Self-Employment and Retirement Policy in Canada

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Abstract

Mitigating the impacts of an aging population on the supply of skilled workers, government deficits and the funding of the public programs makes understanding retirement behavior crucial for policy makers. The fact that older self-employed Canadians are less likely than wage employees to exit the labour market raises the prospect that policies to promote self-employment among older workers might extend labour force participation. This study evaluates the likely success of such policies by examining the effect self-employment entry later in life has on future employment. I find that labour market continuation is higher among late life entrants to self-employment than among comparable wage employees and that the magnitude of the self-employment effect is non-trivial.

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1. Introduction

The number of seniors aged 65 and older in Canada is projected to double from 5 million to 10 million by 2036; accounting for a quarter of the population by that year (Statistics Canada, 2010). This rapid aging of the population will mean that there will be relatively few working aged individuals in Canada to support the senior population. The ratio of working age Canadians to seniors is expected to fall from 5 to just 2.5 by 2036. The impact of population aging on the supply of skilled workers, government deficits and the funding of the public pension system and health care programs will depend to a great extent on how long workers choose to remain in the labour market before retiring. Thus, understanding retirement behavior is crucial as public policy makers attempt to mitigate the impacts of population aging.

This study examines the role of self-employment in the retirement decisions of older Canadian workers. A better understanding of the characteristics and labour market outcomes of older self-employed workers is important for a number of reasons. First, self-employment constitutes a considerable part of the working lives of older Canadians. One third of working men and one in five working women aged 55 to 69 in Canada are self-employed[1]. In addition, the prevalence of self-employment among older working Canadians increases with age; such that by age 65 over 40 percent of working men and nearly a quarter of working women are self-employed. It is also likely that the decision to retire is different for the self-employed compared to wage workers. Among other things, the self-employed face different job characteristics, institutional restrictions on retirement and incentives than wage employees. Thus, a full understanding of the labour market outcomes of older Canadians must include an examination of self-employment. To this point, however, most studies examining the retirement decisions of Canadians have focused on wage employees.

The fact that older self-employed Canadian workers have lower retirement rates at each age and are more likely to continue to participate in the labour market than their wage employed counterparts leads to a second reason to examine the self-employment behaviour of older workers. This finding, which is highlighted later in this study, raises the prospect that policies to promote self-employment among older workers might fulfill the objective of extending labour force participation in the broader population. The success of such a policy hinges on why the self-employed remain in the labour market long into the age lifecycle. For example, older self-employed workers may remain in the labour market because the characteristics of self-employment jobs are more conducive to continued labour force participation than wage jobs. Adding support

[1] This is shown below based on calculations using the SLID confidential files covering the period 1993 to 2008.

to this notion is the fact that many of the incentives identified by retirees as likely to encourage continued work (Morissette et. al 2004) are inherent to self-employment. Self-employment jobs offer the potential for a flexible work schedule, command over one's activities, and are not subject to mandatory retirement. Alternatively, continued labour force activity among the self-employed may be associated with the unobserved characteristics of the individuals choosing to become self-employed. Those choosing self-employment may have greater labour force attachment. It is also possible, given the absence of employer provided private pension plans, that the self-employed save too little to retire comfortably until later in life. The latter two explanations for extended labour market participation among the self-employed suggest a lower likelihood of success for policies aimed at encouraging self-employment compared to the first explanation.

Utilizing panel data from the Surveys of Labour and Income Dynamics (SLID) covering the period 1993 to 2008 in Canada this study characterizes the nature of self-employment outcomes among older workers and examines whether policies that promote self-employment among older workers are likely to succeed in extending the working lives of Canadians. The focus of the study is on workers aged 55 to 69 and separate analyses are carried out for men and women. The starting point for the study is an attempt to understand the increased rates of self-employment with age observed among older Canadian workers. The rate of self-employment can increase with age either as a result of older workers transitioning to self-employment[2] or because older self-employed workers remain in the labour market longer than wage employees. An examination of the transition process across age groups is carried out and shows that, while most of the observed increases in self-employment rates with age are due to higher rates of continuation among the self-employed compared to wage employees, self-employment entry also plays a role.

A better understanding of these two mechanisms is achieved through the identification of factors associated with entry into self-employment at older ages and the reasons for longer employment continuation by the self-employed. With respect to self-employment entry, the results show that a transition to self-employment among older workers is most likely to occur around the normal age of retirement (age 65). In addition, I find evidence that a lack of education, managerial experience and capital prevent older workers from entering self-employment. Regression analysis comparing the probability of continuing in the labour market across older self-employed and wage employees helps to rule out the hypothesis that the self-

[2] Indeed, the use of self-employment as a stepping stone to full retirement is well documented (Quinn, 1980) and there is evidence that phased retirement is on the rise in Canada (Clark, 2009).

employed remain in the labour market because of a lack of savings. Instead, the results suggest that self-employed men are simply more likely to continue working than wage employees at older ages after accounting for demographics, wealth and labour market characteristics while self-employed women do not respond to age related factors such as the pension system to the same extent as their wage employed counterparts.

Identification of the key factors behind the prevalence of self-employment among older workers provides a backdrop and helps to inform the primary focus of the study; uncovering whether policies aimed at encouraging longer labour force attachment through the support of self-employment entry are likely to be successful. One approach used in previous research to shed light on this question is to compare the labour force duration patterns of individuals who switch into self-employment at older ages to those of the longer-term self-employed. Parker and Rougier (2007) take this approach utilizing panel data on the UK. The rationale for isolating late life switchers to self-employment is the fact that the individual and economic characteristics of these workers more closely match those of individuals likely to be affected by policies that encourage self-employment entry among older workers. Worker characteristics relevant to the retirement decision no doubt differ between the longer-term self-employed and those who enter later in life. For example, it is likely that the accumulation of retirement assets is affected by long-term self-employment. Further, individuals who choose to become self-employed early in life may have different tastes for work and leisure (either innate or acquired through long term self-employment) that result in longer working lives. Of course a switch to self-employment later in life necessarily entails a job change. Job changes later in life have been shown to alter labour market continuation[3]. A sample of workers who switch to self-employment later in life, who are at the margin between choosing self and wage employment, will have characteristics similar to individuals likely to be affected by a broad reaching policy that encourages self-employment entry.

This approach, however, has a number of shortcomings. It does not allow one to separate the impacts of self-employment from the effects of other determinants of retirement timing that are associated with late life switching, such as unobserved individual characteristics or the effects of a job change. Thus, a finding that shows that late life entrants to self-employment have shorter durations than longer-term self-employed may be driven by characteristics of late life job changers other than self-employment status. This distinction is important in understanding the effects of self-employment and for the development of effective policy. If self-employment is indeed associated with later retirement then it may be possible to develop

[3] For example, Chan and Stevens (2004) and Stevens and Moulton (2011) examine the effects of job loss on the timing of retirement.

policies that selectively encourage self-employment among potential entrants for whom the policy is likely to extend labour market duration.

