capital, education is another demographic factor commonly found in the literature to influence self-employment. Education attainment of the Canadian labour force has also been substantially increasing in the last two decades. However, as the evidence of education on self-employment is mixed (e.g., Acs, Audretsch and Evans (1994)), it is difficult to conclude the extent of contribution to the recent rise in self-employment from increases in the education attainment of the Canadian labour force without further research.

Female labour force participation has long been on the rise in Canada. The rate was 45.2% in 1976, steadily increased to the peak of 58.1% by 1989. But recent years have seen a gradual decline --- it stands at 56.7% for 1997. Given that the self-employment rate is substantially lower among women than men (e.g., Acs, Audretsch and Evans (1994); Whitfield and Wannell (1991)), increasing female labour force participation up to the late 1980s is expected to have negatively contributed to the self-employment rate. By the same token, the reverse trend in recent years is expected to have mildly contributed positively to the rise of the self-employment rate in the 1990s.

Immigration to Canada has also increased dramatically in recent years. Total new immigrants averaged 125 thousand per year during the 1980s, nearly doubled to a little under 230 thousand per annum so far in the 1990s. New immigrants destined for the labour force averaged slightly under 60 thousand a year during the 1980s, more than doubled to over 122 thousand a year in the first eight years of the 1990s. Given that certain immigrant groups are more likely to be self-employed (Borjas (1986)), we can expect that increases in immigration have positively contributed to the recent rise of self-employment. In particular, the creation of the business immigrant program has attracted an increasing number of entrepreneurs into Canada. During the 1980s, business immigrants averaged about 1,500 per year. In the 1990s, the number has more than tripled to nearly 5,200 per annum.

Technological Changes

Blau (1987) argues that effects of technological changes have been positively biased towards industries in which self-employment is more important, and hence contributed positively to the rise of self-employment. Under Blau's study period, it is probably difficult to accept this argument because a lot of new technologies (e.g., personal computers) were barely introduced and certainly not widespread because of high prices. However, the availability and affordability of new technologies have substantially improved ever since. Personal computers have become ever faster and ever cheaper; information-exchange technologies such as telecommunications and the Internet have become more reliable, widely available and affordable. There is no doubt that technological improvements have greatly reduced the operational costs of small businesses, particularly home-based businesses, and hence positively contributed to the recent rise of self-employment. Unfortunately, explicitly assessing these effects will require relevant data that are not yet readily available.

Structural Changes

Structural changes can have both the compositional as well as within-group impacts on self-employment trends. If the economy is shifting towards industries and occupations in which self-employment traditionally plays a relatively important role, it is natural the overall self-employment rate is increasing. Furthermore, if self-employment incidence within certain industries and occupations is increasing, it is also natural the overall self-employment rate is increasing. Gauthier and Roy (1997) and Statistics Canada (1997) show that the Canadian economy has indeed shifted towards certain industries and occupations in which self-employment is more important and that self-employment incidence within certain industries and occupations has indeed be on the steady rise.

Increasing Contracting-Out

Another important development in the world economy since the early 1980s is trade globalization and increasing international competition. There widely exists a notion that employers have increasingly resorted to down-sizing and out-contracting in an attempt to create a flexible workforce and increase competitiveness. Also, as documented in Lin, Picot and Beach (1996), employer payroll taxes in Canada have increased substantially over the last thirty years (up to 1993), and recent years have shown no sign of a reverse trend. There is a perception that one way employers react to increasing payroll taxes is contracting out. No data are yet available to test this hypothesis. But to the extent that it happens, there is no doubt increasing contract-out has created the opportunities for the self-employed to provide the required services.

