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THE ROLE OF SELF-EMPLOYMENT IN JOB CREATION IN CANADA AND THE UNITED STATES

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I. INTRODUCTION

If we wish to understand employment trends and issues, international comparisons are increasingly important. In two papers last year (Manser and Picot, Picot and Manser, 1997) we compared net and gross job creation as well as job security and job stability in Canada and the U.S. for the 1980s and 1990s. The most striking difference was in the contribution of self-employment to net job creation during the 1990s. In particular, self-employment accounted for the majority of the net employment growth that took place in Canada in the 1990s, whereas it accounted for effectively none of the net employment growth in the U.S. in this period. During the 1980's, the role of self- employment was fairly similar in the two countries.

Not surprisingly, in recent years there has been considerable concern over self-employment in Canada. Of course, these trends do not necessarily have only negative consequences. Many workers may prefer self-employment. A 1995 Canadian Survey of Work Arrangements asked why workers were self-employed, and the vast majority provided positive rather than negative reasons, as have respondents to the U.S. Current Population Survey. Nonetheless, popular concern exists regarding whether workers are "pushed" into self-employment due to lack of full-time paid jobs, or "pulled" in by the positive benefits of self-employment.

Views of self-employment have been mixed in the research literature. On the one hand, self-employment is a type of entrepreneurship and small business, something that is encouraged by various government policies and sometimes thought to have particularly desirable impacts, such as on economic growth.[1] On the other hand, it is sometimes thought that individuals are driven into self-employment by poor opportunities in the wage and salary sector. For a discussion of the determinants and consequences of self-employment, see for instance Blanchflower and Oswald (1998) and references therein.

Labour market outcomes, and in particular employment patterns in different countries, may vary for a number of reasons. First, labour supply conditions may differ from country to country due to varying demographic trends. If there is a difference in the growth in the population of an age and with a level of wealth that tends to become self-employed, then employment trends may differ for supply reasons. Secondly, institutional arrangements and taxation legislation vary from country to country, and these too can influence labor market outcomes. For example, differences in personal or payroll taxes may encourage self-employment (or discourage paid employment) in one country, but not in another. The level of "contracting-out" by firms may also be influenced by taxation or labour laws, thus influencing self-employment patterns. Finally, differences in fiscal and monetary policy may also influence labour demand and thus employment patterns. Hence, even if all advanced industrialized countries faced similar shifts in labour demand due to globalization and technological change, the employment patterns may vary for a number of reasons.

Reardon (1997) used decennial Census data from 1990 for the U.S. and from 1991 for Canada to compare nonagricultural full-time self-employment in the two countries. She found that in both countries, the self-employed are older, less likely to be female, more educated, and

[1] Interestingly, Wolff (1998, pp. 146-7) found, using U.S. Survey of Consumer Finances data, that the self-employed were substantially overrepresented in the ranks of the rich in 1983, and that they gained share among the top of the distribution between 1983 and 1995.

work more than others. Her comparison of industry distributions for the two countries reveals that, compared to the self-employed in the U.S., those in Canada are considerably more likely to be in the accommodations and food service industry and less likely to be in finance, insurance, and real estate or in miscellaneous services. Based on econometric analysis of a Roy model of comparative advantage she concludes that "[t]he difference in self-employment rates for men appears to be driven in part by worker characteristics and in part by the selection mechanism at work" and that Canada's far higher immigration rate is an important demographic factor.

Schuetze (1998) compares trends in male self-employment for Canada and the U.S., and concludes that differences in personal tax rates play a role in the divergence in the trends between the countries during the 1990s.

In this paper, we do not attempt to explore the causes of the recent differences in the contribution of self-employment to net job creation between the U.S. and Canada, but instead we focus on comparing the characteristics of the growth of self-employment in the two countries. However, a major difference between the two countries lies in the strength of the 1990s recovery. Certainly, competing explanations for how self-employment should respond to economic conditions have been important in the literature on self-employment. We do examine the relationship between the rate of self-employment and overall economic conditions for Canada, where recovery has been relatively slow and the self-employment rate rising.

The comparability of existing data sources among developed countries is essential to international comparisons. Although Canada and the U. S. utilize different official definitions of self-employment and consequently highlight series that are not comparable, certain comparable information is available. Below, we discuss the alternative measures. We also address the issue of changes in the U.S. data series.

The plan of the paper is as follows. We begin in section II by discussing measurement issues. Section III presents an overview of self-employment trends, and section IV provides more detailed comparisons. Section V presents a time series analysis of the relationship between the rate of self-employment and the rate of unemployment (and the employment/population ratio), and we conclude with section VI. The Appendix provides detailed information on definitions and changes in series.

II. MEASUREMENT ISSUES

One objective of this paper is to compare the role of self-employment in job growth in the two countries for both the 1980s and 1990s recession and recovery. Different indicators suggest different choices of peaks and troughs in economic performance. Analysts of U.S. growth often combine the 1980 recession and the more severe 1982 recession. Indeed, the non-recession year of 1981 does not represent an altogether positive employment situation. While there was also a mini-recession in Canada in 1980, employment peaked in 1981, and that year is often used as a cyclical peak when employing annual data as we are here. For simplicities sake, we choose to analyze the period 1979-89 for both countries. We also analyze the period 1989-1997; the recession in both countries as measured by NBER and Statistics Canada business cycle analysts began in 1990. Furthermore, the annual average unemployment rate reached its low point in 1989 in both countries.

Recent employment trends have differed in the two countries. Employment growth has been stronger in the U.S., where total employment grew 10.4% between 1989 and 1997, compared to 6.5% in Canada. But the dramatic difference has been in the contribution of self-employment. The extent of this contribution depends on the definition used. The "official" published series for the two countries are not comparable. In the Canadian definition, incorporated working owners (with or without employees) as well as the unincorporated are considered self-employed. In the U.S. definition only the unincorporated are considered self-employed; incorporated self-employed are considered paid employees. Both definitions are useful. Previous findings indicating that incorporated and unincorporated self-employment have experienced different growth rates in each country lead us to analyze both. It is possible to construct series for both total self-employment (including the incorporated and unincorporated) and unincorporated self-employment only from the Canadian Monthly Labour Force Survey for the entire period of interest. For the U.S. data, availability is more complex. There are two sources of time series data; the regular monthly CPS, and the March Supplement to the CPS. An official series on incorporated self-employment has been produced beginning only with 1989 using the monthly Current Population Survey (CPS) data. It would be possible to push this series back but issues of lack of comparability arrise. In order to permit us to examine total self-employment (incorporated plus unincorporated) for the U.S., back to 1979 we utilize information from the CPS March Income Supplement for the period 1979-96; 1997 data are not yet available.

While Canadian data and the monthly CPS data refer to class of worker in the primary job held during the interview week, the March Income Supplement question refers to class of worker status in the longest job held over the preceding calendar year. In theory, the number of self-employed from the March data could be either higher or lower than the monthly average data for the corresponding year. A detailed discussion of the U.S. data and the extent to which the monthly data and the March supplement data provide a similar picture of self-employment for years for which both are available is provided in the Data Appendix. In general, they provide very similar pictures. In the end, for the U.S. we rely primarily on the CPS March supplement because it allows a comparable series for "total" self-employment (incorporated plus unincorporated) to be created back to 1979. We do employ the monthly CPS data in places.

Another issue with the monthly CPS data is the the effect of the January 1994 major revision on estimates of self-employment. When using the monthly CPS data the estimate of exactly how many self-employment jobs were created depends on whether or not an adjustment is made to account for the effects of the revision of the monthly CPS. It is important to note that using the unadjusted data increases the estimated growth of self-employment over the 1990s (relative to the adjusted data), since prior to the revision the CPS was undercounting employment and particularly self-employment. Hence, the use of the unadjusted data decreases the differences between the U.S. and Canada. The effect of adjusting (or not) the data on the estimated distribution of jobs by various characteristics is likely to be small. There is also a question of whether the March supplement data were affected by the revision. It is likely those data were affected to a similar extent as the monthly data but no overlap data are available to adjust them. These issues are discussed more fully in the Appendix.

III. AN OVERVIEW OF THE ROLE OF SELF-EMPLOYMENT IN CANADA AND THE UNITED STATES

The growth of total self-employment was substantial in both Canada and the U.S. over the period 1979-97, although much higher in Canada, at 74.8 percent and 25.4 percent, respectively (figure 1). Figure 2 shows the trend in the self-employment rate; the ratio of total (incorporated plus unincorporated) self-employment to total employment. The increase in the self-employment rate for Canada in the latter part of the period is striking. It rose from 13.8% in 1989 to 17.8% in 1997, after having changed little during the 1980s. There was little change in the self-employment rate in the U.S. over the entire period. It remained at around 10%, well below the rate for Canada.

There has been a tendency for an increasing share of the self-employed to incorporate, particularly in the U.S. In Canada, the share of all self-employment that is incorporated rose somewhat, from 33.2 to 36.4 percent between 1979 and 1989, and changed little during the 1990s (charts 3a and 3b). In contrast, it has risen more substantially in the U.S., from 21.8 to 25.0 percent over 1979-89 (March CPS) and from 25.6 to 29.2 percent over 1989-97 (monthly averages). The tendency to increasingly incorporate applies in the U.S. during the 1990s, but not to Canada.

Table 1 presents data on net job creation, by which we mean the net change in employment. The most striking difference is that in Canada, total self-employment accounted for the vast majority of the employment gains over the latest cycle (to date), whereas in the U.S. self-employment contributed relatively little to net employment growth. Between 1989 and 1997, self-employment (incorporated plus unincorporated) accounted for about 80 percent of the net employment gain in Canada, but very little in the U.S. (about 1 percent using adjusted monthly data versus 11 percent unadjusted). Unincorporated self-employment by itself (the U.S. definition) contributed about half of net new jobs in Canada over the latest cycle, but virtually none of net new jobs in the U.S. (-2.3 percent adjusted; 4.1 percent unadjusted). This dramatic contribution to job creation in Canada was unique to the 1990s. During the 1980s cycle there was relatively little difference between the two countries; total self-employment contributed 17 percent in Canada, and 13 percent in the U.S.