In this study, I attempt to isolate the effects of self-employment from unobserved individual characteristics and the effects of a job change in a sample of late-life job changers. In order to achieve this, a number of approaches are used. Ideally one would examine the effects of self-employment on retirement behaviour in the context of a fixed effect model to account for the unobserved individual characteristics of late life self-employment entrants. However, a fixed effect model does not lend itself well to the analysis of labour supply or retirement in this context. Instead the labour force continuation of workers who switched to self-employment late in life is compared, in the context of a probit model, to wage employees who also had a late life job change. This approach accounts for any individual heterogeneity that is correlated with a late life job change as well as the direct effects of a change in job on labour market continuation. In addition, I make use of rich information on work history prior to the first year of the panel, a series of variables capturing spousal labour supply, wealth measures, and demographic characteristics. Inclusion of this extensive set of characteristics in the regression analysis will account for many of the remaining differences between the two groups of late life job changers as well as any unobserved characteristics that are correlated with these attributes.

I find that, while the probability of continuing in the labour market is highest among the long term self-employed, labour market continuation is higher among late life entrants to self-employment than among comparable wage employees. In addition, the magnitude of the self-employment effect among late life job changers is non-trivial. Men who enter self-employment later in their working lives are, on average, 7 percent more likely to be employed a year later compared to similar wage employees. This differential is 5 percent among women, though less precisely estimated. The predicted increases in continuation resulting from self-employment are large enough to undo the declines in continuation associated with aging among wage employees up to age 64 and would reduce the large decline observed at age 65 by almost 20 percent. This leaves open the possibility that policies that support self-employment entry will encourage longer labour force attachment.

The remainder of the paper is organized as follows: In order to set the context of the research into the current literature, Section 2 provides a review of currently available research pertaining to self-employment and retirement. Section 3 describes the data used and the mechanisms driving the increased rates of self-employment with age observed among older Canadian workers. Section 4 identifies the factors

related to self-employment entry among older workers and the decision to continue working. Section 5 examines the effect of late life self-employment entry on labour market continuation and Section 6 discusses conclusions and their importance for potential policies.

2. Literature Review

Only a handful of studies have examined self-employment among older Canadians. Most studies utilizing Canadian data to this point have been descriptive in nature. For example, a few Canadian studies examine the characteristics of older self-employed workers across a number of dimensions, including household composition, individual demographic characteristics, occupational and other employment dimensions and household income levels (Stone and Nouroz (2006), Schuetze (2007), and Uppal (2011)). A key relationship between age and rates of self-employment among both men and women is identified in a broader set of studies examining labour force participation. Duchesne (2002), Kapsalis and Tourigny (2004), Stone and Nouroz (2006), Marshall and Ferrao (2007), Schuetze (2007), and Uppal (2011) all identify a positive relationship between age and the rate of self-employment among workers over the age of 55. This is an important finding in that it suggests that self-employment is an increasingly important aspect of labour market activity as workers age. Indeed, the studies above note that the rate of self-employment continues to increase beyond the normal age of retirement.

This statistical fact is not unique to Canada. Similar increases in rates of self-employment with age are observed in the United States and the UK (see Fuchs (1982) and Iams (1987) and Bruce, Holtz-Eakin and Quinn (2000) for the US; Moralee (1998) and Parker (2003) for the UK). That this pattern holds across these countries leaves open the possibility that there is something unique about self-employment or the self-employment experience that is related to labour force participation decisions at older ages. One potential explanation for the rise in self-employment rates stems from the well documented finding that many workers partially retire from the labour market before entering full retirement (for examples see Clark, 2009, Honig and Hanoch, 1985 and Ruhm, 1990). Quinn (1980) and Iams (1987) examine the role of self-employment as a bridge job and find that a significant number of older workers utilize self-employment as a stepping stone to full retirement.

An early study by Fuchs (1982) notes that the increased importance of self-employment over the lifecycle can result from either the transition of older workers to self-employment or longer labour force

continuation among older self-employed workers compared to the wage employed. Utilizing a method to decompose self-employment rate increases with age into the two potential components he finds that both transitions to self-employment from wage employment and labour force continuation play a role in explaining the rise in self-employment rates with age in the US among a sample of older white males. In particular, he shows that transitions to self-employment explain the increase in the self-employment rate among older male workers who have not yet reached the normal age of retirement. Greater continuation in the labour market by the self-employed explains the bigger increase in the rate of self-employment that occurs among these workers at and beyond the normal age of retirement in the US according the Fuchs (1982).

With this result as background Fuchs (1982) attempts to identify the determinants of the probability of a transition from wage employment to self-employment and for continuation by the self-employed through the estimation of logit models. The main results suggest that previous self-employment experience, previous management experience and hours of work are positively related to transitions by wage employees to self-employment while being vested in a private pension is negatively correlated. With respect to continuation in the labour market, Fuchs finds evidence that public and private pensions and the ability of the self-employed to reduce hours worked (an option not typically available to wage employees) help to explain the differences in labour market continuation between the self and wage employed.

More recent studies by Bruce, Holtz-Eakin and Quinn, 2000, and Zissimipoulos and Karoly, 2007 focus on the transition between wage employment and self-employment among older workers in the US and attempt to identify the factors influencing this transition[4]. These papers extend the work of Fuchs (1982) in two significant respects. These papers examine a broader set of potential determinants and widen the population under study to include both women and minorities. Bruce et al (2000) examine the effects of wealth and access to portable health insurance on transitions to self-employment among a representative sample of wage workers in the US. They find that, while access to portable health insurance has little effect, higher wealth is associated with the probability of a transition to self-employment. The authors interpret the association between higher wealth and transitions to self-employment as an indication that liquidity constraints likely impede older workers from entering self-employment.

[4] While both of these papers include descriptions of transitions between three labour force states (wage employment, self-employment, and non-employment) the focus of each is on the transition between wage and self-employment.

While using a similar approach to Bruce et al (2000), Zissimipoulos and Karoly (2007) examine a broader set of possible determinants of transitions between wage and self-employment and more recent data. They confirm the results of the decomposition in Fuchs (1982) and the findings from previous research that show that higher wealth is positively related to self-employment entry and pension coverage negatively related. Zissimipoulos and Karoly (2007) replicate the decomposition proposed by Fuchs (1982) using data covering the period 1992 to 2000. They find that transitions to self-employment from wage employment explain much of the increase in the rate of self-employment among older workers not yet approaching the normal age of retirement (age 65), while differences in labour force continuation between sectors explains the increase among workers approaching retirement age and beyond. In addition to finding a positive relationship between wealth and self-employment entry, Zissimipoulos and Karoly (2007) find that transitions to self-employment are higher among men who have ever received an inheritance. They argue that this finding provides further evidence that the positive association between wealth and self-employment entry results from liquidity constraints among older workers. Unlike Fuchs (1982), Zissimipoulos and Karoly (2007) find that the presence of a work-limiting health condition (poor health) is associated with a higher probability of switching from wage to self-employment. While based on US data these results are interesting in light of the current study which seeks to identify the factors that influence transitions to self-employment.