Government Policies

A number of studies (e.g., Schuetze (1998), Parker (1996), Blau (1987)) have found that increases in the marginal personal income tax rates are positively correlated with the self-employment rate but offered no explanation why this is the case. The Canadian personal income tax system does not explicitly offer additional advantage to the self-employed. Once reported, the same level of income is subject to the same marginal income tax rate, regardless it is earned from paid work or from self-employment. So, why do increases in the marginal tax rates affect self-employment more than paid-employment? To the extent this positive relationship does exist, one possible explanation lies in the fact that there is some flexibility in reporting net self-employment earnings. Business owners have more control over their reporting of revenues and expenses whereas wage and salary workers simply get T4s from their employers. Again, this is only a perception and there exists no empirical supporting evidence.

Finally, many governments in the industrialized countries have special programs in place to assist self-employment and small businesses as a way of combating high unemployment (Robinson (1992)). In Canada, the self-employment assistance (SEA) program under the developmental use of the unemployment insurance (employment insurance since July 1996) system has helped thousands of unemployed Canadians to start their own businesses since its inception in 1992. The number of unemployed receiving SEA benefits averaged sixteen hundred per month in 1992, steadily increased to the peak of over nine thousand per month in 1995, and declined somewhat since 1996. The creation of the program has undoubtedly contributed to the recent surge of self-employment.

Due to numerous limitations (some relates to length consideration, others owe to data unavailability), the present study offers no explicit assessment of the effects of these possible factors. But they are natural areas for expansion in future research.

Table 1:   Self-Employment and Paid-Employment in Canada, 1976-1997

	Level of Employment				Year-to-Year % Change		As % of LF		SE as % of TE
	Number (000's)		Index (1976=100)						
	SE	PE	SE	PE	SE	PE	SE	PE	
76	1,206.6	8,569.5	100.0	100.0			11.5	81.4	12.3
77	1,280.0	8,698.2	106.1	101.5	6.1	1.5	11.8	80.1	12.8
78	1,360.2	8,960.1	112.7	104.6	6.3	3.0	12.1	79.5	13.2
79	1,423.0	9,337.7	117.9	109.0	4.6	4.2	12.2	80.3	13.2
80	1,462.3	9,619.9	121.2	112.3	2.8	3.0	12.2	80.3	13.2
81	1,521.4	9,876.6	126.1	115.3	4.0	2.7	12.3	80.1	13.3
82	1,537.1	9,498.0	127.4	110.8	1.0	-3.8	12.4	76.6	13.9
83	1,594.2	9,511.5	132.1	111.0	3.7	0.1	12.6	75.4	14.4
84	1,628.8	9,773.6	135.0	114.1	2.2	2.8	12.7	76.0	14.3
85	1,677.0	10,065.0	139.0	117.5	3.0	3.0	12.8	76.7	14.3
86	1,681.6	10,412.9	139.4	121.5	0.3	3.5	12.6	77.8	13.9
87	1,746.1	10,676.3	144.7	124.6	3.8	2.5	12.8	78.3	14.1
88	1,820.9	10,998.1	150.9	128.3	4.3	3.0	13.1	79.1	14.2
89	1,809.1	11,276.9	149.9	131.6	-0.7	2.5	12.8	79.7	13.8
90	1,889.3	11,275.8	156.6	131.6	4.4	0.0	13.2	78.7	14.4
91	1,919.9	10,996.2	159.1	128.3	1.6	-2.5	13.3	76.3	14.9
92	1,936.1	10,905.9	160.5	127.3	0.8	-0.8	13.4	75.3	15.1
93	2,056.4	10,958.4	170.4	127.9	6.2	0.5	14.0	74.7	15.8
94	2,111.4	11,180.3	175.0	130.5	2.7	2.0	14.2	75.4	15.9
95	2,135.7	11,369.9	177.0	132.7	1.1	1.7	14.3	76.2	15.8
96	2,266.6	11,409.6	187.8	133.1	6.1	0.3	15.0	75.3	16.6
97	2,487.9	11,452.6	206.2	133.6	9.8	0.4	16.2	74.6	17.8
Average									
76-97	1,752.3	10,310.1			3.5	1.4	13.1	77.6	14.4
76-79	1,317.5	8,891.4			5.7	2.9	11.9	80.3	12.9
80-89	1,647.9	10,170.9			2.4	1.9	12.6	78.0	13.9
90-97	2,100.4	11,193.6			4.1	0.2	14.2	75.8	15.8

Source: Labour Force Survey.