Figure 1. Growth in Total Self-Employment in the USA and Canada
(Index = 100 in 1979)

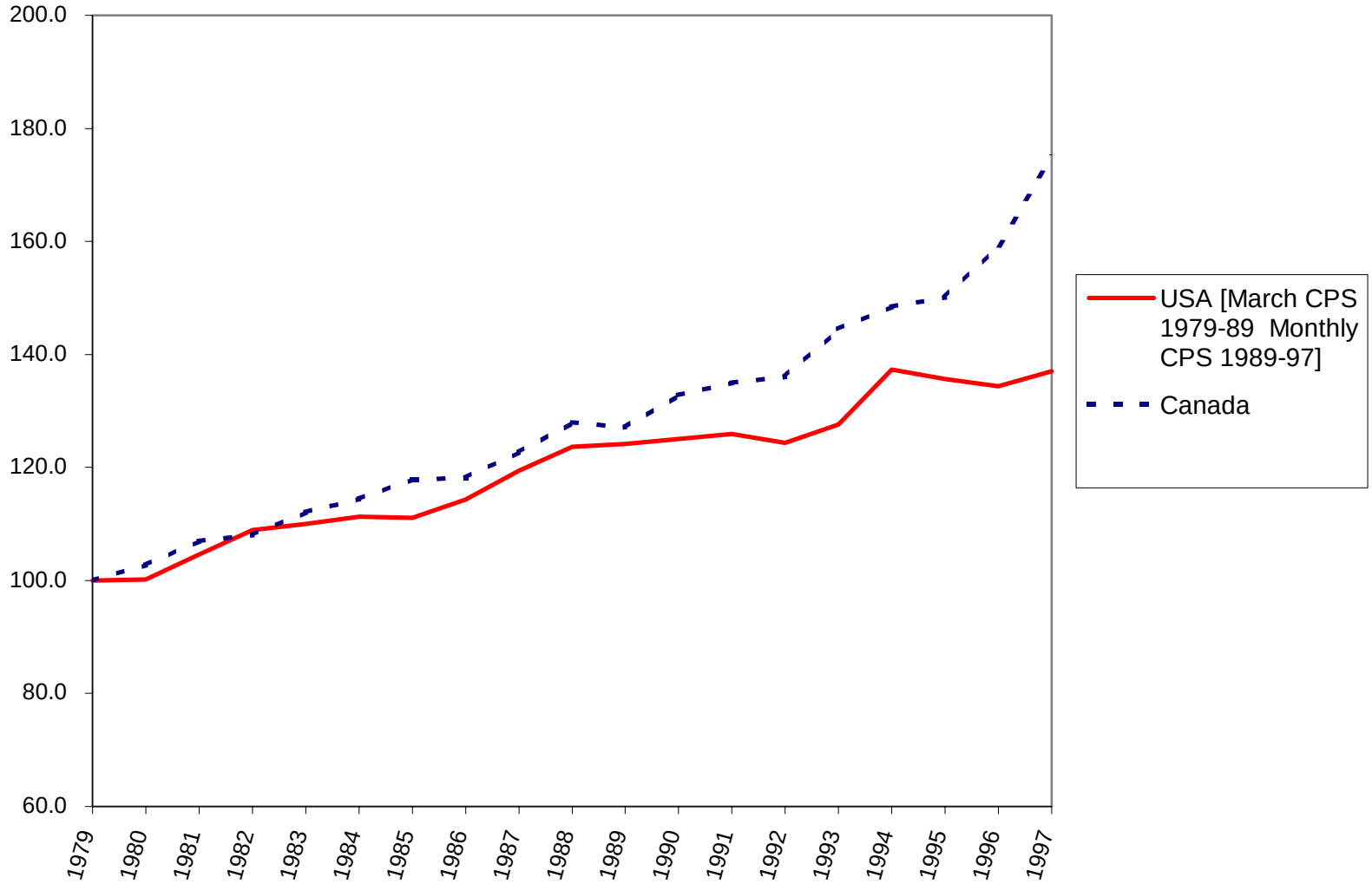


Figure 2. Total Self-Employment as a Percent of Total Employment in the US and Canada

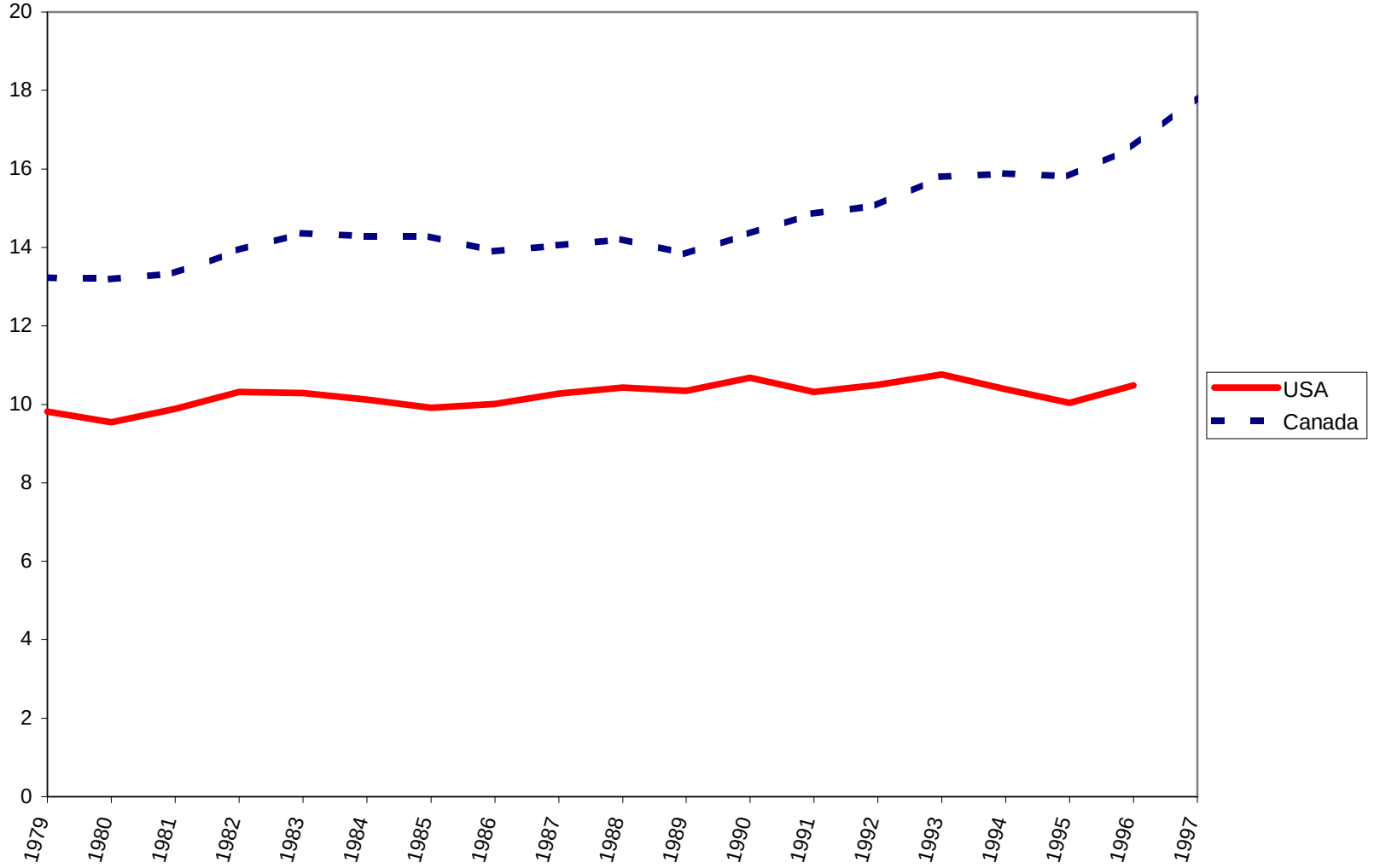


Figure 3a. Total Self-Employment and Incorporated Self-Employment, Canada

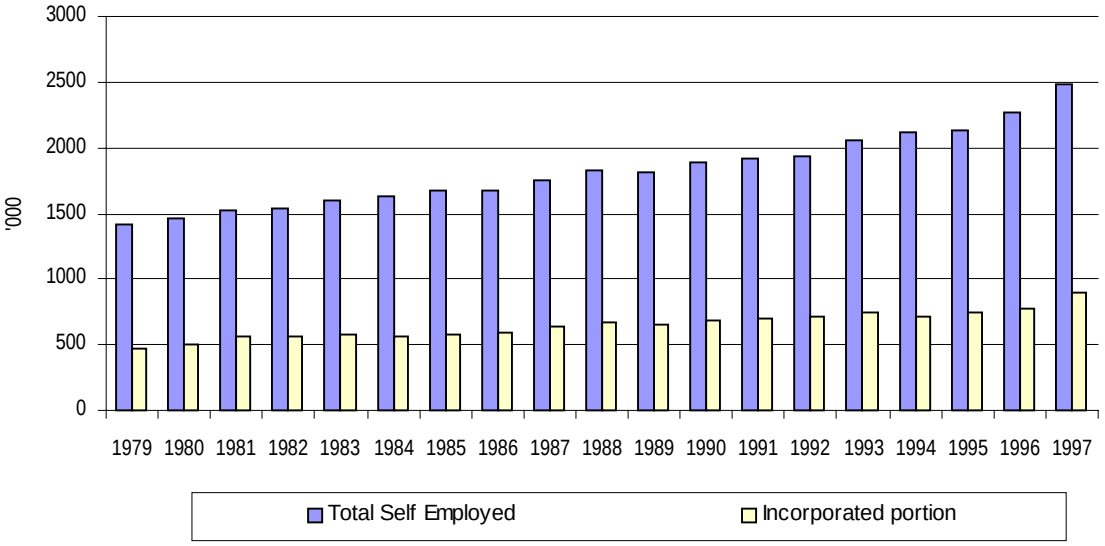
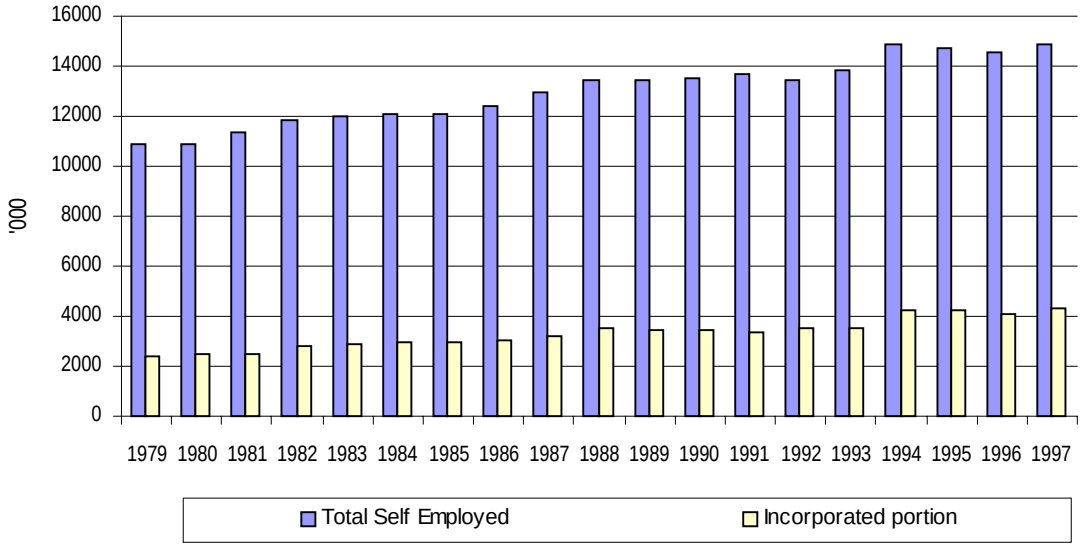


Figure 3b. Total Self-Employment and Incorporated Self-Employment, USA



Note:

1979 - 88 data from March CPS
1989 - 97 data from Monthly CPS

Another striking difference in the self-employment trends between the 1980s and 1990s cycle in Canada is the role played by the self-employed with and without employees. Most, that is 60%, of the net new self-employment jobs created during the 1980s involved entrepreneurs who themselves engaged other employees. Only 40% were "own-account" self-employed jobs. During the 1989-97 period however, fully 90% of the net new self-employment jobs in Canada were "own-account". These are workers who are employed on their own, without engaging other labour. This difference would have affected the growth in paid employment; small entrepreneurs created substantial paid employment during the 1980s, very little during the 1990s. Clearly the 1990s cycle in Canada produced not only many more self-employed jobs relative to the U.S. and relative to the 1980s, but also jobs which were different in many ways than those it produced in the 1980s.