Using two waves of data between 1988 and 1994 from the British Retirement Survey, Parker and Rougier (2007) suggest that longer labour force continuation among the self-employed compared to wage employees in their sample explains the increase in the rate of self-employment with age in the UK. As a result of this finding they focus on a comparison of the determinants of the retirement decision between self-employed and wage employed UK workers. They find significant differences in the factors affecting the retirement decision among self-employed older workers compared to wage employees. In particular, their results suggest that female and poor health status are associated with a higher probability of retirement among wage employees but are not related to retirement among the self-employed. Parker and Rougier (2007) argue that these results may be driven either by institutional factors that require female employees and the ill to retire earlier in the UK or the flexibility of self-employment jobs. The authors also find that the presence of children and a working spouse decrease the probability of retirement among wage employees but have no effect on self-employed workers.

An important finding in relation to the current study from Parker and Rougier is that, among older workers, recent switchers to self-employment (those with 4 to 5 years tenure) are more likely to retire at

every age across the years examined than the long-term self-employed. They perform a simple comparison of the retirement rates across the two waves of data between the self-employed (both short and long-term) and wage employees and conclude that only long tenure self-employed workers remain in the labour market longer than wage employees. Recent switchers to self-employment are found to be as likely to retire as wage employees at each age. While informative their approach does not control for differences in individual characteristics across the groups compared. Indeed, no accounting is made for the fact that the short-term self-employed have shorter job tenures than the full sample of wage employees.

While the current state of research provides substantial information about the self-employment and retirement behavior of older workers there are a number of shortcomings. All of the studies to this point leave out what is likely an important route into self-employment; the path from non-employment (including retirement) to self-employment. Indeed, the decomposition proposed by Fuchs (1982), which has formed the basis for much of the research in this area, does not account for transitions between non-employment and self-employment. Instead, research to this point has focused mainly on transitions from wage employment to self-employment and/or the retirement behaviour of the self-employed. This is unfortunate because previous research shows that transitions between non-employment and self-employment are important for understanding the mechanism by which younger workers become self-employed (Evans and Leighton 1989, Kuhn and Schuetze 2001 and Carrasco 1999). Given the potential for age discrimination in the wage employment sector and the fact that many older workers retire for a brief period before returning to the labour market, it is likely that transitions from non-employment are also important in explaining self-employment among older workers.

As noted above, the only study that has examined the likely success of a policy aimed at increasing labour market participation of older workers, Parker and Rougier (2007), has a number of shortcomings. The data used provide relatively few observations and are from the UK. This study is, therefore, likely to provide limited information about the likely success of such policies in Canada Because of differences in labour market institutions between Canada and the UK. Most serious are the issues with the approach which does not allow one to isolate the impact of self-employment entry and doesn't provide the key comparison of labour market retirement behaviour between individuals who switch to self-employment and similar wage employees.

3. Data and Stylized Facts

The data are drawn from the 1993 to 2008 Surveys of Labour and Income Dynamics[5] confidential files. Introduced in 1993, SLID provides longitudinal information for Canadian households, families and individuals on labour force experiences, human capital and demographic characteristics. The SLID survey is designed to be representative of the population; covering all individuals in Canada, excluding residents of the Yukon, the Northwest Territories and Nunavut, residents of institutions and persons living on Indian reserves or in military barracks). Each panel of SLID provides information on roughly 30,000 adults, who are surveyed for a period of six consecutive years. A new panel is introduced every three years, so (beginning in 1996) two panels always overlap; providing information on nearly 60,000 adults each year.

For the analysis that follows, I have restricted the sample to include only individuals aged 55 to 69. Key labour market information was not asked of individuals aged 70 and older. In order to examine longitudinal information on labour force state among these older workers two-year panels across consecutive years between 1993 and 2008 were extracted. Although rates of self-employment among older workers are relatively high, transitions into self-employment are fairly rare. Thus, the two-year panels are pooled[6]. While not ideal, pooling of the data may be justified for reasons beyond sample size concerns. First, the period covered by the data is somewhat homogeneous with respect to broader economic conditions – 1993 to 2008 was a period of expansion. The downfall of this is that the results may not apply to periods of economic contraction. Second, rates of self-employment among men and women were relatively stable across the period observed. Figure 1 provides rates of self-employment by year for men and women, separately. While self-employment rates increase over the period for both men and women, the increases are relatively modest.

Labour force state (self-employed, wage employed, or not employed) for individuals in each year is determined based upon the labour force status of the individual for a given week of the year (week three in January for the analyses that follow[7]) and the class of worker variable for their "main job" if the individual worked during that week. The "main job", if the individual worked at more than one job during the week, is defined as the job in which the individual worked the greatest number of hours in the week. In addition to

[5] This data provides a larger number of observations compared to the British Retirement Survey data utilized by Parker and Rougier (2007). These authors noted that the precision of their estimates was limited by the relatively small number of observations spanning only two waves of data.

[6] Longitudinal weights are used throughout the analysis. These weights are pooled and unadjusted – a common approach used when cross-sections of data are pooled. Thus, the samples represent a weighted average of the Canadian population over the period studied.

[7] The choice of week in the year is somewhat arbitrary. Experimentation with different choices for week in the year suggests that the main results are not sensitive to this choice.

the restrictions on age described above, the data was further restricted to individuals who, if they worked in the first year of the two-year panel (year t), were in the non-agricultural sector. Year t+1 employment is also restricted to the non-agricultural sector. Individuals who reported "working without pay" were dropped from the sample, as were individuals (when appropriate) with missing values for the variables of interest, and individuals who were lost from the panel because of attrition or because they were at the end of the six year panel period.

3.1 Characterizing the Rise in Self-Employment with Age

In this section the stylized facts with respect to self-employment among older workers in the sample are established. Much like previous research, I find that the rate of self-employment increases with age among older men and women in Canada. Unlike previous research, the main focus here is on characterizing the transition process between other labour force states and self-employment. Characterizing transitions between employment in the wage-and-salary sector (E), self-employment (S), and not employed (N) provides a picture of the transition process to retirement for older workers in Canada that includes the role of non-employment.

Table 1 provides self-employment rates and employment rates by age and gender for individuals in the samples. As observed by previous researchers, rates of self-employment among older workers are quite high; averaging around 32 percent among men and 19 percent among women in the overall sample. Like younger workers, self-employment rates are higher among older men than older women. Also consistent with previous studies, I find that the rate of self-employment increases significantly with each year of age. Among men the self-employment rate rises from 24 percent at age 55 to almost 59 percent at age 69. A similar pattern is observed across age for women; the rate increase from 15 percent at age 55 to 31 percent at age 69. These increases are reflected in the group averages shown at the bottom of the table. For both men and women the most substantial increases occur after age 64. The rate of self-employment jumps by 11 percentage points between age 64 and 66 among men and by just over 14 percentage points among women. These results suggest that institutions that designate age 65 as the normal age of retirement likely play a role in the life-cycle increase in self-employment. However, the steady increase in the rate of self-employment prior to age 65 and beyond suggest that other age related factors are also important.