Table 2:   Total Job Creation and Contribution of Self-Employment in Canada, 1976-1997

	1976-1997			1980-1989			1990-1997		
	TE	PE	SE	TE	PE	SE	TE	PE	SE
Change (000's)	4,164.4	2,883.1	1,281.3	2,003.8	1,657.0	346.8	775.4	176.8	598.6
% Change	42.6	33.6	106.2	18.1	17.2	23.7	5.9	1.6	31.7
% Contribution		69.2	30.8		82.7	17.3		22.8	77.2

Source: Labour Force Survey.

Table 3:   Growth of Self-Employment by Nature of Business in Canada, 1980-1996

	Total Growth (000's)	Growth by Nature of Business (000's)		% Contribution to Total Growth	
		Employer	Own-Account	Employer	Own-Account
1980-1996	804.3	273.9	530.4	34.1	65.9
1980-1989	346.8	227.8	119.0	65.7	34.3
1989-1996	457.5	46.1	411.4	10.1	89.9

Source: Statistics Canada (1997).

Table 4:   Self-Employment across Provinces in Canada, 1976-1997

	Nfld	PEI	NS	NB	Que	Ont	Man	Sask	Alta	BC
SE as % of LF										
1976-1997	11.1	17.6	11.6	10.9	11.5	11.7	15.5	25.3	16.5	14.2
1980-1989	11.0	18.5	11.4	10.7	11.4	11.2	15.5	25.1	15.3	13.6
1990-1997	11.5	15.8	12.5	11.8	12.6	13.0	15.9	23.9	17.7	16.2
SE as % of TE										
1976-1997	13.4	20.3	13.2	12.5	13.0	12.7	16.8	27.0	17.8	15.8
1980-1989	13.4	21.2	13.0	12.4	12.8	12.1	16.8	27.0	16.7	15.4
1990-1997	14.2	18.9	14.3	13.5	14.3	14.3	17.3	25.7	19.2	17.9
SE Year-over-Year % Change										
1976-1997	2.2	1.6	3.3	3.1	3.3	4.3	2.3	0.4	3.2	5.2
1980-1989	-0.1	-0.3	3.2	2.0	3.1	2.9	0.9	-0.3	1.7	3.9
1990-1997	2.7	2.0	2.7	4.1	2.9	4.8	2.2	0.3	4.9	6.6
PE Year-over-Year % Change										
1976-1997	0.8	1.7	1.1	1.2	0.9	1.4	0.8	1.3	2.5	2.2
1980-1989	1.9	2.1	1.8	1.7	1.4	2.4	1.2	1.5	2.0	2.2
1990-1997	-1.3	1.2	-0.1	0.4	0.0	-0.3	0.3	0.5	1.2	1.5
TE Change (000's)										
1976-1997	31.9	17.9	95.4	82.3	706.7	1,667.5	103.5	89.6	598.0	771.7
1980-1989	21.8	6.7	56.4	39.5	376.4	1,037.3	45.8	33.3	137.7	248.9
1990-1997	-13.6	5.3	1.9	14.2	88.2	187.3	20.3	15.7	179.9	276.3
PE Change (000's)										
1976-1997	22.6	14.6	65.4	60.0	456.9	1,138.8	67.1	80.3	451.5	525.9
1980-1989	23.4	7.9	47.9	35.4	292.1	890.5	39.5	30.7	105.3	184.5
1990-1997	-17.0	3.5	-10.9	6.4	-16.6	-57.8	6.9	16.4	94.9	151.0
SE Change (000's)										
1976-1997	9.3	3.3	30.0	22.2	249.8	528.8	36.4	9.3	146.6	245.7
1980-1989	-1.6	-1.2	8.5	4.2	84.3	146.8	6.3	2.7	32.4	64.4
1990-1997	3.3	1.8	12.8	7.8	104.7	245.1	13.4	-0.7	85.1	125.3
TE Change due to SE (%)										
1976-1997	29.1	18.3	31.4	27.0	35.3	31.7	35.2	10.4	24.5	31.8
1980-1989	n.a.	n.a.	15.1	10.6	22.4	14.1	13.8	8.0	23.6	25.9
1990-1997	n.a.	33.5	n.a.	54.7	n.a.	n.a.	66.0	n.a.	47.3	45.3