Table 1: Contribution of Self-Employment to Total Job Growth

Total Self-Employment (Canadian Definition)

		Growth ('000)		% of Total
		Self Employment	Total Employment	Growth Accounted for by Self-Employment
U.S.	1979-89*	2,624	19,638	13.4%
	1989-96*	1,180	9,597	12.3%
	1989-97**	1,402	12,216	11.5%
Canada	1979-89	288	1,688	17.0%
	1989-97	679	855	79.4%

Unincorporated Self-Employment (U.S. Definition)

		Growth ('000)		% of Total
		Self Employment	Total Employment	Growth Accounted for by Self-Employment
U.S.	1979-89*	1,585	19,638	8.1%
	1979-89**	1,624	18,518	8.8%
	1989-97**	505	12,216	4.1%
	1989-97***	(246)	10,662	-2.3%
Canada				
	1979-89	187	1,688	11.1%
	1989-97	407	855	47.7%

* Source: CPS March Supplement
** Source: Monthly Averages, CPS, unadjusted for redesign
***Source: Monthly Averages, CPS, adjusted for redesign

IV. TYPES OF SELF-EMPLOYMENT JOBS IN THE TWO COUNTRIES

Self-employment played a much larger role in job creation in Canada than in the U.S. during the 1990s. But did Canada, with its higher self-employment job creation rate, produce significantly different types of self-employment jobs than the U.S., or than were produced in the 1980s? Such detail is necessary if we are to begin to understand the dramatic difference in the growth in self-employment, both between the two countries, and between the 1980s and 1990s.

This section focuses on the characteristics of the total self-employed (incorporated plus unincorporated) in both countries. We rely on the March CPS data for the U.S., and Canadian LFS data for this purpose. Since the March CPS data are available only to 1996, in some places we compare 1996 U.S. data with 1997 Canadian data. We also briefly examine unincorporated self-employment (the U.S. definition), using data from the monthly CPS for the U.S. Following are some of the salient observations from this analysis.

A. Self-Employment Rates in Different Economic Sectors and Demographic Groups: Do They Differ Between Canada and the US?

Data on self-employment rates and the distributions of self-employment by characteristic are shown in Appendix Tables 1 to 3 for the U.S., and 6 to 8 for Canada. Those data indicate that:

1. *The proportion of workers self-employed (incorporated plus unincorporated) has been consistently higher in Canada than the U.S. over the past twenty years, and this difference increased dramatically during the 1990s.* The self-employment rate changed little in the U.S. between 1979 and 1996 (at around 10%), and changed little in Canada during the 1980s (at around 13.5%). By 1997, however, the Canadian rate had reached 17.8%, compared to 10.5% in the U.S.

2. *This much greater tendency to be self-employed in Canada than in the U.S. in the late 1990s is widespread;* it is observed in all industry groupings, across all occupations (except management where the U.S. rate is higher), in all education and age groups. It is not the case that self-employment is dramatically higher in a few industries or occupations in Canada, this explaining the difference in the aggregate rate. The difference is widespread. It is also not the case that part-time self-employment[2] plays a larger role in Canada than the U.S.. If anything it is the opposite; 21% of self-employment was part-time in Canada in 1997, one-quarter in the U.S. (1996).

3. *The industrial concentration of self-employed jobs is very similar in the two countries.* Self-employment is particularly strong (i.e. a high self-employment rate) in agriculture and construction, and relatively absent from mining, manufacturing and public administration in both countries. Finance/Insurance and real estate, retail trade and wholesale trade industries are in the middle of the pack regarding the tendency to use self-employed workers in both countries.

[2] Less than 30 hours per week in Canada, less than 35 hours per week in the US.

4. *Due to differences in the occupational categories for the two countries, comparisons are difficult. Self-employment appears to be more concentrated in the managerial category in the U.S., however.* Self-employment rates are very high in the management/administration category in the U.S. relative to Canada. Next to farming, management had the highest self-employment rate in the U.S., while it was 6th out of 7 categories in Canada. Otherwise, the occupational concentration appears very similar in the two countries.

5. *In both Canada and the U.S., men have a greater tendency to be self-employed than women.* The proportion of male / female workers who were self-employed in the late 1990s was 13.0% / 7.6% in the U.S., and 21.1% / 13.9% in Canada. This could be the result of men being concentrated in particular industries or occupations where self-employment was very prominent. That is unlikely, however, as the male rate is higher in the vast majority of industries, occupations, age and education groups than the female rate in the same categories. The exception is the service occupations, where women are slightly more likely to be self-employed than men. Compositional differences in the employment patterns of men and women are unlikely to explain much of this greater tendency for men to be self-employed in both countries.

6. *The tendency to be self-employed (given that one is employed at all) increases quite significantly with age in both countries.* With the exception of the very young (16-19) in Canada, there is a strong age pattern. In both countries the self-employment rate is about 2.5 times greater among 55-64 than 25-34 year olds. However, the number of self-employed is concentrated in the 25-44 year old age groups, simply because that is where the bulk of the employment is located.

Other than the fact that the self-employment rates are much higher in Canada than the U.S., there does not appear to be a striking difference between the countries in the pattern of self-employment across major industry sectors, age/education groups, and between men and women. Self-employment is somewhat more likely to be a full-time pursuit in Canada than the U.S., and there may be some occupational differences, as the management occupation appears to use self-employment to a much greater degree in the U.S. than Canada. This may be a reflection of differences in the classification systems, however.

B. The Types Of Self-Employment Jobs Created During the 1990s

The previous section provided a cross-sectional view of self-employment in the late 1990s. But the most striking difference between Canada and the U.S. has been the rate of self-employment job creation during the 1990s. This section outlines the changes in the types of self-employment jobs in Canada and the U.S., and asks if there is any significant difference between the two countries. As noted, the growth of self-employment jobs was small or about zero in the U.S., depending on how they are measured, so our focus for the U.S. is on notable shifts in the distribution of self-employment. Prior to the redesign, the data are expected to understate employment of women compared to the new survey; thus, since men and women hold different types of jobs, it is important for the U.S. to consider shifts for men and women separately. Effects on other characters of the employed are expected to be smaller. Data in Appendix Tables 4 and 5 for the U.S. (based on the March CPS Supplement), and 9 and 10 for Canada indicate that:

1. *In terms of job creation, self-employment was much more important in Canada than the U.S. during the 1990s, but not during the 1980s.* Self-employment (including incorporated and unincorporated) accounted for almost 80% of the net new job creation in Canada between 1989 and 1997 but very little in the U.S. This phenomenon is largely related to events in the 1990s, however, as during the 80s there was relatively little difference between the countries. The share of jobs accounted for by self-employment between 1979 and 1989 was 13% in the U.S., 17% in Canada.

2. *The difference in the importance of full-time jobs among the self-employed in Canada versus the U.S. is difficult to assess.* The percentage of self-employment jobs that are full-time declined over the '90s in both countries. However, 70% of the net new self-employment jobs created in the 1990s were full-time in Canada, compared to an unadjusted estimate of 35% for the U.S. But part-time jobs are a type of job that was undercounted in the monthly CPS prior to the redesign, so this result for the U.S. is likely to be biased downward. Over the 1980s a difference also existed; 68% of the self-employment jobs created in the U.S. were full-time, and 86% in Canada. These data are more reliable and suggest that the jobs created in Canada may be more likely to be full-time.

3. *The services industries became a larger component of self-employment jobs in Canada, but distributions were relatively little changed in the U.S.* The services industries accounted for about half of all the net new jobs created in the U.S. over the 1989 to 1996 period, and fully 60% in Canada (1989 to 1997). The services industry includes generally higher paying sectors such as business services, and education and health services, as well as generally lower paying areas such as recreational and personal services; in Canada, it also includes food and accommodation services. In Canada, 42% of self-employment jobs were in services in 1997, compared to 35% in 1989. Over the period, about 40% of all net new self-employment jobs created in Canada were in the generally higher paying service industries, including business services (28%), such as computer services and management consulting, and education and health services (12%). The remaining services sector jobs (20% of all self-employment jobs created) were largely in personal, food and accommodation services. The U.S. did not experience the notable relative increase in the importance of services jobs for the self-employed experienced by Canada; in the U.S. 38% of self employment jobs were in services in 1996, compared to 37% in 1989. Moreover, the distribution of self-employment jobs in the overall U.S. service-producing sector did not change in major ways; the percentage in retail trade (which includes eating and drinking places) fell for both men and women, and there were small offsetting increases elsewhere.

4. *The goods-producing sector played a relatively strong role in the U.S.* The goods sector (particularly construction) in the U.S. gained share of self-employment jobs over the 1990s to a greater extent than in Canada.

5. *The occupational concentration of self-employment jobs changed differently in the two countries.* As noted earlier, the classification systems are different, but even the very broad categories suggest that the occupational characteristics of the recent experience are significantly different. In the U.S., for both men and women, the percent of the self-employed who were managers rose substantially, rose for precision production, and fell for sales workers. Over the period in Canada, there were noteworthy increases in the percentage of self-employed workers in professional/technical (from 13 to 17%) and sales

occupations (from 17 to 18%), and a decline in the percentage who were managers (from 13 to 11%). Although their share of jobs was little changed, it is also important to note that services occupations accounted for 17% of the new jobs in Canada.

6. *Almost all of the expansion in self-employment during the 1990s in both countries was among persons with some or a completed post-secondary education.* The same is true for the growth in paid employment. This is largely because the number of people with lower levels of education was declining in both countries, while the number of more highly educated was expanding at a rapid pace, and hence employment gains were concentrated among the more highly educated. The tendency to be self-employed (i.e. the self-employment rate), perhaps a better indicator of differences among groups, rose in all educational classes in Canada, and changed little among all classes in the U.S.

7. *In both countries all age groups shared in the general self-employment trends.* The self-employment rates rose in Canada in all age groups (but particularly among persons over age 55), while in the U.S. they changed relatively little between 1989 and 1996 in most age groups. Thus, the tendency to be self-employed changed little in most age groups in the U.S., and rose in all groups in Canada.

To summarize, not only was there a significant difference in the volume of total self-employment created in the two countries during the latest cycle, but the type of jobs differed across a number of important dimensions as well. The net new self-employment jobs were more likely to:

- be full-time in Canada,
- more likely to be in the good sector in the U.S., although services jobs dominated in both countries,
- more likely to be in the management/administration category in the U.S., while in the professional/technical, sales and services in Canada

In general, many of the large number of jobs created in Canada appeared to be full-time jobs in industrial sectors that are associated with a reasonable income level, such as business services. During the early 1990s the relative earnings of "own account" self-employed to paid workers changed little (at around 70%), and this is where most of the expansion in self-employment took place. The earnings of self-employed as employers fell relative to paid workers, and there was little expansion of this type of job (Statistics Canada, 1998).

Turning now to unincorporated self employment (the American definition), notice that in 1997 (here, the U.S. figures are based on CPS monthly averages) a higher percentage of self-employed women are unincorporated than of men: 71.0 percent of women and 59.8 percent of men in Canada and 77.6 % of women versus 67.3 percent of men in the U. S. A particularly small fraction of managers are in unincorporated self-employment. Although the distributions of unincorporated self-employment are somewhat different than for total self-employment, the general story is not notably altered when one focuses on unincorporated only.

V. THE ASSOCIATION BETWEEN THE SELF-EMPLOYMENT RATE AND CHANGING ECONOMIC CONDITIONS

Given the rapid increase in self-employment in Canada during a period of relatively slow economic recovery during the 1990s, we decided to focus on the association between changes in the self-employment rate and economic conditions. Does the self-employment rate rise when economic conditions and opportunities for paid employment deteriorate? This would occur if an increasing number of people are "pushed" into self-employment when economic conditions deteriorate. This section empirically investigates, at the aggregate level, the relationship between the incidence of self-employment and unemployment/full-time paid-employment for Canada. We employ cross-sectional data extracted from the monthly Labour Force Survey (LFS) of Statistics Canada. In a companion paper (Lin, Yates and Picot, 1998) 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. The findings are similar to those reported here regarding the association between the incidence of self-employment and economic conditions. But first, we turn to the literature for a brief review.

What do we know from economic theory and existing empirical evidence?