To aid in interpreting the meaning of the self-employment rates for the population as a whole, Table 1 also provides age specific employment rates generated from the samples. As one might expect, employment rates fall with each year of age. The greatest declines occur around age 65. A comparison of the age specific self-employment to employment rates highlights an important point to keep in mind when interpreting the very high rates of self-employment among the oldest workers in the samples. The comparison shows that the high rates of self-employment are associated with very low rates of employment. Thus, while the rate of self-employment among men age 68 in the sample is 54 percent by this age only around 12 and a half percent of the male population this age is engaged in any employment.

In order to identify the process by which self-employment rates increase with age for men and women in Canada I analyze the dynamics of self-employment among three labour force states: employment in the wage-and-salary sector (E), self-employment (S), and not employed (N)[8]. Table 2 reports the probability matrices that summarize the transition rates among self-employment, wage-and-salary employment, and non-employment in my samples. Elements (pij) of each 3x3 matrix give the empirical probability that an individual in state i in year t (the first year of the two year panels) is in state j in year t+1. In order to identify the key element(s) of the transition matrix explaining the increase in self-employment rates by age I examine separate matrices by age group and gender. More specifically, I separate the data into two age groups (individuals aged 55-61 and 62-69 in year t) by gender. The decision to separate the overall sample into these two age groups was made based on two main points of consideration. First, for estimate precision it is desirable to maintain group sample sizes and extract balanced samples. Second, I attempted to split the sample based on the main parameters of Canada's pension plan[9].

To help summarize and interpret the transition matrices Table 2 also reports the steady-state distribution of individuals across these three states under the assumption that the transitions among the labour force states are governed by a Markov process. This steady-state distribution is the fraction of the population that would occupy each of these three labour market states if the transition matrix is applied to annual transition rates indefinitely[10]. Thus it summarizes the long-run implications of any given transition

[8] Individuals who are "not-employed" will include those who are retired, not in the labour force for other reasons and unemployed. Here and throughout the study I have chosen to examine transitions to/from non-employed rather than "retired" for two reasons. First, retirement is often not well defined for individuals. Second, the focus of the study is on whether or not the individual is engaged in labour market activity.

[9] While it would have been ideal to include those aged 60 and above in the older category because age 60 is the age at which one can start collecting CPP/QPP sample size considerations led to the categories chosen.

[10] The "steady state" or ergodic distribution is calculated as the eigenvector q associated with the unit eigenvalue such that: $P \cdot q = q$, where P is the 3x3 transition matrix. By definition, q must sum to one, and is so normalized.

matrix. Further, Table 2 also reports a steady-state rate of self-employment for each transition matrix, which is simply the percent of individuals in the population of interest in self-employment in steady-state over the percent of individuals in all forms of employment in steady-state.

Reflecting the increases in self-employment with age observed in Table 1, the steady-state rates of self-employment in Table 2 increase with age for both men and women. While the steady-state rates of self-employment tend to overshoot somewhat they are remarkably close to the age-group/gender specific rates reported in Table 1. For both men and women the differences in the steady-state distributions across age groups suggest that the increases in the steady state rates of self-employment are driven primarily by a much sharper decline in the percent of individuals remaining in wage employment compared to self-employment in steady-state. While there are fewer wage and self-employed men and women among individuals aged 62 to 69 in steady-state compared to those aged 55 to 61, the declines in wage employment are much larger. The percent of men in wage employment in steady-state falls 27 percentage points (79 percent) across age categories compared to 10 percentage points (64 percent) in self-employment. Among women the differential in declines across sectors are even more pronounced with a decline of 23 percentage points (85 percent) in wage employment compared to a 4 percentage point (71 percent) decline in self-employment across age groups. The fact that the percent of men and women in self-employment in steady-state does not increase with age suggests that self-employment entry is not the primary explanation for the observed increases in self-employment rates with age.

Examination of the transition matrices in Table 2 provides a more detailed understanding of the process by which self-employment rates increase with age. As suggested by the steady-state analysis, much of the increase with age in the self-employment rates among men and women is explained by lower rates of labour market exit by the self-employed. While there are small declines in retention rates in self-employment (St,St+1) across age groups among men and women, retention rates in wage employment (Et, Et+1) fall significantly. Among men the self-employment retention rate falls from 90 percent in the younger age group to 84 percent among the oldest category compared to a drop from 86 percent to 75 percent in the retention rate in wage employment. The difference in the changes in retention rates across employment sectors is even more pronounced in the sample of women. The self-employment retention rate falls from 86 percent to 81 percent while the wage employment retention rate falls from 87 percent to 75 percent.

As a result of the relatively large declines in wage employment retention with age, the gap in overall employment stability between the two sectors increases with age. Employment stability as measured by the

percent of workers in one year who are employed (regardless of sector) a year later is higher among self-employed men and women in both age groups. For example, just over 94 percent of men aged 54 to 61 who are self-employed in year t are employed in the following year compared to 87 percent of wage employed men in the same age category; a gap of 7 percentage points. This gap in stability across sectors persists across gender and age categories and is greater in magnitude among 62 to 69 year old men and women. Among men the gap grows to almost 11 percentage points while among women it increases from 4 percentage points to 11 percentage points.

While higher rates and smaller declines of labour market continuation among the self-employed explain much of the rise in self-employment with age, the transition matrices in Table 2 suggest that entry into self-employment also plays a role. A simple examination of changes in self-employment entry probabilities from wage employment (Et,St+1) and non-employment (Nt, Nt+1) shows little evidence of increased entry to self-employment. Entry rates from wage employment to self-employment change very little across age groups and the raw entry rates from non-employment actually decline among men and women. However, the changes in these rates are masked by big increases in labour market exit and retention in non-employment related to increased retirement.

In order to abstract from the effects of retirement I examine entry rates to self-employment conditioning on employment at t+1. While entry rates from wage employment to self-employment change little with age even after conditioning on employment in the second year, among the non-employed in year t who choose to work a year later there are substantial increases in entry to self-employment over wage employment. The probability of choosing self-employment over wage employment conditional on working in year t+1 among the wage employed in year t $[(E_t,S_{t+1})/(E_t,E_{t+1})+(E_t,S_{t+1})]$ is stable across age categories for both men and women. About 1.5 percent of wage employed men and 1.1 percent of women aged 54 to 61 who were working a year later entered self-employment compared to 1.9 percent of men and 1.2 percent of women in the 62 to 69 age categories. In contrast, the probability of choosing self-employment over wage employment conditional on working in year t+1 among the non-employed $[(N_t,S_{t+1})/(N_t,E_{t+1})+(N_t,S_{t+1})]$ increases across the age categories from 22 percent to 33 percent among men and from 17 percent to 25 percent among women.