Notes: Source- Labour Force Survey. n.a. --- not appropriate.

Table 5: Key Variable Sample Statistics and Regression Results on Self-Employment

	Sample Statistics					
	Men & Women		Men		Women	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Ln(SE Rate)	2.642	0.276	2.835	0.298	2.288	0.257
Ln(URate)	2.291	0.397	2.266	0.460	2.314	0.352
Ln(FTPE Rate)	4.308	0.060	4.399	0.063	4.166	0.058
	Fixed Effects Model Full Pooling GLS Regression Results [Dep. Var. = Ln(SE Rate)]					
	Indep. Var = Ln(Urate)			Indep. Var = Ln(FTPE Rate)		
	Coefficient	Std. Error		Coefficient	Std. Error	
Men & Women	-0.056	0.007		0.135	0.014	
Men	-0.051	0.006		0.153	0.039	
Women	-0.032	0.011		-0.054	0.055	

Notes: Additional explanatory variables included in the regressions are the constant term, log of the monthly labour force participation rate, 9 provincial dummy variables (Ontario being the omitted case), a dummy variable indicating time, and 11 monthly dummy variables (January being the omitted case). Due to table length, results on these controls are not reported here but available upon request.

Table 6: Self-Employment Flows in Canada, 1981-1995

	Level	Entry		Exit		Gross Flow		Net Flow	
		Number	% of Level	Number	% of Level	Number	% of Level	Number	% of Level
	(1)	(2)	(3)=(2)/(1)	(4)	(5)=(4)/(1)	(6)=(2)+(4)	(7)=(6)/(1)	(8)=(2)-(4)	(9)=(8)/(1)
1981	915,140	n.a.	n.a.	178,620	19.5	n.a.	n.a.	n.a.	n.a.
1982	931,240	194,750	20.9	175,470	18.8	370,220	39.8	19,280	2.1
1983	953,350	197,700	20.7	172,810	18.1	370,510	38.9	24,890	2.6
1984	988,590	208,030	21.0	194,820	19.7	402,850	40.7	13,210	1.3
1985	990,980	197,280	19.9	193,490	19.5	390,770	39.4	3,790	0.4
1986	1,019,390	221,760	21.8	198,280	19.5	420,040	41.2	23,480	2.3
1987	1,069,690	248,630	23.2	218,600	20.4	467,230	43.7	30,030	2.8
1988	1,099,470	248,370	22.6	227,110	20.7	475,480	43.2	21,260	1.9
1989	1,125,410	253,710	22.5	236,300	21.0	490,010	43.5	17,410	1.5
1990	1,159,370	269,500	23.2	240,580	20.8	510,080	44.0	28,920	2.5
1991	1,191,930	273,190	22.9	231,870	19.5	505,060	42.4	41,320	3.5
1992	1,253,290	293,330	23.4	231,750	18.5	525,080	41.9	61,580	4.9
1993	1,334,050	312,620	23.4	264,170	19.8	576,790	43.2	48,450	3.6
1994	1,400,760	330,810	23.6	284,730	20.3	615,540	43.9	46,080	3.3
1995	1,471,800	355,940	24.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Average	1,126,964	257,544	22.4	217,757	19.7	470,743	42.0	29,208	2.5

Notes: Source- T1 files of Revenue Canada, based on 10% random samples. For personal income tax filers whose self-employment earnings are their main source of earnings in the year.