Theoretical predictions on the relationship between self-employment and labour market conditions are inconclusive; existing empirical evidence is equally inconclusive.[3] Economic theories on the determinants of self-employment can be generally categorized into two contrasting schools 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.[4] Comparing self-employment across OECD countries and over time, Acs, Audretsch and Evans (1994) conclude that the 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

[3] 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.

[4] 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.

(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 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.

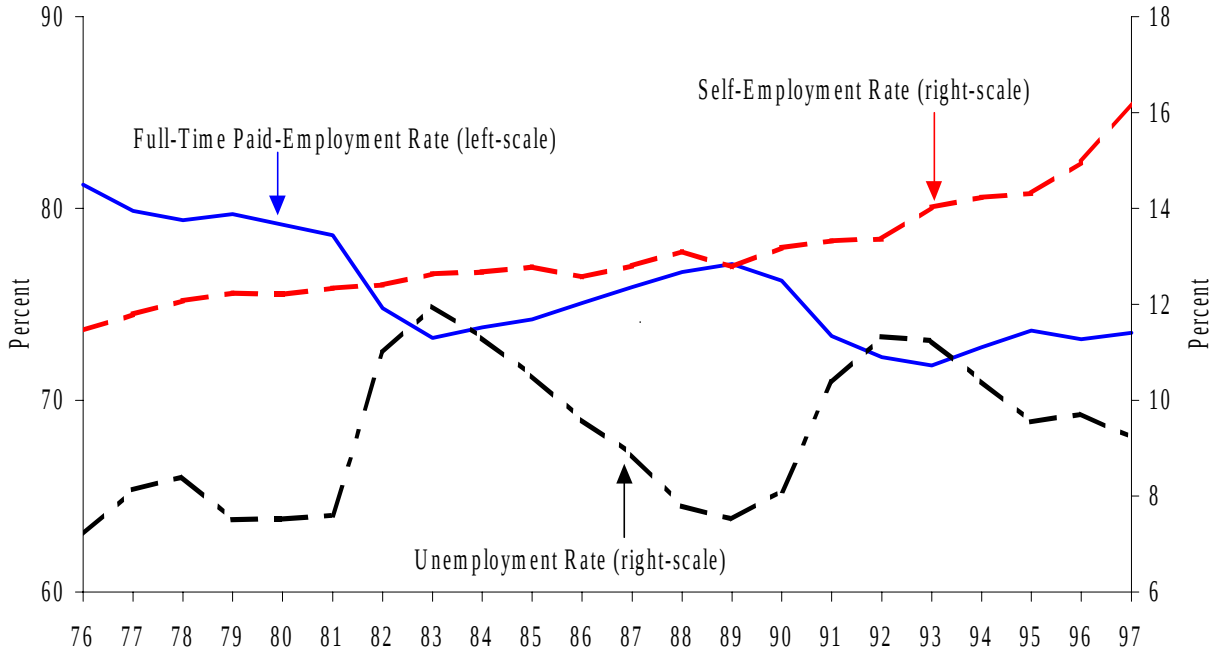
There is also evidence supporting both schools of thought. Acs, Audretsch and Evans (1994) argue that unemployment can affect self-employment both positively (as high unemployment reduces the average alternative opportunity cost of entering self-employment) and negatively (as high unemployment indicates 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.

Self-employment rate and unemployment/full-time paid-employment rate

We choose to use both the unemployment rate and the full-time paid employment rate as indicators of economic conditions. The former is an obvious and commonly used measure, and the latter provides a measure of paid employment job opportunities, which could influence the self-employment rate. The assessment of these relationships 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).

Figure 1: Self-Employment in the Labour Market Cycle in Canada, 1976-1997



Source: Labour Force Survey.

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),[5] and the monthly provincial labour force participation rate ($PARTRATE_{it}$);[6] 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).[7]

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.[8] However, to separate longer-term time trend from seasonality (month-to-month variations), we enter a dummy variable indicating time trend[9] 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 + γ_{5m}).[10]

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[5] 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.

[6] 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) changes only very slightly.

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

[8] 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.

[9] 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) changes only marginally.

[10] 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 effects or error component model. See Johnston

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.[11]

There is a weak but statistically significant negative association between the self-employment rate and the unemployment rate. A 1% change in unemployment results in a 0.056% decline in the self-employment rate for men and women combined, controlling for other variables in the equation. When the equation is estimated for men and women separately, similar results are observed (Table 5). There appears to be only an extremely weak association between changes in the unemployment rate, and changes in the self-employment rate.

Table 5: Key Variable Sample Statistics and Regression Results on Canadian 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		

Note: 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.

The combined results for men and women 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) in Canada.

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

[11] 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.

In a companion paper, we use a totally different data source, taxation data, to address this same issue, and extended it to include an analysis of the association between entries and exits to self-employment and economic conditions (Lin, Yates and Picot, 1998). The results were very similar. There was a small negative (positive) relationship between the self-employment rate and unemployment (full-time paid employment). The self-employment entry rate was also marginally negatively (positively) related to unemployment (full-time paid employment), as was the self-employment exit rate.

VI. CONCLUSION

Although the economies of Canada and the United States are closely linked, during the 1990s their labour markets have diverged in a number of ways. The unemployment gap between the two countries increased (with lower unemployment in the U.S.), and income inequality and poverty has been more of an issue in the United States than Canada. Many of these differences have been captured in recent books (eg Card and Freeman, 1993 and Freeman, 1994). This paper addresses another major difference, the types of jobs created over the latest business cycle. In the United States, most jobs created were full-time paid jobs, whereas in Canada most employment growth has been among self-employment and part-time paid jobs (Manser and Picot, 1997). This has resulted in considerable focus on self-employment in Canada in recent years.

Arriving at comparable data on trends for the two countries is a challenging task, given the differences in the official definition of self-employment, and more importantly, the changes to the U.S. CPS in 1994. It appears, however, as if self-employment rates have been higher in Canada than the U.S. for some time, and that this difference has been accentuated during the 1990s. Canadians, it seems, have been more likely to be self-employed entrepreneurs than their American counterparts for some time. The fact that self-employment is more likely to be a full-time pursuit in Canada simply increases the importance of this difference. And this greater propensity for Canadian workers to be self-employed is widespread. It is observed in virtually all industrial sectors and among most types of workers. Regarding job growth in the 1990s, the new self-employment jobs in Canada were more likely to be full-time than in the U.S., and many were in the relatively high paying business, health and education service sectors. Self-employment growth was more likely to be in management/administration in the U.S., more likely to be professional, technical or in sales and services in Canada.

Why would job creation have been so heavily self-employment dominated in Canada, while being concentrated in the paid job sector in the U.S.? This paper does not focus directly on this issue, although we do look at the association between the self-employment rate and economic conditions in Canada. This analysis is dominated by cyclical variation, and while there is substantial cyclical variation in unemployment and the paid-employment to population ratio, there is relatively little in the self-employment rate. Hence, one observes only a very weak (and negative) association between changes in economic conditions and the self-employment rate in Canada. Analysis based on totally different data set (taxation data) provides similar results, as does an analysis of entry to and exit from self-employment, as reported in a companion paper. Furthermore, unemployment was as high during the 1980s cycle in Canada as during the 1990s cycle, but this did not result in the rapid self-employment growth during the 1980s that was observed recently. These results would suggest that the slower economic growth in Canada during the 1990s (compared to the 1980s) would be an unlikely candidate to explain all of the

difference between the two decades[12] (i.e. the much more rapid self-employment growth in the 1990s), and by extension perhaps, between the two countries during the 1990s. While both the "push" and "pull" theories are no doubt at work, these results taken together suggest that the "push" does not dominate the "pull" hypothesis.

There may be other causes of the differences between the countries. More rapid growth in personal tax rates in Canada could provide some incentive for Canadians to be self-employed, as they could shelter more income from taxes as a self-employed person than as a paid employee. This was explored in Schuetze, 1997. More rapid growth in payroll taxes, and the fact that they have become a major policy issue in Canada recently, could act as a disincentive for firms to produce paid jobs, turning instead to contracting-out and other methods of engaging labour that might result in increased self-employment. It is not clear how important this factor would be, however, as payroll taxes are higher in the United States than in Canada, although they have increased significantly in Canada during the past two decades.

There may be numerous other factors that affect self-employment levels including: technological change that results in reduced operating costs and increased production opportunities for small business, especially home-based business; increased contracting-out by employers; changes in the attractiveness to U.S. workers of taking paid-employment jobs that offer health benefits; differences in immigration rates and incentives for immigrants to enter self-employment; difference in interest rates affecting the ability of entrepreneurs to finance their business; and increasing entrepreneurial spirit perhaps associated with the preference to be one's own boss. Without further analysis it is difficult to see why at least the first two of these factors in particular would play a more prominent role in Canada than the U.S., however, given the similarities in the economies and demographics. Certainly, the industry and demographic changes that we have examined in this paper do not appear able to account for the major differences in the recent self-employment experiences of Canada and the U.S. Thus, while some studies have started to focus on the differences that have evolved between the countries in the 1990s, much remains to be done.

[12] The statistical analysis behind this conclusion is dominated by cyclical variation. It may be that structural (i.e. longer-term) changes in economic conditions many influence self-employment rates while shorter-term cyclical variation does not. This would not be detected in this statistical analysis. This should be detectable with logged economic variables, however, and when such logs were used they were not significant in the analysis.

DATA APPENDIX

United States

Information on self-employment in the U.S. is available both from the monthly Current Population Survey (CPS) (which we term the "basic CPS"), the survey on which the monthly unemployment rate series are constructed, as well as from retrospective annual information collected each March for the preceding calendar year in the March Income Supplement to the CPS.

A major revision of the basic CPS, which included a revised questionnaire (question wordings and sequencing) and collection methodology (a switch from paper and pencil data collection to computer assisted data collection), was put into place in January 1994. As is so frequently the case, improvement in current information from this survey poses some problems for analysis of changes over time. Polivka and Miller (1994) calculated adjustment factors for a number of CPS series using information from a parallel survey which collected data using the new procedures from July 1992 through December 1993 and using the unrevised procedures from January through May 1994. They found (p. 30) that ". . . the new methodology significantly raised the employment-to-population ratio." They provided adjustment factors for a number of other series as well. It is particularly important to recognize the effect of the revision in studies focusing on aspects of employment where the changes were large, such as in part-time employment.

The March supplement questionnaire was not explicitly revised. However, because it too was changed to computer-assisted interviewing at the same time as the basic CPS and is administered following the revised basic questionnaire, there may also be a redesign effect on the March data. No overlap survey was conducted for the March supplement so that it is not possible to construct estimates of the impact of the revision.

Self-Employment

Within self-employment, it is possible to distinguish between employer and own account. The BLS only partially follows the standards set by the International Labor Organization. In the CPS, during the period examined in this paper, employed persons have been asked: "Were you employed by government, by a private company, a nonprofit organization, or were you self-employed (or working in a family business). Persons who respond that they are self-employed are asked: "Is this business incorporated?" Persons who respond "yes" are classified by BLS as wage and salary workers, on the basis that, legally, they are the employees of their own businesses. For 1989 and later years, BLS has tabulated the number of incorporated self-employed using the question on an incorporated business. To extend the U.S. series for incorporated self-employment based on the monthly data back as far as 1979 leads to issues of comparability.