Thus, the raw transitions data show that among older men and women in Canada increases in self-employment rates with age are explained primarily by lower rates of labour market exit by the self-employed and that increased entry from non-employment but not from wage employment also plays a role. Although

entry to self-employment from non-employment explains a smaller part of the increased rate of self-employment with age, the fact that entry rates to self-employment from non-employment are much higher than those from wage employment and that the propensity to enter self-employment, conditioning on employment, increases among the non-employed and not the wage employed suggests that previous studies such as Fuchs (1982) that leave out transitions from non-employment understate the role of self-employment entry.

4. The Determinants of Self-Employment Entry and Labour Market Continuation

The previous section shows that entry into self-employment at older ages and a higher probability of labour market continuation among the self-employed explain the high rates of self-employment among older Canadians. In order to develop a better understanding of these two mechanisms this section identifies the factors associated with entry into self-employment at older ages and the reasons for longer labour force attachment by the self-employed. Little is known about the underlying factors that drive self-employment outcomes among older Canadians. Uncovering these factors will provide context for the evaluation of potential policies that encourage self-employment as a way to extend labour force participation.

4.1 The Determinants of Transitions to Self-Employment at Older Ages.

In this subsection, the effects of various potential determinants on transitions into self-employment from wage employment and non-employment are examined in the context of a multinomial logit model for transitions between three labour force states; employed, self-employed and non-employed. The list of independent variables includes a number of factors found to be important in the decision to enter self-employment from the existing self-employment literature on older workers. In addition a number of factors that are likely to be affected by policy are examined in order to identify the set of potential policy tools that may be used to encourage self-employment among older workers, should such a policy be deemed worthwhile. The set of factors examined include age (included as single year indicator variables), education level, province of residence, marital status, Immigration status, visible minority status, a self assessment of the presence of a disability, job tenure (time t), capital proxied by investment income and capital gains income (in real 2007 dollars), controls for individual year effects (time t), and a number of variables related to

one's spouse or family situation. The variables related to one's spouse include an indicator variable for the presence of a married/common law spouse in the census family, an indicator variable equal to 1 if the spouse withdrew from the labour force between year t and year t+1 and the spouses total labour market earnings in real 2007 dollars. For the samples of workers who were wage employed in the first year of the two-year panels the set of determinants also includes a number of year t job characteristics: indicator variables for occupation, wages, an indicator for access to a private pension plan in the current job, and an indicator for supervisory/ management role in the current job.

The results of the multinomial logit regressions on transitions from wage employment and non-employment in year 1 of each of the two-year panels to self-employment in year 2 (transitions to other states are omitted) for the two samples of men and women are presented in Table 3[11]. The results for men are included in the left half panel while those for the sample of women are on the right half panel. The two left columns within each gender panel pertain to individuals who were wage employed at time t and the two right columns to those who were non-employed at time t. In all cases the base outcome is continuation in the same labour force state as that occupied at time t. For example, among the samples of men and women who were wage employed at time t the base outcome is wage employment at time t+1. Thus, the coefficients give the impact of the determinants on the probability of switching to self-employment relative to continuation in the time t labour force state.

The results in Table 3 show that age and factors related to age affect the probability of a transition to self-employment among the samples of men and women who are wage and non-employed in the initial year. However, the pattern across age is different for wage workers than for the non-employed. Perhaps not surprisingly, among non-employed men and women the probability of transitioning to self-employment, relative to staying non-employed, decreases with age. The coefficients on the single year age indicators become larger and more likely to be statistically significant with age. For wage employed men and women the probability of entering self-employment appears to be influenced by factors related to the normal age of retirement. For both men and women the probability of entering self-employment increases in the years around age 65. For men the coefficients on age 65 and 66 are positive and statistically significant, while for women only the coefficient on age 65 is significant.

[11] For the purpose of exposition the coefficients on province, occupation and year have been omitted from the table. These are available from the author. The base case includes individuals in 1993, aged 54, with less than highschool education, residing in Newfoundland, non-immigrant, non-minority with no disability, no spouse present, if present the spouse has not retired, no private pension, working in the private sector, and in a non-managerial role.

Previous research using data on the US and UK[12] to examine entry to self-employment from wage employment has included age only in broader groupings and generally finds no impact of age on entry. The findings here, which examine single year age categories, suggest that wage employed men and women may wait to become fully vested in private/public pensions before entering self-employment or are pushed out of their jobs by mandatory retirement clauses or pension parameters that penalize continuation and continue in the labour market by becoming self-employment. Nonetheless, this result along with the fact that the coefficients on the indicator variables for presence of a private pension among men and women in Table 3 are negative and statistically significant imply that pension parameters matter in the decision to enter self-employment.

The results also suggest that a policy to provide education and training may help to encourage entry into self-employment. For both wage and non-employed men and women the probability of entering self-employment relative to continuation in the initial labour force state increases with education. The coefficients on the top two education categories (indicating a bachelor's degree or higher) in all of the regressions in Table 3 are positive and statistically significant. At the same time, the probability of entering self-employment increases for wage employees with management or supervisory experience (controlling for education, occupation and other factors). Both education and previous experience as a supervisor/manager or other occupation in which pay is tied performance have been found to be positively related to self-employment entry among older wage employees in previous research. One interpretation of these findings is that the acquisition of both general and management skills are precursors to entry into self-employment among older workers[13].

Wealth and the probability of entering self-employment are commonly found to be positively related in studies examining both younger[14] and older wage employees. The interpretation that has typically been given to this result is that some individuals are capital constrained[15]. In Table 3 investment income and capital gains income are included as proxies for capital. They capture the flow of funds that are derived from investment wealth. The results are somewhat mixed. In the specification presented in Table 3 only the coefficient on investment income for non-employed men is statistically significant. However, I also include

[12] See Fuchs (1982), Bruce et al (2000), Zissimopolous and Karoly (2007) for examples using US data and Parker and Rougier (2007) using UK data.

[13] Alternatively, managerial or supervisory experience may capture the extent to which the individual has developed professional networks that increase opportunities for self-employment.

[14] See Parker (2009) for a review of this literature.

[15] While there is some debate regarding this interpretation (Hurst and Lusardi, 2004) recent evidence requiring a more nuanced approach appears to support this general interpretation (Fairlie and Krashinsky, 2012).

spouse's total real earnings in the regression which is likely another measure of wealth and may be collinear with my proxies for capital. In regressions that exclude spouses total earnings (not presented here) the coefficients on investment income for both wage employed and non-employed men and women are positive and usually statistically significant. The relatively poor measures of wealth yield only weak evidence but the results are suggestive that household capital resources play a role in the decision to enter self-employment at older ages. This leaves open the possibility that a policy of providing start-up capital or loans may be effective in encouraging self-employment among older workers in Canada.

The remaining results are generally consistent with those of previous research. Wage employed men who are minorities are less likely to transition to self-employment. The results with respect to the effect of poor health or a disability limiting work on self-employment entry are mixed and I find little evidence of an impact of from a disability among older Canadian workers. As found in previous research, I find that the presence of a pension plan reduces the probability that a wage employed worker will become self-employed.