Table 7: **Key Variable Sample Statistics and Regression Results on Self-Employment Flows**

	Sample Statistics					
	Men & Women		Men		Women	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
1981-1995:						
Ln(SE Rate)	2.231	0.328	2.480	0.346	1.737	0.336
Ln(URate)	2.373	0.331	2.379	0.349	2.365	0.317
Ln(FTPE Rate)	4.294	0.036	4.386	0.042	4.156	0.039
1982-1995:						
Ln(Entry Rate)	0.661	0.251	0.765	0.237	0.492	0.313
Ln(URate)	2.395	0.313	2.406	0.325	2.380	0.307
Ln(FTPE Rate)	4.290	0.033	4.382	0.039	3.541	0.116
1981-1994:						
Ln(Exit Rate)	2.936	0.171	2.836	0.196	3.178	0.129
Ln(URate)	2.376	0.333	2.379	0.351	2.371	0.319
Ln(FTPE Rate)	4.294	0.037	4.079	0.106	4.156	0.040
	Fixed Effects Model Full Pooling GLS Regression Results					
	Dep. Var. = Ln(SE Rate)		Dep. Var. = Ln(Entry Rate)		Dep. Var. = Ln(Exit Rate)	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Indep. Var. = Ln(URate):						
Men & Women	-0.044	0.009	-0.178	0.030	-0.140	0.011
Men	-0.036	0.009	-0.060	0.024	-0.133	0.013
Women	-0.039	0.011	-0.289	0.038	-0.135	0.022
Indep. Var. = Ln(FTPE Rate):						
Men & Women	0.340	0.070	1.140	0.201	0.985	0.090
Men	0.300	0.078	0.455	0.189	1.152	0.113
Women	0.259	0.060	1.808	0.112	0.690	0.132

Notes: For personal income tax filers whose self-employment earnings are their main source of earnings in the year. The sample period is 1981-1995 for the self-employment rate regression; 1982-1995 for the entry rate regression; and 1981-1994 for the exit rate regression. Additional explanatory variables included in the regressions are the constant term, log of the annual provincial labour force participation rate, 9 provincial dummy variables (Ontario being the omitted case), and a dummy variable indicating time. Due to table length, results on these controls are not reported here but available upon request. Regressions for individuals with self-employment earnings only and those with any self-employment earnings are also run and very similar qualitative results are obtained. They are not reported here either but also available upon request.