There were few changes affecting the self-employment sequence of questions in the 1994 revision, and Bregger (1996) termed the effect of the redesign on this series "quite limited." However, the beginning of the survey was changed. The new approach to asking about jobs identifies more employment, as noted above, and the distribution of this new employment among class of worker categories may well be different than for employment found formerly. In addition, the order of the industry and occupation questions changed, so that the information on

class of worker is now obtained first. Research indicates that the totality of the questionnaire changes as well as the collection methodology changes did have a small but significant effect on the number of self-employed workers. Polivka and Miller calculated adjustment factors for self-employment which would increase the estimated ratio of the self-employed to total employment for the pre-revision years by about 6 percent. Thus, adjusted figures show the change in self-employment accounting for a smaller part of the gain in employment during the 1990s than shown by unadjusted figures, as can be seen in Table 1.

Polivka and Miller also provide adjustment factors for employment in an industry as a percentage of the employed for nine major industries (but no adjustment factors are provided for cross-tabulations, such as class of worker by industry). The adjustment factors for industry are small although a few are statistically significant. The effect of the redesign on the sectoral estimates reported here is ignored.

Comparing the estimates of the contribution of the growth in self employment to overall employment growth over the '80s and the '90s from the March Income Supplement and the monthly CPS suggests that the March estimates were impacted by the CPS redesign to a similar extent as the monthly estimates. Over the '80s, a period of no major revision, the estimate of the percent of total employment growth accounted for by unincorporated self-employment from the monthly CPS was 8.8 percent, and that from the March data was 8.1 percent. We do not compare these two series over the '90s because there is a problem in the March supplement variables for incorporated and unincorporated self-employment for 1995 and 1996. The unadjusted estimate of the percent of total growth accounted for by total self-employment for 1989-96 from the monthly CPS is 11.9 percent, quite close to the corresponding estimate from the March supplement of 12.3 percent. In contrast, the adjusted estimate from the monthly CPS for 1989-96 is -3.1 percent. Thus, the similarity of the CPS monthly and March supplement series for both periods suggests that using unadjusted March supplement series will overstate the change over the 1990s.

Examining recent year-to-year changes in total self-employment from the basic/monthly CPS and the March Income Supplement does not help to understand the impact of the redesign. The year-to-year movements in the two series are quite erratic.

Table A-1: Annual Change in Self-Employment, U.S. (in thousands)

	Monthly av., total	Monthly Av., unincorporated	March Suppl., total	March Suppl., unincorporated
1989-90	108	89	502	418
1990-91	93	177	-438	-407
1991-92	-174	-314	288	188
1992-93	355	319	592	194
1993-94	1060	369	-285	-263
1994-95	-188	-166	-339	n.a.
1995-96	-137	7	860	n.a.
1996-97	285	24	--	--

Part-Time Employment and Jobs

Polivka and Miller conclude (p. 32) that ". . . the unrevised [basic] CPS either was not completely enumerating individuals who were working part time or was misclassifying them." The U.S. desired part-time concept refers to the usual hours of workers on all their jobs held, with workers with usual hours less than 35 being classified as part-time. In the revision, the CPS was changed so that now all respondents are asked first how many hours they usually work, and then are asked in subsequent questions about their actual hours. The revision eliminated a misclassification caused by the procedure in the unrevised CPS of only asking individuals who actually worked less than 35 hours in the reference week how many hours they usually worked. Thus, prior to 1994 all individuals who were at work 35 hours or more were automatically classified as full time, regardless of how many hours they usually worked. Perhaps more importantly, the more complete enumeration increased the estimate of part-time workers. Polivka and Miller estimate that the number of part-time workers as a percentage of the employed would have been about 10 percent higher prior to the revision. Thus, using adjusted figures shows part-time employment accounting for a considerably smaller share of the increase in employment in the recent period than do unadjusted figures.

In the CPS, a person is classified as full-time if he or she held two or more part-time jobs with different employers that provide 35 hours or more of work. Overall, the incidence of multiple job-holding in the U.S. trended upwards through the 1980s, rising from 4.9 percent in May 1979 to 6.2 percent in May 1989.[13] In 1996 this rate was also at 6.2 percent. This suggests that figures for the percent of the 1990s increase in jobs accounted for by part-time jobs would be unlikely to differ substantially from the percent of the increase in employment accounted for by part-time employment.[14] However, the part of the 1980s increase in jobs accounted for by part-time jobs may be somewhat higher than the corresponding figure for employment shown here from the household survey.

Canada

Self-Employment

There are also differences in the manner in which the self-employed are determined in the American CPS and the Canadian LFS that would tend to increase the share of workers classified as self-employed in Canada relative to the U.S. In the LFS workers are asked questions about their main job or business, including “Were you an employee or self employed?” If self-employed, the respondent is further asked whether they had an incorporated business, and whether they had any employees. The self-employed in Canada can then be classified as incorporated with or without employees, and unincorporated with or without employees. This is different than the published U.S. figures where incorporated working owners with or without

[13] Since the revision, the focus is on obtaining a more precise measure of actual hours at the main job, and multiple jobholders are asked separately about hours worked at their other job or jobs. Prior to the redesign the questions on multiple job holding were asked infrequently.

[14] In 1995, 915,000 persons had full-time hours but usually were part-time on both their primary and secondary jobs, and another 1,091,000 persons with full-time hours reported at least one part-time job but said hours varied on both their primary and secondary jobs. If both groups were added to part-time to be consistent with the Canadian definition of part-time based on hours on the main job, we would increase the measure of part-time by 8.6%.

employees are deemed to be employees, not self-employed. In 1996, almost one-third (32%) of the self-employed in Canada had incorporated businesses. These people would have been classified as paid employees in the U.S. figures. Thus, levels of self-employment are substantially overestimated in Canada relative to the U.S. in the published data. The Canadian data are adjusted in places to overcome this comparability problem, as noted in the text.

Part-Time Employment and Jobs

In the Canadian LFS up to 1996, a holder of multiple part-time jobs could be classified as having full-time employment if total hours worked per week exceeded 29. The usual hours worked in all jobs were used to classify part-time or full-time status. Persons working less than 30 hours per week (not 35 as in the U.S.) are classified as part-time. As in the U.S. prior to the revision, part-time/full-time referred to the status of the worker, not of the jobs held by the worker. This was altered in a major Labour Force Survey revision implemented in January of 1997.

Currently, a worker's part-time/full-time status is determined on the basis of the main job. Persons working less than 30 hours per week in the main job are classified as part-time. This revision was pushed back in the data, so that in this paper part-time/full-time status is determined for both expansions in this way. This tends to increase slightly the proportion of workers classified as part-time compared to the earlier method of classification. The part-time employment rate was 0.7 percentage points higher in 1994 due to this revision. (see "Moving with the Times, Introducing Change to the LFS", Household Surveys Division, Statistics Canada)

Thus, compared to the U.S. part-time numbers utilized in this paper, which are based on hours worked on all jobs, this revised Canadian method of classifying part-time/full-time would tend to increase slightly part-time employment in Canada relative to that in the U.S. On the other hand, using the cut-off of 30 hours in Canada rather than 35 in the U.S would tend to decrease part-time employment in Canada relative to the U.S.

These differences (and others discussed here) refer to differences in levels. Most of the paper, however, focuses on trends and change in levels over various periods. The trends may be comparable, even if the levels are not. The measurement differences discussed here would have some effect on the share of the employment gain accounted for by, say, part-time employment, but it is not clear how much.

Appendix Table 1: Self-Employment Rate and Percent Distribution of Total Self-Employment in the United States by selected characteristics, CPS March Supplement, 1979 [Canadian Definition] (in thousands)

Category	Percent Dist - Self-Employment			Percent Dist - Total Employment			Self-Employment Rate*		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**9.8**	**13.2**	**5.5**
16 - 19 years	1.40	1.42	1.34	11.19	10.48	12.09	1.2	1.8	0.6
20 - 24 years	5.05	5.00	5.18	15.09	14.36	16.02	3.3	4.6	1.8
25 - 34 years	21.21	20.59	23.06	25.51	25.35	25.71	8.2	10.7	5.0
35 - 44 years	24.71	24.22	26.18	18.57	18.50	18.65	13.1	17.3	7.8
45 - 54 years	22.69	23.00	21.77	15.79	16.32	15.12	14.1	18.6	8.0
55 - 64 years	17.06	17.66	15.27	10.77	11.59	9.74	15.5	20.1	8.7
65 years and over	7.89	8.12	7.19	3.08	3.41	2.66	25.1	31.4	15.0
Industry									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**9.8**	**13.2**	**5.5**
Agriculture	15.74	18.67	6.93	3.49	4.84	1.79	44.2	50.9	21.5
Nonagricultural industries	84.26	81.33	93.07	96.51	95.16	98.21	8.6	11.3	5.3
Mining	0.31	0.39	0.07	0.82	1.28	0.23	3.7	4.0	1.6
Construction	14.27	18.41	1.85	6.70	11.08	1.18	20.9	21.9	8.8
Manufacturing	5.56	6.31	3.30	22.05	26.47	16.48	2.5	3.1	1.1
Transportation & Public Utilities	3.19	3.78	1.44	6.11	8.23	3.45	5.1	6.1	2.3
Wholesale Trade	4.55	5.40	2.02	3.72	4.74	2.43	12.0	15.0	4.6
Retail Trade	19.81	15.93	31.42	17.12	13.91	21.17	11.4	15.1	8.2
Finance, Insurance & Real Estate	5.59	5.53	5.79	5.60	4.04	7.58	9.8	18.1	4.2
Services	30.98	25.58	47.18	29.08	19.46	41.20	10.5	17.3	6.4
Public Administration	-	-	-	5.31	5.94	4.50	0.0	0.0	0.0
Occupation									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**9.8**	**13.2**	**5.5**
Managers and administrators, except farm	28.48	30.23	23.24	10.42	13.42	6.64	26.8	29.7	19.4
Professionals and Technicians	14.67	14.93	13.88	15.37	14.81	16.07	9.4	13.3	4.8
Sales workers	9.67	8.31	13.73	6.12	5.63	6.75	15.5	19.5	11.3
Clerical	3.28	0.92	10.37	18.72	6.38	34.28	1.7	1.9	1.7
Services workers	8.54	2.66	26.16	14.23	9.21	20.56	5.9	3.8	7.1
Crafts	14.22	18.17	2.36	12.66	21.34	1.71	11.0	11.2	7.7
Operators & Labourers	7.60	8.47	5.00	19.77	25.40	12.67	3.8	4.4	2.2
Farming, Forestry, Fishing,									
Trapping and Mining	13.54	16.30	5.25	2.71	3.82	1.32	49.0	56.4	22.1
Education									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**9.8**	**13.2**	**5.5**
Less than High School Degree	21.96	23.07	18.64	23.36	25.63	20.50	9.2	11.9	5.0
High School Diploma	34.03	31.53	41.53	36.18	32.46	40.88	9.2	12.8	5.6
Some post-secondary									
or diploma / certificate	19.33	18.62	21.49	22.65	22.23	23.18	8.4	11.0	5.1
University Graduate	24.67	26.78	18.34	17.81	19.69	15.44	13.6	18.0	6.6
Full- or Part-time Status									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**9.8**	**13.2**	**5.5**
Full-time workers	79.79	87.76	55.87	79.98	88.71	68.98	9.8	13.1	4.5
Part-time workers	20.21	12.24	44.13	20.02	11.29	31.02	9.9	14.3	7.9

* Ratio of self-employment to total employment.