4.2 The Determinants of Labour Market Continuation among the Self-Employed

In order to identify the factors influencing the observed differences in continuation between the self and wage employed a series of probit[16] regressions on the probability of continuing work[17] are estimated on the samples of self-employed and wage employed workers in the initial year and the results compared. In particular, the pooled sample of 2-year panels from SLID are restricted either to workers who were self-employed or wage employed in the initial year (t) and who were either employed or not employed (still in the survey) in year t+1. The probit model estimated separately by employment sector and gender can be written:

(1) $P_{t+1} = \Phi(X_t'\beta)$

The dichotomous dependent variable (P_{t+1}) takes on the value one if the self-employed (wage employed) worker in year t continues working in year t+1 and the value zero if the worker is not employed the following year. Φ is the normal cumulative distribution function. The independent variables (X) included are individual year age indicator variables to pick up the impact of age related incentives inherent in private and public

[16] Probit was chosen here over multinomial logit for ease of interpretation and to allow simple tests of differences between self and wage employees in the factors affecting labour market continuation.

[17] The choice to examine employment continuation rather than "retirement" was made for two reasons. First, retirement is generally not well defined. Often individuals who report being retired are also employed. Second, the focus of the current study is identifying the effects of late life self-employment entry on labour market continuation.

pension plans, and controls for the individual characteristics (education level, immigration and minority status), proxy variables for wealth (investment and capital gains income), spouses labour activity and, controls for year, industry, and province of residence.

The marginal effects generated from these regressions for men and women, separately, are presented in the upper portion of Table 4. Also included at the bottom of Table 4 are predicted probabilities by gender and employment sector based on the model and evaluated at the means of the dependent variables for the full sample along with the 55 to 61 and 62 to 68 age groupings. Tests for differences in marginal effects and predicted probabilities across self and wage employees were performed across the samples of men and women. Statistically significant differences across sector are indicated by an asterisk. The findings from Table 2 above, which suggest that the self-employed are more likely to continue working than wage employees, hold even after controlling for differences in demographics, wealth and labour market characteristics. The predicted probability of continuing in employment generated from the model is higher for self-employed men and women than wage employees holding the other factors constant at their means. The predicted probability of labour market continuation is 77 percent among wage employed men compared to 84 percent among self-employed men and the difference is statistically significant at standard levels. Among women the predicted probabilities evaluated at mean characteristics are 78 percent for wage employees and 83 percent for the self-employed and the difference is statistically significant. The predicted probabilities by age group show that the gap in the predicted probabilities of continuing between self and wage employed men and women increases with age. Among men the gap increases from 6 percentage points among 55 to 61 year olds to 9 percentage points among 62 to 68 year olds. In comparison, the gap across sectors among 55 to 61 year old women is less than 3 percentage points and is not statistically significant but grows to a large and statistically significant 10 percentage points among 62 to 68 year old women.

The marginal effects presented in Table 4 highlight the factors that influence labour market continuation and any differences in the effects of the various determinants between self-employed and wage employed men and women. The patterns across age suggest that the effects of age, while similar for self-employed and wage employed men, are very different for self-employed women in comparison to their wage employed counterparts. Although work continuation is higher among self-employed men than wage employed men the patterns of labour market withdrawal across the two sectors have a number of similarities. In particular, among both self and wage employed men there are statistically significant declines in employment continuation around age 60 and even more pronounced declines around age 65. The biggest

declines occur at age 65 among wage employed men and a year later at age 66 among self-employed men[18]. A similar pattern is observed among wage employed women but not self-employed women. Age appears to have no statistically significant effect on employment continuation among self-employed women.

These patterns across age with respect to labour market continuation suggest that the retirement decisions of self-employed men and wage employed men and women (but not self-employed women) are likely influenced by public and/or private pensions and other age related institutions like mandatory retirement[19]. The fact that these workers are statistically significantly less likely to continue working at age 60, the earliest age at which a reduced CPP/QPP pension becomes available, and even less likely to continue at age 65, the age at which full CPP/QPP and many private pension benefits become available, highlights the significant effect of pension system parameters on retirement behaviour. It is, however, unclear why the largest declines in employment continuation among self-employed men occur a year later than their wage employed counterparts and the age at which unreduced Canada Pension Plan (CPP) benefits become available. That self-employed women do not appear to respond to the incentives of the pension system might suggest that few of the self-employed women in the sample have significant CPP benefit entitlements built up.

Wealth (as proxied by investment and capital gains income) has little[20] or no effect on the probability of continuing to work in all cases. The fact that increased wealth does not lead to a decline in the probability of continuing work among the self-employed helps to rule out one of the possible explanations for longer labour market continuation by the self-employed. In particular, one possible reason for greater continuation by the self-employed is that, because self-employment income is highly variable and they are not forced to save through private pension schemes, the self-employed may not save enough to retire at the normal age of retirement. If this hypothesis were true it is less likely that a policy to increase labour force longevity by encouraging self-employment would be successful. These results suggest that an increase in wealth would not result in earlier retirement by the self-employed and that it is unlikely that the self-employed are under-saving.

[18] These differences in timing across sectors are statistically significant as indicated by the asterisks at age 65 and 66.
[19] Mandatory retirement clauses were still legal in most Provinces over the period covered.
[20] While the coefficient on capital gains income is negative and statistically significant among self-employ men the magnitude is small. The entry implies that a $10,000 increase in capital gains income reduces the probability of continuing by about half of one percentage point.

Finally, it appears that the presence of a married or common-law spouse in the census family is associated with a higher probability of remaining in the labour market for both wage and self-employed men. However, the same is not true of women in the sample. For men, the presence of a spouse is associated with a 5 to 7 and a half percent increase in the probability of continuing in the labour market. The results relating to one's spouse also echo the findings in previous labour market research on retirement that shows that the withdrawal of one's spouse is associated with a higher likelihood of leaving the labour market. The coefficients on the indicator variable for retirement of one's spouse are negative, statistically significant, and large in magnitude in all cases. These coefficients are larger in magnitude among the self-employed, which may suggest that the self-employed are better able to coordinate labour force withdrawal with their spouses.

In sum, the results suggest different reasons among older Canadian men and women for greater labour market continuation by the self-employed relative to wage workers. Among men, while there is some evidence of lower labour market withdrawal around age 65 among self compared to wage employees[21], most of the factors examined have similar impacts on continuation across employment sectors. Thus it appears that self-employed men at all ages examined are simply more likely to continue working than wage employees after accounting for demographics, wealth and labour market characteristics. The primary explanation for differences in continuation across employment sectors among women is that older self-employed women do not respond to age related factors such as the pension system like their wage employed counterparts. While labour market continuation is similar for self and wage employed women from age 55 up until around age 63 or 64, controlling for individual characteristics, there is a large drop in continuation among wage employed women at age 65 and beyond that is not experienced by the self-employed. Despite these differences, the fact that self-employed men and women are more likely to continue working beyond the normal age of retirement than similar wage employees leaves open the possibility that self-employment results in greater attachment to the labour market and that a policy that encourages self-employment among older workers will result in longer working lives.