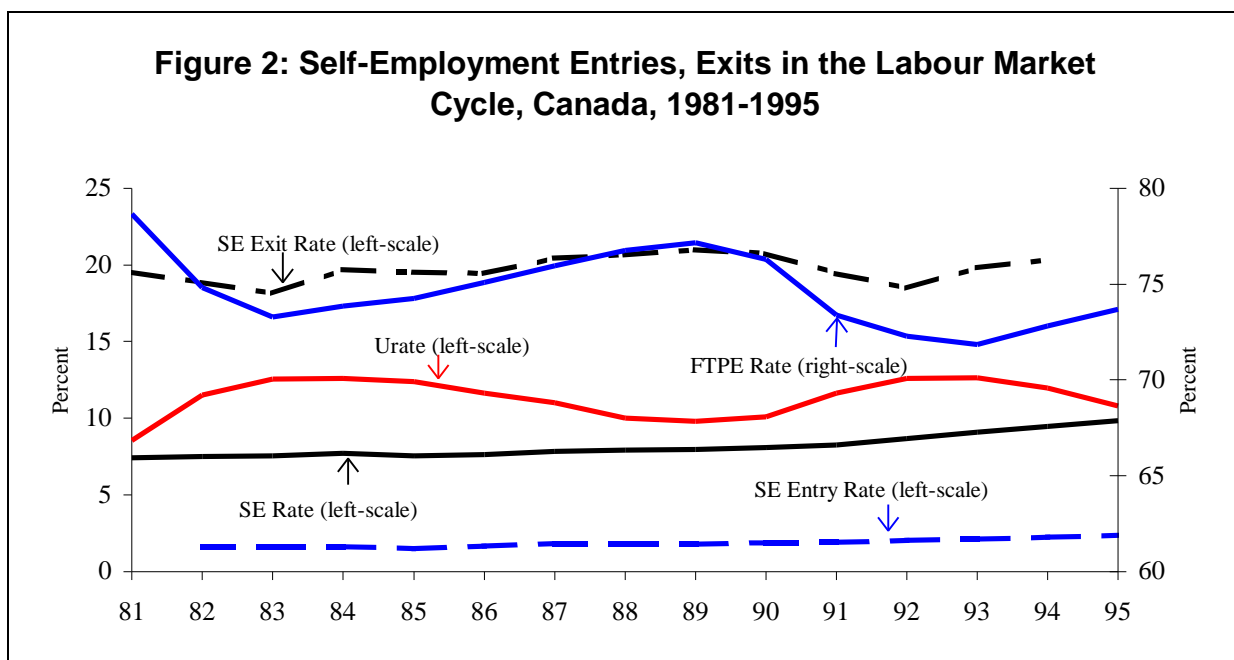**Figure 1:   Self-Employment in the Labour Market Cycle, Canada, 1976-1997**
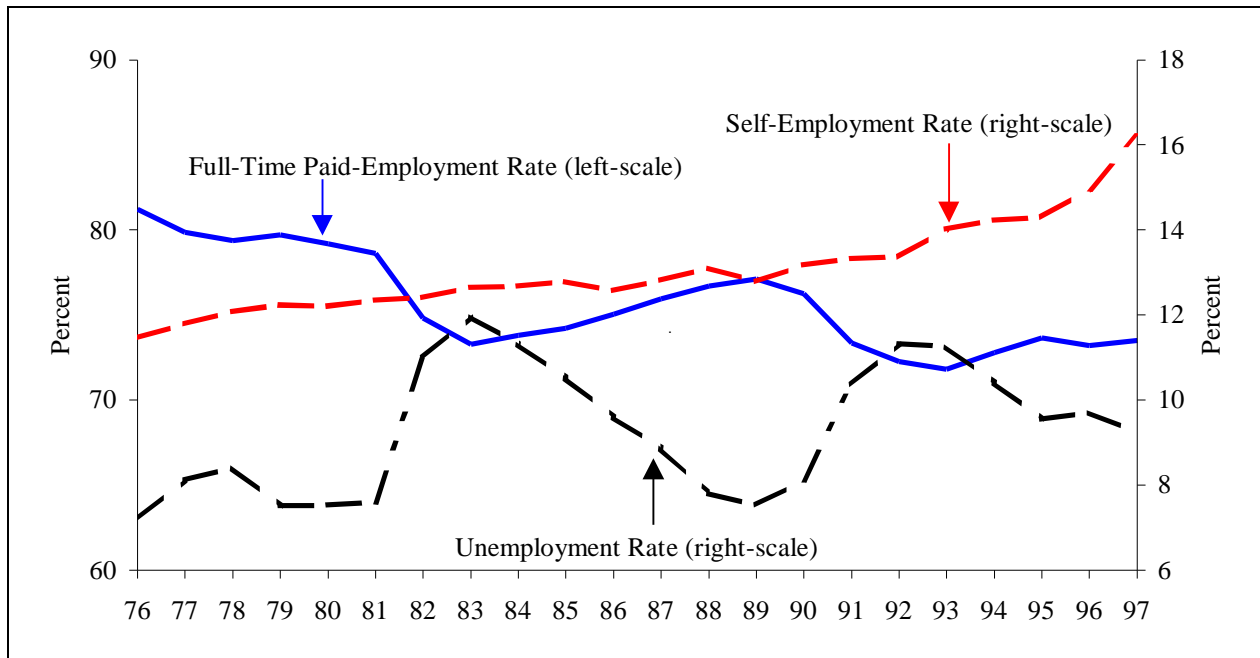
Source: Labour Force Survey.