Appendix Table 2: Self-Employment Rate and Percent Distribution of Total Self-Employment in the United States by selected characteristics, CPS March Supplement, 1989 [Canadian Definition] (in thousands)

Category	Percent Dist - Self-Employment			Percent Dist - Total Employment			Self-Employment Rate*		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.3**	**13.3**	**6.9**
16 - 19 years	0.91	0.96	0.82	7.96	7.59	8.38	1.2	1.7	0.7
20 - 24 years	3.36	3.36	3.35	12.08	11.66	12.57	2.9	3.8	1.8
25 - 34 years	21.36	20.47	23.37	28.53	28.71	28.31	7.7	9.5	5.7
35 - 44 years	28.31	28.05	28.91	23.66	23.52	23.83	12.4	15.9	8.4
45 - 54 years	22.24	22.02	22.75	15.34	15.37	15.30	15.0	19.1	10.2
55 - 64 years	16.19	16.76	14.90	9.39	9.85	8.85	17.8	22.7	11.6
65 years and over	7.62	8.39	5.89	3.05	3.30	2.76	25.9	34.0	14.7
Industry									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.3**	**13.3**	**6.9**
Agriculture	12.06	14.73	6.07	2.97	4.30	1.43	42.0	45.7	29.3
Nonagricultural industries	87.94	85.27	93.93	97.03	95.70	98.57	9.4	11.9	6.6
Mining	0.39	0.56	0.01	0.59	0.92	0.20	6.8	8.1	0.3
Construction	13.82	18.61	3.07	6.81	11.48	1.40	21.0	21.6	15.1
Manufacturing	5.10	5.45	4.33	17.69	21.60	13.17	3.0	3.4	2.3
Transportation & Public Utilities	3.22	4.02	1.42	6.57	8.69	4.12	5.1	6.2	2.4
Wholesale Trade	4.65	5.56	2.60	3.81	5.01	2.43	12.6	14.8	7.4
Retail Trade	16.67	14.13	22.35	17.35	15.00	20.08	9.9	12.6	7.7
Finance, Insurance & Real Estate	6.69	6.82	6.42	6.68	5.15	8.46	10.4	17.6	5.2
Services	37.41	30.13	53.72	32.80	22.78	44.39	11.8	17.6	8.3
Public Administration	-	-	-	4.73	5.06	4.34	0.0	0.0	0.0
Occupation									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.4**	**13.4**	**6.9**
Managers	19.97	22.14	15.12	11.95	13.17	10.55	17.3	22.5	9.9
Professionals	14.16	14.48	13.43	12.83	11.48	14.39	11.4	16.9	6.4
Technicians	0.80	0.88	0.61	3.18	2.99	3.41	2.6	3.9	1.2
Sales workers	20.03	19.28	21.71	12.42	11.13	13.91	16.7	23.2	10.8
Administrative support	4.07	0.74	11.54	15.88	5.91	27.41	2.7	1.7	2.9
Services workers	10.11	2.77	26.57	13.88	10.10	18.25	7.5	3.7	10.0
Precision production, craft, and repair	14.45	19.66	2.76	11.46	19.49	2.18	13.1	13.5	8.7
Operators, fabricators, and laborers	5.02	5.83	3.20	15.37	21.05	8.80	3.4	3.7	2.5
Farming and related occupations	11.40	14.22	5.06	3.02	4.69	1.09	39.1	40.6	32.0
Education									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.3**	**13.3**	**6.9**
Less than High School Degree	13.99	14.82	12.13	16.21	18.29	13.79	8.9	10.8	6.1
High School Diploma	33.37	31.39	37.81	35.40	33.49	37.61	9.8	12.5	6.9
Some post-secondary									
or diploma / certificate	23.12	22.57	24.35	25.52	24.00	27.28	9.4	12.5	6.1
University Graduate	29.52	31.22	25.71	22.87	24.21	21.32	13.4	17.2	8.3
Full- or Part-time Status									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.3**	**13.3**	**6.9**
Full-time workers	77.57	85.14	60.59	79.51	87.28	70.52	10.1	13.0	5.9
Part-time workers	22.43	14.86	39.41	20.49	12.72	29.48	11.3	15.6	9.2

* Ratio of self-employment to total employment.

Appendix Table 3: Self-Employment Rate and Percent Distribution of Total Self-Employment in the United States by selected characteristics, CPS March Supplement, 1996 [Canadian Definition] (in thousands)

Category	Percent Dist - Self-Employment			Percent Dist- Total Employment			Self-Employment Rate*		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.5**	**13.0**	**7.6**
16 - 19 years	0.91	0.99	0.77	7.27	6.96	7.62	1.3	1.9	0.8
20 - 24 years	3.13	3.13	3.13	10.58	10.60	10.57	3.1	3.8	2.3
25 - 34 years	17.01	15.81	19.34	24.92	25.10	24.71	7.2	8.2	6.0
35 - 44 years	29.12	29.19	28.98	26.31	26.26	26.36	11.6	14.5	8.4
45 - 54 years	25.92	25.68	26.38	18.90	18.65	19.18	14.4	17.9	10.5
55 - 64 years	15.30	15.58	14.75	8.92	9.05	8.78	18.0	22.4	12.8
65 years and over	8.60	9.62	6.65	3.10	3.38	2.78	29.1	37.0	18.2
Industry									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.5**	**13.0**	**7.6**
Agriculture	10.76	12.45	7.49	2.65	3.84	1.30	42.5	42.2	43.8
Nonagricultural industries	89.24	87.55	92.51	97.35	96.16	98.70	9.6	11.9	7.1
Mining	0.20	0.30	0.01	0.47	0.72	0.18	4.4	5.3	0.3
Construction	14.30	19.68	3.90	6.60	11.20	1.39	22.7	22.9	21.3
Manufacturing	5.72	5.79	5.58	16.11	20.14	11.55	3.7	3.7	3.7
Transportation & Public Utilities	4.49	5.53	2.49	6.80	9.32	3.96	6.9	7.7	4.8
Wholesale Trade	4.52	5.27	3.07	3.64	4.78	2.36	13.0	14.4	9.9
Retail Trade	15.16	12.94	19.43	17.71	15.96	19.68	9.0	10.6	7.5
Finance, Insurance & Real Estate	6.65	6.78	6.39	6.18	4.91	7.61	11.3	18.0	6.4
Services	38.20	31.25	51.64	35.62	24.79	47.85	11.2	16.4	8.2
Public Administration	-	-	-	4.23	4.34	4.10	0.0	0.0	0.0
Occupation									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.5**	**13.0**	**7.6**
Managers	22.94	24.57	19.79	13.48	13.98	12.93	17.8	22.9	11.7
Professionals	14.24	13.62	15.45	14.19	12.22	16.41	10.5	14.5	7.2
Technicians	0.81	0.81	0.80	3.18	2.76	3.65	2.7	3.8	1.7
Sales workers	18.74	18.37	19.45	12.37	11.05	13.85	15.9	21.7	10.7
Administrative support	4.46	0.81	11.50	14.16	5.70	23.70	3.3	1.9	3.7
Services workers	9.23	2.91	21.45	14.32	10.69	18.41	6.8	3.6	8.9
Precision production, craft, and repair	14.48	20.49	2.86	10.89	18.73	2.04	14.0	14.3	10.6
Operators, fabricators, and laborers	5.17	6.50	2.60	14.72	20.70	7.98	3.7	4.1	2.5
Farming and related occupations	9.93	11.92	6.08	2.69	4.18	1.02	38.7	37.2	45.3
Education									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.5**	**13.0**	**7.6**
Less than High School Degree	10.86	12.08	8.49	13.60	15.62	11.32	8.4	10.1	5.7
High School Diploma	30.87	30.02	32.50	32.69	32.00	33.46	9.9	12.2	7.4
Some post-secondary									
or diploma / certificate	26.20	24.28	29.92	28.67	26.83	30.74	9.6	11.8	7.4
University Graduate	32.08	33.62	29.09	25.04	25.54	24.48	13.4	17.1	9.0
Full- or Part-time Status									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**10.5**	**13.0**	**7.6**
Full-time workers	74.12	83.45	56.06	79.50	86.85	71.19	9.8	12.5	6.0
Part-time workers	25.88	16.55	43.94	20.50	13.15	28.81	13.2	16.4	11.6

*Ratio of self-employment to total employment.

Appendix Table 4: Growth in Total Self-Employment in U.S. by selected characteristics, CPS March Supplement, 1979 to 1989 [Canadian Definition] (in thousands)

Category	Number - Self-Employment			Number - Total Employment			Ratio to Total Employment		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**2,624**	**1,180**	**1,444**	**19,638**	**8,201**	**11,436**	**13.4**	**14.4**	**12.6**
16 - 19 years	(29)	(26)	(3)	(2,022)	(1,161)	(860)	1.4	2.3	0.3
20 - 24 years	(96)	(94)	(1)	(967)	(710)	(256)	9.9	13.3	0.5
25 - 34 years	578	232	346	8,948	4,432	4,516	6.5	5.2	7.7
35 - 44 years	1,135	643	492	10,296	5,033	5,263	11.0	12.8	9.3
45 - 54 years	535	179	355	2,513	676	1,837	21.3	26.5	19.3
55 - 64 years	330	124	205	305	(269)	574	108.1	-46.2	35.8
65 years and over	171	121	50	564	200	363	30.4	60.7	13.7
Industry									
Total	**2,624**	**1,180**	**1,444**	**19,638**	**8,201**	**11,436**	**13.4**	**14.4**	**12.6**
Agriculture	(83)	(148)	64	4	18	(14)	-1996.5	-827.2	-470.9
Nonagricultural industries	2,707	1,327	1,380	19,633	8,183	11,450	13.8	16.2	12.0
Mining	19	20	(1)	(139)	(148)	9	-13.7	-13.7	-14.9
Construction	313	236	77	1,459	1,189	270	21.4	19.8	28.6
Manufacturing	84	(6)	91	(1,357)	(1,239)	(118)	-6.2	0.5	-76.9
Transportation & Public Utilities	87	67	20	1,797	1,000	797	4.8	6.7	2.5
Wholesale Trade	132	79	53	856	576	280	15.4	13.7	19.0
Retail Trade	96	20	76	3,662	1,904	1,759	2.6	1.0	4.3
Finance, Insurance & Real Estate	295	186	110	2,511	1,113	1,398	11.8	16.7	7.8
Services	1,681	727	954	10,561	3,921	6,640	15.9	18.5	14.4
Public Administration	-	-	-	284	(131)	415	0.0	0.0	0.0
Education									
Total	**2,624**	**1,180**	**1,444**	**19,638**	**8,201**	**11,436**	**13.4**	**14.4**	**12.6**
Less than High School Degree	(500)	(498)	(2)	(4,742)	(3,032)	(1,710)	10.5	16.4	0.1
High School Diploma	804	359	445	6,086	3,387	2,698	13.2	10.6	16.5
Some post-secondary or diploma / certificate	**1,018**	**588**	**430**	**8,190**	**3,062**	**5,128**	**12.4**	**19.2**	**8.4**
University Graduate	1,302	730	572	10,104	4,784	5,320	12.9	15.3	10.7
Full- or Part-time Status									
Total	**2,624**	**1,180**	**1,444**	**19,638**	**8,201**	**11,436**	**13.4**	**14.4**	**12.6**
Full-time workers	1,794	790	1,003	15,093	6,273	8,821	11.9	12.6	11.4
Part-time workers	830	390	441	4,544	1,928	2,616	18.3	20.2	16.8
Missing	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!