5. The Effect of Late Life Self-Employment on Labour Market Continuation

The results thus far provide some clues regarding the reasons for longer labour market participation by the self-employed and by extension the likely effect self-employment has on retirement behaviour. In

[21] The magnitudes of the marginal effects of age at age 65 and beyond are smaller for the self than wage employed. In addition, the gap in the predicted probability of continuation increases across the age groupings.

order to assess the likely success of policies to promote self-employment as a way to extend the working lives of older Canadian workers it is informative to examine the effect that late life entry to self-employment has on labour market longevity. The timing of entry to self-employment among workers who choose self-employment later in life matches that of individuals likely to be affected by such policies. However, a simple examination of the effects of late life entry to self-employment on labour market longevity will capture the effects, not only of self-employment, but also other observed and unobserved factors related to the choice to enter self-employment. Aside from individual characteristics, a transition to self-employment necessarily entails a job change which will likely alter the choice of age at retirement. Isolating the effects of self-employment from unobserved individual characteristics and the effects of a job change is important for establishing the effects of self-employment on labour market outcomes and for the development of effective policy.

In order to isolate the effects of self-employment on labour market continuation a number of approaches are used. Ideally one would examine the effects of self-employment on retirement behaviour in the context of a fixed effect model to account for the unobserved individual characteristics of late life self-employment entrants. Because a fixed effect model does not lend itself well to the analysis of labour supply or retirement in this context[22], instead the labour force continuation of workers who switched to self-employment late in life is compared to wage employees who also had a late life job change. This approach controls for any individual heterogeneity that is correlated with a late life job change as well as the direct effects of a change in job on labour market continuation. In addition, I make use of rich information on work history prior to the first year of the panel, a series of variables capturing spousal labour supply, wealth measures, and demographic characteristics. Inclusion of this extensive set of characteristics in the regression analysis will account for many of the remaining differences between the two groups of late life job changers as well as any unobserved characteristics that are correlated with these attributes.

The comparison of retirement behaviour between individuals switching to self-employment later in life and short tenure wage employed is carried out utilizing two-year panels on a sample of older workers in the context of a probit model. In particular, a series of probit regressions on the probability of continuing work are estimated on a pooled sample of workers who were either self-employed or wage employed at the first year of the two-year panel. The probit equations include all of the same variables as in Table 4 above,

[22] The sample includes only individuals that are working in the initial period.

allowing characteristics to have different effects for the wage and self-employed, and add to these indicator variables capturing the effects of self-employment, "short tenure" (or "recent entry" to self-employment), and the interaction of the two as regressors.

The model can be written:

(2) $$P_{t+1} = \Phi(X_t'\beta + SE_t \bullet X_t'\beta^{SE} + SE_t\delta + SHORTTEN_t\gamma + SE_t \bullet SHORTTEN_t\lambda)$$

where P_{t+1} is the probability of employment in year two of the panel, X_t is the same vector of observable characteristics included in equation 1 above, SE_t is an indicator for self-employed at time t, and $SHORTTEN_t$ an indicator for "short tenure" at the job held at time t. Initially I define "short tenure" as 3 years or less of tenure (this is my base case). However, to test for the sensitivity of the results to this choice the analysis is repeated using 4 to 5 years, separately by full year, to define short tenure. The inclusion of the indicator variables for self-employment, short tenure and their interaction allow me to compare predicted probabilities of continuation for short and longer tenure wage and self-employed workers while holding individual characteristics constant. Before getting to these results, however, I present the raw data.

Table5 provides descriptive statistics comparing the self-employed and wage employed across job tenure group (base case) for the samples of men and women, separately. Looking first at the primary outcome of interest, employment one year later, shows that the self-employed and individuals with longer tenure have the highest rates of continuation. With one exception, the probability of continued employment is higher in the samples of self-employed men and women than among wage employees with the same gender and tenure. The difference between the rate of continuation between long term self and wage employed men is nearly 7 percentage points (84.9 percent compared to 78 percent). This differential falls to 2 percentage points across sectors among men with short tenure. The gap across employment sectors is smaller among longer term women (just over 4 percentage points) while there is no difference between rates of continuation across sectors among women with short tenure. Within employment sector rates of labour market continuation are highest among men and women with longer tenure. The difference between long and short tenure workers is larger among self-employed men and women than among wage workers. Among men and women the difference across tenure category is around 10 percentage points for the self-employed and 6 percentage points among the wage employed samples.

Table 5 also illustrates a number of important differences across employment sectors and job tenure that may be associated with rates of labour market continuation, however. Self-employed men and women are slightly older, more highly educated, more likely to be immigrants and minorities, have higher wealth (as proxied by investment and capital gains income), and higher spousal income than their wage employed counterparts. Looking across tenure, workers with longer tenure are more likely to be immigrants, less likely to have a disability, and have higher measures of wealth than workers with shorter tenure. At the same time patterns across tenure for some characteristics vary across gender and employment sector. For example, the level of education is higher among longer-term self-employed men, lower among longer-term self-employed women and there is little difference across tenure among wage employed men and women. All of this highlights the importance of controlling for these factors.

A summary of the regression results along with predicted probabilities of continuation for short and longer tenure wage and self-employed workers for the various definitions of short tenure are presented in Table 6 for men and women, separately. To help interpret the results marginal effects for self-employment, short tenure and their interaction are provided along with predicted probabilities of continuation and key differences in these across tenure and employment sector. The marginal effects give the change in the predicted probability of continuation, computed at the average characteristics of all workers in the first year ($\overline{X}_t$), for a discrete change in the indicator variable[23]. These are presented in the upper portion of each section. Predicted probabilities, which are also computed at $\overline{X}_t$, differences in key probabilities compared to recent entrants to self-employment and test results for these differences are presented in the lower portions of each section in Table 5.

Among both men and women in the samples the estimated marginal effect of self-employment is positive and that of short tenure is negative and both are statistically significant. The cross marginal effect of self-employment and short tenure is also negative but not statistically significant in the sample of women. The estimated marginal effects on self-employment suggest that being long term self-employed raises the probability of continuing by almost 9 percentage points among men and 6 percentage points among women, relative to the base outcome (long-term wage employees) after controlling for observable characteristics.

[23] For example, the marginal effect of self-employment is calculated as the difference between $\hat{P}_{t+1} = \Phi(\overline{X}\hat{\beta} + \overline{X}\hat{\beta}^{SE} + \hat{\delta})$ (the predicted probability of continuing among the long-term self-employed) and $\hat{P}_{t+1} = \Phi(\overline{X}\hat{\beta})$ (the predicted probability of continuing among long-term wage-employees – the base group). These are calculated in STATA using the Margins command.

While it has been argued that a late life job change might either increase or decrease labour market continuation its effect are negative in the samples of wage and self-employed workers here. For example, the estimated marginal effect of short tenure suggest that short tenure wage employees are between 5 and almost 7 percentage points less likely to continue in the labour market compared to longer term wage employees, depending on the definition of short tenure used.