Figure 2: Self-Employment Entries, Exits in the Labour Market Cycle, Canada, 1981-1995

Source: T1 files and Labour Force Survey.

Appendix: Selected Demographic, Labour Market and Policy Trends in Canada, 1976-1997

	Labour Force	Youth Share of LF	Female LF Participation	Immigration			SEA Beneficiaries
				Total	LF Destined	Entrepreneur	
	Thousands	Percent	Percent	Person	Person	Person	Person
1976	10,530	26.6	45.2	146,110	60,125	n.a.	n.a.
1977	10,860	26.1	46.6	114,914	47,627	n.a.	n.a.
1978	11,265	26.4	48.5	86,313	35,204	446	n.a.
1979	11,630	26.3	49.7	112,096	48,234	285	n.a.
1980	11,983	25.9	50.6	143,117	63,745	266	n.a.
1981	12,332	25.2	51.6	128,618	56,969	293	n.a.
1982	12,398	24.2	51.8	121,147	55,472	449	n.a.
1983	12,610	23.4	52.7	89,157	37,109	569	n.a.
1984	12,853	22.7	53.9	88,239	38,500	1,032	n.a.
1985	13,123	22.2	54.9	84,302	38,453	1,504	n.a.
1986	13,378	21.3	55.2	99,219	48,200	1,769	n.a.
1987	13,631	20.5	56.6	152,098	76,712	2,515	n.a.
1988	13,901	19.6	57.1	161,929	76,350	3,216	n.a.
1989	14,151	18.8	58.1	192,001	98,227	3,815	n.a.
1990	14,329	18.0	57.9	214,230	114,091	4,006	n.a.
1991	14,408	17.4	57.3	230,834	131,614	3,781	n.a.
1992	14,482	16.6	57.4	252,842	143,599	6,249	1,608
1993	14,664	16.3	57.2	255,747	134,055	7,381	4,387
1994	14,832	15.8	57.1	223,759	108,749	6,216	6,839
1995	14,928	15.5	56.6	212,030	109,359	4,470	9,214
1996	15,145	15.2	56.8	224,218	118,204	4,931	8,981
1997	15,354	15.0	56.7	216,063	119,044	4,387	7,428

Source: CANSIM, Statistics Canada.

References

Abell, P., H. Khalaf and D. Smeaton (1995), "An Exploration of Entry to and Exit from Self-Employment", Discussion Paper No. 224, London School of Economics Centre for Economic Performance.

Acs, Z. J. , D. B. Audretsch and D. S. Evans (1994), "Why Does the Self-Employment Rate Vary Across Countries and Over Time?", Discussion Paper No. 871, Centre for Economic Policy Research.

Alba-Ramirez, A. (1994), "Self-employment in the midst of unemployment: the case of Spain and the United States", Applied Economics, 26, 189-204.

Aronson, R. (1991), Self-Employment: A Labor Market Perspective, Ithaca, New York: ILR Press.

Bernhardt, I. (1994), "Comparative advantage in self-employment and paid work", Canadian Journal of Economics, 27 (2), 273-89.

Blanchflower, D. G. and A. J. Oswald. (1998), "What Makes an Entrepreneur?", Journal of Labor Economics, 16 (1), 26-60.

Blau, D. M. (1987), "A Time-Series Analysis of Self-Employment in the United States", Journal of Political Economy, 95 (3), 445-67.

Borjas, G. J. (1986), "The Self-Employment Experience of Immigrants", The Journal of Human Resources, 21 (4), 485-506.

Casson, M. (1991), The Entrepreneur: An Economic Theory, Worcester: Billing and Sons Ltd.

Casson, M. (1982), The Entrepreneur and Economic Theory, Totowa, New Jersey: Barnes and Noble.

Cohen, G. (1988), Enterprising Canadians: The Self-Employed in Canada, Statistics Canada: Labour and Household Analysis Division.