Appendix Table 5: Growth in Total Self-Employment in U.S. by selected characteristics, CPS March Supplement, 1989 to 1996 [Canadian Definition] (in thousand)

Category	Number - Self-Employment			Number - Total Employment			Ratio to Total Employment		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**1,180**	**340**	**839**	**9,597**	**4,293**	**5,304**	**12.3**	**7.9**	**15.8**
16 - 19 years	11	6	5	(205)	(149)	(56)	-5.3	-4.2	-8.2
20 - 24 years	7	(10)	17	(939)	(289)	(650)	-0.7	3.6	-2.6
25 - 34 years	(387)	(381)	(6)	(2,315)	(1,449)	(866)	16.7	26.3	0.6
35 - 44 years	452	206	246	5,973	3,045	2,928	7.6	6.7	8.4
45 - 54 years	802	430	372	6,465	3,100	3,365	12.4	13.9	11.1
55 - 64 years	61	(56)	117	251	(170)	422	24.1	33.2	27.8
65 years and over	234	147	87	367	207	160	63.8	71.1	54.5
Industry									
Total	**1,180**	**340**	**839**	**9,597**	**4,293**	**5,304**	**12.3**	**7.9**	**15.8**
Agriculture	(48)	(170)	122	(160)	(155)	(5)	30.1	110.0	-2256.0
Nonagricultural industries	1,228	510	717	9,757	4,448	5,309	12.6	11.5	13.5
Mining	(24)	(23)	(0)	(112)	(109)	(4)	21.0	21.6	1.7
Construction	234	166	67	354	284	70	66.0	58.6	95.6
Manufacturing	151	52	99	(516)	(154)	(362)	-29.2	-33.9	-27.3
Transportation & Public Utilities	225	160	66	955	838	117	23.6	19.0	56.3
Wholesale Trade	36	(9)	45	129	43	86	28.4	-20.1	52.8
Retail Trade	(25)	(67)	41	2,166	1,359	808	-1.2	-4.9	5.1
Finance, Insurance & Real Estate	72	20	52	(70)	38	(109)	-102.9	52.3	-48.4
Services	558	211	347	7,098	2,468	4,630	7.9	8.5	7.5
Public Administration	-	-	-	(246)	(319)	72	0.0	0.0	0.0
Occupation									
Total	**1,180**	**340**	**839**	**9,693**	**4,367**	**5,326**	**12.2**	**7.8**	**15.8**
Managers	672	311	361	3,301	1,179	2,122	20.4	26.4	17.0
Professionals	180	(34)	214	3,140	1,045	2,095	5.7	-3.3	10.2
Technicians	11	(4)	15	299	(42)	341	3.6	9.3	4.3
Sales workers	47	(23)	69	1,131	428	703	4.1	-5.3	9.9
Administrative support	104	9	95	(876)	103	(979)	-11.9	9.0	-9.7
Services workers	(10)	23	(33)	1,951	876	1,075	-0.5	2.6	-3.0
Precision production, craft, and repair	175	147	28	314	288	26	55.8	51.2	106.6
Operators, fabricators, and laborers	81	84	(3)	593	663	(71)	13.7	12.7	4.4
Farming and related occupations	(81)	(174)	94	(160)	(173)	13	50.2	100.5	728.6
Education									
Total	**1,180**	**340**	**839**	**9,597**	**4,293**	**5,304**	**12.3**	**7.9**	**15.8**
Less than High School Degree	(295)	(214)	(80)	(2,096)	(1,198)	(898)	14.1	17.9	8.9
High School Diploma	26	(26)	52	(408)	330	(738)	-6.3	-7.9	-7.0
Some post-secondary or diploma / certificate	725	242	483	6,861	3,133	3,728	10.6	7.7	13.0
University Graduate	723	338	385	5,240	2,028	3,212	13.8	16.7	12.0
Full- or Part-time Status									
Total	**1,180**	**340**	**839**	**9,597**	**4,293**	**5,304**	**12.3**	**7.9**	**15.8**
Full-time workers	408	126	282	7,609	3,426	4,183	5.4	3.7	6.7
Part-time workers	771	214	558	1,989	868	1,121	38.8	24.6	49.7
Missing	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!

Appendix Table 6: Self-Employment Rate and Percent Distribution of Total Self-Employment in Canada by selected characteristics, annual average, 1979 using the Canadian Definition (in thousands)

Category	Percent Dist - Self-Employment			Percent Dist - Total Employment			Self-Employment Rate*		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.2**	**15.3**	**9.9**
16 - 19 years	7.54	4.76	14.35	10.12	8.85	12.13	9.8	8.3	11.7
20 - 24 years	5.67	5.32	6.52	15.50	13.77	18.24	4.8	5.9	3.5
25 - 34 years	22.47	22.50	22.39	27.63	27.83	27.31	10.8	12.4	8.1
35 - 44 years	22.96	23.55	21.51	19.30	19.86	18.41	15.7	18.2	11.5
45 - 54 years	21.70	22.47	19.81	15.84	16.72	14.45	18.1	20.6	13.5
55 - 64 years	14.62	15.56	12.31	9.89	10.89	8.32	19.5	21.9	14.6
65 years and over	5.05	5.84	3.10	1.72	2.08	1.15	38.8	43.0	26.6
Industry									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.2**	**15.3**	**9.9**
Agriculture	27.45	29.76	21.80	5.64	7.19	3.18	64.4	63.5	67.6
Nonagricultural industries	72.55	70.24	78.20	94.36	92.81	96.82	10.2	11.6	8.0
Mining	0.12	0.15	0.04	1.45	2.11	0.40	1.1	1.1	1.0
Construction	12.02	16.11	2.00	6.15	9.24	1.27	25.8	26.7	15.5
Manufacturing	3.81	4.52	2.08	19.98	23.99	13.65	2.5	2.9	1.5
Transportation & Public Utilities	4.06	5.21	1.26	8.70	11.25	4.67	6.2	7.1	2.7
Wholesale Trade	4.08	5.12	1.52	4.71	5.71	3.15	11.4	13.8	4.8
Retail Trade	17.10	15.75	20.40	12.71	10.79	15.74	17.8	22.4	12.8
Finance, Insurance & Real Estate	2.50	2.77	1.83	5.38	3.57	8.25	6.1	11.9	2.2
Services	28.85	20.61	49.07	35.28	26.14	49.69	10.8	12.1	9.7
Public Administration							#DIV/0!		#DIV/0!
Occupation									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.2**	**15.3**	**9.9**
Managers	3.54	4.33	1.62	7.66	9.32	5.04	6.1	7.1	3.2
Professionals and Technicians	9.94	10.59	8.34	15.39	13.01	19.16	8.5	12.5	4.3
Sales workers	19.13	18.97	19.52	10.43	10.29	10.66	24.2	28.3	18.1
Clerical	2.95	0.56	8.81	17.20	6.43	34.21	2.3	1.3	2.5
Services workers	15.58	6.88	36.93	12.80	9.73	17.65	16.1	10.9	20.6
Precision production	15.34	20.94	1.61	14.62	22.75	1.78	13.9	14.1	8.9
Operators & Labourers	5.69	7.03	2.41	15.61	20.06	8.59	4.8	5.4	2.8
Farming, Forestry, Fishing, Trapping and Mining	27.82	30.70	20.76	6.28	8.42	2.90	58.6	55.9	70.6
Education									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.2**	**15.3**	**9.9**
Grade 8 or less	25.78	27.56	21.40	16.34	18.97	12.19	20.9	22.3	17.3
Some or completed high school	48.81	45.83	56.11	53.12	51.10	56.31	12.2	13.8	9.8
Some post-secondary or diploma / certificate	15.41	15.20	15.94	19.60	17.86	22.36	10.4	13.1	7.0
University Graduate	10.00	11.41	6.55	10.94	12.07	9.14	12.1	14.5	7.1
Full- or Part-time Status									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.2**	**15.3**	**9.9**
Full-time workers	81.15	91.56	55.61	86.19	93.46	74.72	12.5	15.0	7.3
Part-time workers	18.85	8.44	44.39	13.81	6.54	25.28	18.1	19.8	17.3

*Ratio of self-employment to total employment.

Appendix Table 7: Self-Employment Rate and Percent Distribution of Total Self-Employment in Canada annual average, 1989 using the Canadian Definition (SE-1) (in thousands) by selected characteristics,

Category	Percent Dist - Self-Employment			Percent Dist - Total Employment			Self-Employment Rate**		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.8**	**17.0**	**9.8**
16 - 19 years	4.00	2.55	7.21	7.37	6.78	8.12	7.5	6.4	8.7
20 - 24 years	3.53	3.18	4.29	11.87	11.02	12.95	4.1	4.9	3.2
25 - 34 years	22.22	21.70	23.40	29.63	29.35	29.99	10.4	12.5	7.6
35 - 44 years	28.80	28.88	28.62	25.27	24.92	25.72	15.8	19.7	10.9
45 - 54 years	22.30	22.52	21.82	15.90	16.41	15.25	19.4	23.3	14.0
55 - 64 years	14.32	15.57	11.51	8.49	9.77	6.86	23.3	27.1	16.4
65 years and over	4.84	5.60	3.15	1.47	1.75	1.12	45.4	54.3	27.6
Industry									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.8**	**17.0**	**9.8**
Agriculture	18.54	20.26	14.72	4.22	5.47	2.62	60.7	62.9	55.0
Nonagricultural industries	81	80	85	96	95	97	11.8	14.3	8.6
Mining	0.42	0.54	0.15	1.44	2.26	0.40	4.0	4.0	3.5
Construction	13.05	17.75	2.56	6.18	9.84	1.48	29.2	30.6	16.9
Manufacturing	5.07	5.84	3.36	17.08	21.77	11.07	4.1	4.6	3.0
Transportation & Public Utilities	4.23	5.38	1.66	7.70	10.14	4.58	7.6	9.0	3.5
Wholesale Trade	4.89	6.04	2.33	4.54	5.88	2.82	14.9	17.4	8.1
Retail Trade	15.21	14.39	17.02	12.98	11.59	14.76	16.2	21.1	11.3
Finance, Insurance & Real Estate	3.76	4.22	2.75	5.88	4.08	8.19	8.9	17.6	3.3
Services	34.83	25.57	55.46	33.25	22.09	47.58	14.5	19.7	11.4
Public Administration	-	-	-	6.71	6.89	6.49	0.0	0.0	0.0
Occupation									
Total *	**100**	**100**	**100**	**100**	**100**	**100**	**13.8**	**17.0**	**9.8**
Managers	12.65	14.85	7.75	12.39	13.69	10.72	14.1	18.4	7.1
Professionals and Technicians	12.62	12.09	13.80	16.73	13.52	20.84	10.4	15.2	6.5
Sales workers	16.70	16.35	17.47	9.37	8.99	9.85	24.7	30.9	17.4
Clerical	3.18	0.90	8.28	16.73	5.91	30.60	2.6	2.6	2.6
Services workers	14.51	6.27	32.85	13.23	10.28	17.00	15.2	10.4	18.9
Precision production	15.28	21.10	2.31	12.88	21.45	1.88	16.4	16.7	12.1
Operators & Labourers	6.30	7.39	3.85	14.04	19.55	6.97	6.2	6.4	5.4
Farming, Forestry, Fishing, Trapping and Mining	18.76	21.04	13.69	4.65	6.61	2.15	55.8	54.1	62.4
Education									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.8**	**17.0**	**9.8**
Grade 8 or less	13.92	15.24	10.97	8.87	10.64	6.59	21.7	24.3	16.3
Some or completed high school	46.76	44.94	50.82	48.22	47.87	48.66	13.4	15.9	10.2
Some post-secondary or diploma / certificate	22.48	21.59	24.46	27.35	25.09	30.25	11.4	14.6	7.9
University Graduate	16.85	18.24	13.75	15.57	16.40	14.50	15.0	18.9	9.3
Full- or Part-time Status									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**13.8**	**17.0**	**9.8**
Full-time workers	81.15	89.97	61.52	83.43	91.32	73.29	13.4	16.7	8.2
Part-time workers	18.85	10.03	38.48	16.57	8.68	26.71	15.7	19.6	14.1

* Data file contains observations with missing values for these variables.
** Ratio of self-employment to total employment.

Appendix Table 8: Self-Employment Rate and Percent Distribution of Total Self-Employment in Canada by selected characteristics, annual average, 1997 using the Canadian Definition (in thousands)

Category	Percent Dist - Self-Employment			Percent Dist- Total Employment			Self-Employment Rate**		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**17.8**	**21.1**	**13.9**
16 - 19 years	3.40	2.33	5.39	5.20	4.88	5.60	11.7	10.1	13.3
20 - 24 years	2.88	2.62	3.36	9.32	8.92	9.82	5.5	6.2	4.7
25 - 34 years	18.32	17.76	19.34	25.71	25.29	26.22	12.7	14.8	10.2
35 - 44 years	30.40	29.58	31.93	28.81	28.39	29.31	18.8	22.0	15.1
45 - 54 years	26.06	26.77	24.72	21.20	21.31	21.07	21.9	26.5	16.3
55 - 64 years	13.73	14.93	11.50	8.20	9.26	6.93	29.9	34.1	23.0
65 years and over	5.22	6.00	3.76	1.55	1.95	1.06	60.2	65.0	49.4
Industry									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**17.8**	**21.1**	**13.9**
Agriculture	13.71	15.38	10.61	3.85	5.03	2.43	63.5	64.6	60.5
Nonagricultural industries	86	85	89	96	95	98	16.0	18.8	12.7
Mining	0.55	0.70	0.27	1.27	1.98	0.41	7.8	7.5	9.2
Construction	11.17	15.57	3.03	5.36	8.69	1.31	37.2	37.8	32.1
Manufacturing	4.49	5.13	3.32	15.54	20.34	9.71	5.2	5.3	4.7
Transportation & Public Utilities	5.17	6.92	1.93	7.44	10.04	4.27	12.4	14.6	6.3
Wholesale Trade	4.90	5.99	2.88	4.70	6.11	2.97	18.6	20.7	13.4
Retail Trade	13.10	12.74	13.77	12.42	11.40	13.66	18.8	23.6	14.0
Finance, Insurance & Real Estate	5.05	5.25	4.67	5.70	4.07	7.70	15.8	27.3	8.4
Services	41.85	32.31	59.50	38.04	26.51	52.06	19.6	25.7	15.8
Public Administration	0.00	-	0.00	5.67	5.83	5.48	0.0	0.0	0.0
Occupation									
Total *	**100**	**100**	**100**	**100**	**100**	**100**	**17.9**	**21.1**	**13.9**
Managers	10.53	11.71	8.35	13.85	13.95	13.74	13.6	17.7	8.4
Professionals and Technicians	17.30	16.72	18.38	19.39	15.66	23.92	15.9	22.6	10.7
Sales workers	17.51	17.37	17.76	10.17	9.89	10.51	30.7	37.1	23.4
Clerical	3.52	0.90	8.36	13.83	5.22	24.31	4.5	3.7	4.8
Services workers	15.15	7.06	30.15	13.49	10.43	17.21	20.1	14.3	24.3
Precision production	15.25	21.91	2.93	11.79	19.91	1.92	23.1	23.3	21.2
Operators & Labourers	6.14	7.39	3.84	13.11	18.72	6.29	8.4	8.3	8.5
Farming, Forestry, Fishing,									
Trapping and Mining	14.60	16.95	10.23	4.37	6.22	2.11	59.7	57.6	67.2
Education									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**17.8**	**21.1**	**13.9**
Grade 8 or less	6.53	7.24	5.22	4.47	5.23	3.56	26.1	29.3	20.4
Some or completed high school	33.54	32.81	34.90	34.28	34.94	33.49	17.5	19.8	14.5
Some post-secondary									
or diploma / certificate	39.18	37.96	41.44	42.47	40.93	44.34	16.5	19.6	13.0
University Graduate	20.74	21.98	18.44	18.77	18.90	18.61	19.7	24.6	13.7
Full- or Part-time Status									
Total	**100**	**100**	**100**	**100**	**100**	**100**	**17.8**	**21.1**	**13.9**
Full-time workers	78.05	87.71	60.16	81.00	89.51	70.64	17.2	20.7	11.8
Part-time workers	21.95	12.29	39.84	19.00	10.49	29.36	20.6	24.7	18.8

* Data file contains observations with missing values for these variables.
** Ratio of self-employment to total employment.

Appendix Table 9: Growth in Total Self-Employment in Canada by selected characteristics, 1979 to 1989 using the Canadian Definition (in thousands)

Category	Number - Self-Employment			Number - Total Employment			Ratio to Total Employment		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**386**	**238**	**148**	**2,325**	**770**	**1,556**	**16.6**	**30.9**	**9.5**
16 - 19 years	(35)	(16)	(19)	(125)	(84)	(41)	28.0	19.4	45.3
20 - 24 years	(17)	(14)	(3)	(115)	(96)	(19)	14.7	14.6	14.8
25 - 34 years	82	43	39	905	326	578	9.1	13.3	6.7
35 - 44 years	194	123	72	1,231	525	705	15.8	23.3	10.2
45 - 54 years	95	54	41	376	106	271	25.2	51.2	15.0
55 - 64 years	51	37	14	47	1	46	109.3	3633.5	30.3
65 years and over	16	11	5	7	(9)	16	209.4	-125.7	30.3
Industry									
Total	**387**	**238**	**148**	**2,325**	**770**	**1,556**	**16.6**	**30.9**	**9.5**
Agriculture	(55)	(48)	(7)	(54)	(71)	17	102.4	67.2	-42.6
Nonagricultural industries	442	286	156	2,379	841	1,538	18.6	34.0	10.1
Mining	6	5	1	33	27	6	17.7	19.5	10.4
Construction	65	59	6	147	115	32	44.2	51.1	19.3
Manufacturing	38	27	10	85	21	64	44.0	130.6	15.9
Transportation & Public Utilities	19	14	4	72	5	68	25.7	305.3	6.1
Wholesale Trade	30	24	7	87	57	30	35.0	41.8	22.3
Retail Trade	32	21	11	331	142	189	9.6	14.4	6.0
Finance, Insurance & Real Estate	33	25	8	190	65	125	17.2	38.0	6.3
Services	220	111	109	555	(97)	652	39.6	-114.2	16.7
Public Administration	-	-	-	879	507	372	0.0	0.0	0.0
Occupation									
Total	**386**	**238**	**148**	**2,315**	**761**	**1,555**	**16.7**	**31.2**	**9.5**
Managers	178	142	37	796	392	404	22.4	36.1	9.1
Professionals and Technicians	87	44	43	531	136	394	16.4	32.2	10.9
Sales workers	30	12	18	102	(17)	119	29.3	-71.9	14.7
Clerical	16	6	10	336	11	325	4.6	49.1	3.1
Services workers	41	9	32	352	115	237	11.6	7.6	13.5
Precision production	58	52	6	111	78	33	52.3	66.5	19.1
Operators & Labourers	33	21	12	156	115	41	21.2	18.5	28.6
Farming, Forestry, Fishing, Trapping and Mining	(57)	(48)	(9)	(68)	(69)	2	83.7	68.8	-489.4
Education									
Total	**386**	**238**	**148**	**2,325**	**770**	**1,556**	**16.6**	**30.9**	**9.5**
Grade 8 or less	(115)	(88)	(27)	(598)	(467)	(131)	19.2	18.9	20.3
Some or completed high school	151	98	54	593	156	438	25.5	62.7	12.3
Some post-secondary or diploma / certificate	187	116	71	1,469	669	800	12.7	17.3	8.9
University Graduate	162	112	50	860	411	450	18.9	27.3	11.1
Full- or Part-time Status									
Total	**386**	**238**	**148**	**2,325**	**770**	**1,556**	**16.6**	**30.9**	**9.5**
Full-time workers	313	198	116	1,643	562	1,081	19.1	35.2	10.7
Part-time workers	73	40	33	683	208	475	10.6	19.2	6.9
Missing	(0)	(0)	0	-	0	(0)	#DIV/0!	-29900.0	-29800.0

Appendix Table 10: Growth in Total Self-Employment in Canada by selected characteristics, 1989 to 1997 using the Canadian Definition (in thousands)

Category	Number - Self-Employment			Number - Total Employment			Ratio to Total Employment		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Age									
Total	**679**	**367**	**312**	**855**	**292**	**562**	**79.4**	**125.5**	**55.5**
16 - 19 years	12	6	7	(238)	(126)	(113)	-5.2	-4.6	-5.9
20 - 24 years	8	3	5	(253)	(129)	(124)	-3.1	-2.0	-4.2
25 - 34 years	54	16	38	(293)	(225)	(69)	-18.3	-7.2	-54.7
35 - 44 years	235	117	118	709	339	371	33.2	34.6	31.9
45 - 54 years	245	151	93	875	423	452	28.0	35.8	20.7
55 - 64 years	83	47	36	32	(10)	43	255.0	-446.5	83.5
65 years and over	42	27	15	23	21	2	183.4	131.3	633.5
Industry									
Total	**679**	**367**	**312**	**855**	**292**	**562**	**79.4**	**125.5**	**55.5**
Agriculture	6	(5)	10	(15)	(18)	3	-36.6	24.9	349.5
Nonagricultural industries	673	371	302	870	311	559	77.4	119.6	54.0
Mining	6	5	2	(12)	(15)	3	-53.0	-32.0	55.8
Construction	42	30	12	(62)	(59)	(3)	-68.0	-50.5	-469.1
Manufacturing	20	10	10	(69)	(45)	(23)	-29.1	-21.7	-43.2
Transportation & Public Utilities	52	45	8	29	23	6	81.6	198.7	20.0
Wholesale Trade	33	21	12	60	35	25	55.6	61.2	47.8
Retail Trade	51	26	25	33	19	14	156.2	138.5	180.5
Finance, Insurance & Real Estate	57	32	25	26	11	15	217.2	285.5	166.7
Services	411	203	208	952	403	549	43.2	50.3	37.9
Public Administration	0	-	0	(88)	(61)	(27)	0.0	0.0	-0.1
Occupation									
Total	**679**	**367**	**312**	**854**	**295**	**559**	**79.5**	**124.4**	**55.7**
Managers	33	4	29	310	60	249	10.7	6.3	11.8
Professionals and Technicians	202	119	83	514	204	310	39.3	58.5	26.7
Sales workers	133	76	57	192	96	97	69.4	79.8	59.0
Clerical	30	3	27	(260)	(36)	(224)	-11.5	-9.5	-11.8
Services workers	115	36	79	150	41	108	76.5	86.1	72.9
Precision production	103	91	13	(41)	(54)	13	-250.2	-167.1	96.6
Operators & Labourers	39	27	12	(9)	(6)	(4)	-420.2	-476.4	-331.3
Farming, Forestry, Fishing,									
Trapping and Mining	24	11	13	(0)	(10)	10	-4912.2	-109.3	128.1
Education*									
Total	**599**	**318**	**281**	**775**	**328**	**447**	**77.2**	**96.7**	**62.9**
Grade 8 or less	(60)	(52)	(8)	(352)	(243)	(109)	17.0	21.3	7.4
Some or completed high school	72	28	44	(765)	(343)	(422)	-9.4	-8.2	-10.4
Some post-secondary									
or diploma / certificate	373	210	163	1,177	590	587	31.7	35.6	27.7
University Graduate	214	131	83	716	325	391	29.8	40.3	21.1
Full- or Part-time Status									
Total	**679**	**367**	**312**	**855**	**292**	**562**	**79.4**	**125.5**	**55.5**
Full-time workers	474	294	180	374	128	245	126.7	228.6	73.4
Part-time workers	205	73	132	481	164	317	42.7	44.7	41.6

* Refers to the growth between 1990 and 1997. Changes to the education classification system in 1989 renders data prior to 1990 not comparable to that post-1990.

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