Evans, D. S. and B. Jovanovic (1989), "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints", Journal of Political Economy, 97 (4), 808-27.

Evans, D. S. and L. S. Leighton (1989a), "The Determinants of Changes in U.S. Self-Employment", Small Business Economics, 1 (2), 111-20.

Evans, D. S. and L. S. Leighton (1989b), "Some Empirical Aspects of Entrepreneurship", The American Economic Review, 79 (3), 519-35.

Gauthier, J. and R. Roy (1997), "Diverging Trends in Self-Employment in Canada", Working Paper R-97-13E, Applied Research Branch, Human Resources Development Canada.

Highfield, R. and R. Smiley (1987), "New Business Starts and Economic Activity", <u>International Journal of Industrial Organization</u>, 5, 51-66.

Holmes, T. J. and J. A. Schmitz (1990), "A Theory of Entrepreneurship and Its Application to the Study of Business Transfers", <u>Journal of Political Economy</u>, 89, 265-94.

Johnston, J. (1984), <u>Econometric Methods</u>, Third Edition, Toronto: McGraw-Hill.

Kihlstrom, R. E. and J. J. Laffont (1979), "A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion", <u>Journal of Political Economy</u>, 87, 719-48.

Kmenta, J. (1971), <u>Elements of Econometrics</u>, New York: Macmillan.

Lin, Z., G. Picot and C. Beach (1996), "What Has Happened to Payroll Taxes in Canada over the Last Three Decades?", <u>Canadian Tax Journal</u>, 44 (4), 1052-77.

Lin, Z., J. Yates and G. Picot (1998, forthcoming), "The Entry and Exit Dynamics of Self-Employment in Canada", Business and Labour Market Analysis Division, Statistics Canada.

Macredie, I. (1985), <u>Self-Employment in Canada: An Overview</u>, Statistics Canada: Labour and Household Analysis Division.

OECD (1992), "Recent Developments in Self-Employment", <u>Employment Outlook</u>.

OECD (1989), <u>Self-Employment Schemes for the Unemployed.</u>

Parker, S. C. (1996), "A Time Series Model of Self-Employment under Uncertainty", Economica, 63, 459-75.

Rees, H. and A. Shah (1986), "An Empirical Analysis of Self-Employment in the U.K.", <u>Journal of Applied Econometrics</u>, 1, 95-108.

Robinson, J. (1992), "New Forms of Activity for the Unemployed and Measures to Assist the Creation of Self-Employment: Experiences and Opportunities in Combating Unemployment", presented at the General Assembly of the International Social Security Association, Acapulco, Mexico, November 24, 1992.

Rosen, S. (1983), "Economics and Entrepreneurs", in J. Ronen (ed.), <u>Entrepreneurship</u>, Lexington, MA: Lexington Books.

Schuetze, H. J. (1998), "Taxes, Economic Conditions and the Recent Trends in Male Self-Employment: A Canada-U.S. Comparison", 1998 Canadian Economics Association meetings, University of Ottawa, Ottawa, Ontario.

Statistics Canada (1997), <u>Labour Force Update: The Self-Employed</u>, Catalogue 71-005-XPB.

Storey, D. J. (1991), "The Birth of New Firms – Does Unemployment Matter?: A Review of the Evidence", <u>Small Business Economics</u>, 3 (3), 167-78.

Taylor, M. P. (1996), "Earnings, Independence or Unemployment: Why Become Self-Employed?", Oxford Bulletin of Economics and Statistics, 58 (2), 253-66.

Van Praag, C. M. and H. Van Ophem (1995), "Determinants of Willingness and Opportunity to Start as an Entrepreneur", Kyklos, 48 (4), 513-40.

White, K. (1993), SHAZAM User's Reference Manual, Version 7.0, Toronto: McGraw-Hill.

Whitfield, L. and T. Wannell (1991), "Self-Employment in Canada: First Choice or Last Chance?", mimeo, Business and Labour Market Analysis