The relative outcomes of late life entrants to self-employment, which are the main focus here, are not easily obtained from the estimated marginal effects. Instead, the predicted probabilities and differences from short tenure self-employed across sectors and tenure included in Table 5 provide the key comparisons. Holding constant observable characteristics, labour market continuation is highest among longer term self-employed men and women. Among men, late life entrants to self-employment are between 9 to 10 percentage points less likely to be working a year later compared to longer term self-employed workers with similar observable characteristics. This difference across tenure among self-employed women is 8 to 9 percentage points. Thus, the finding by Parker and Rougier (2007) using raw data on the UK holds among my sample of Canadian men and women even after controlling for observable characteristics.

As noted above, a comparison between late life entrants to self-employment and short tenure wage employees allows one to isolate the effects of self-employment from the effects of a late life job change and individual unobserved characteristics related to such an outcome. This key comparison is provided in the last row of each section. Among older men and women the probability of continuing in the labour market is higher among self-employed workers with short tenure than among comparable wage employees. This differential is 4.8 percentage points (7 percent) among men in the base comparison and 3.7 percentage points (5 percent) among women[24]. These results are not sensitive to the definition of short tenure used. This suggests that, controlling for factors related to a job change, late entry to self-employment has a positive effect on labour market continuation.

While the size of the self-employment effect among short tenure workers is not easy to interpret, comparison to the effects of other factors suggests the magnitude is not small. A strict interpretation implies that, conditional on employment in a given year following a late life job change, being self-employed raises the probability of continuing to work the next year on average by 7 percent among men, the group for which I have the most precise estimates. The results in Table 6 show that this self-employment effect is large enough to counter the negative effect of short tenure on continuation. Differences in the predicted

[24] Likely because of the small number of older short-term self-employed women this difference is estimated with less precision among women such that I cannot reject equality of the predicted probabilities across sectors.

probabilities of continuation between short-tenure self-employed and long-tenure wage employees presented in Table 6 are small and statistically insignificant. Another way to gauge the magnitude of this self-employment effect is to compare its effect on continuation to the well known negative effects of aging. Table 4 shows that aging has large and significant negative effects on continuation among the full sample of wage employed men. The single year age effects are largest in magnitude around age 60 and drop off sharply at age 65. The predicted increase of 4.8 percentage points per year from self-employment would more than counter the effects of aging up to age 64 and would reduce the age 65 effect by almost 20 percent. Thus, the magnitude of the self-employment effect appears to be non-trivial.

While the approach used to this point accounts for factors related to a late life job change it does not account for the possibility that some wage employees, unlike the self-employed, may be covered under private pension plans[25]. This disparity in coverage may explain the observed differences in labour force continuation between short tenure wage and self-employees. In order to account for this possibility I re-estimate equation 2 dropping wage-workers who indicate that they are covered under a private pension plan in the year t job. The results, which are not shown here, change very little utilizing these subsamples and further support the notion that factors related to self-employment cause longer labour market continuation.

6. Conclusions

Mitigating the impacts of aging baby-boomers on the supply of skilled workers, government deficits and the funding of the public programs makes understanding retirement behavior crucial to public policy makers. Despite the high representation of self-employment among older workers most studies examining the retirement decisions of Canadians have focused on wage employees. This study fills this gap by examining self-employment among older workers and the labour market outcomes of the older self-employed in Canada. The finding that older self-employed Canadian workers have lower retirement rates at each age and are more likely to continue to participate in the labour market than their wage employed counterparts raises the prospect that policies to promote self-employment among older workers might fulfill the objective of extending labour force participation in the broader population. Thus, the primary goal of the study is to determine whether transitions to self-employment at an older age are associated with longer working lives.

[25] Indeed, the approach used does not account for other differences in unobservable characteristics related to the choice of self-employment among late life job changers. However, the difference in private pension coverage is the most notable difference.

The results of the study suggest that policies to encourage self-employment among older workers have the potential to extend the working lives of Canadians. In addition, the analysis reveals a number of policy tools that can be used to facilitate entry to self-employment among more senior workers. With respect to the policy tools available to encourage entry to self-employment the results suggest that the provision of training and start-up capital would aid in achieving this goal. Older workers with more experience as managers, higher levels of education and greater family resources are more likely to enter self-employment. A number of countries including Canada have implemented self-employment assistance programs which provide self-employment training and start-up capital for the unemployed. Studies evaluating such programs, while mixed, have generally found that they have had some success in increasing employment and income among the unemployed[26]. This suggests that an effective assistance program geared towards the needs of older workers may be possible.

The findings also suggest that the age parameters included in Canada's pension plan system should be taken into consideration in order to coordinate the timing of any potential self-employment policies and the age at which individuals are likely to make a transition to self-employment. Those workers who make the transition to self-employment in the study do so after some period of withdrawal from the labour market and are more likely to enter self-employment around the timing of the pension system age parameters. There is also some evidence in the study that transition rates to self-employment among older workers have increased in recent years. This is particularly true of older women in the study. That there is some movement towards greater entry in the absence of any self-employment policies may suggest that small incentives could have a big impact on the decision to enter self-employment.

The analysis provides strong evidence that policies to support self-employment entry among older workers will encourage longer labour force attachment. The results show that wealth is not related to the probability of continuing work among the self-employed in the study. This helps to rule out under-saving by the self-employed as the primary explanation for differences in labour market continuation across sectors. That explanation is inconsistent with the success of such self-employment policies. More directly, the study shows that labour market continuation is higher among late life entrants to self-employment than among comparable wage employees. Importantly, the magnitude of the self-employment effect among late life job changers is found to be non-trivial. Men who enter self-employment later in their working lives are, on

[26] See Fairlie (2012) for a discussion of this literature.

average, 7 percent more likely to be employed a year later than similar wage employees. This differential is 5 percent among women, though less precisely estimated.

Whether or not these estimated impacts on labour market continuation would result in significant increases in participation or decreases in the dependency ratio in practice is difficult to ascertain. Relative to the effects of other factors on labour market continuation the effect of self-employment appears to be substantial. For example, in the sample of men, the self-employment effect is large enough to undo the declines in continuation associated with aging among wage employees up to age 64 and accounts for almost 20 percent of the decline observed at the normal age of retirement. However, the overall impact will also depend on the proportion of workers who are affected by such policies and become self-employed. While several factors affect the transition to self-employment have been identified, predicting the fraction of workers who enter self-employment is beyond the scope of this study.

Rates of labour force participation among older workers in Canada are increasing even in the absence of policy changes[27]. These increases are likely the result of economic forces including longer life expectancy, improved health at older ages, changes to mandatory retirement laws, and increases in labour force participation among women. Despite these economic forces it may still be necessary for public policy to further encourage participation and facilitate the changes in labour market behavior of older workers necessary to increase participation. The implementation of policies that encourage self-employment should be viewed as one part of a multi-faceted approach in attempting to extend the working lives of older Canadian workers. It is unlikely that any single policy on its own will yield the desired outcome.

[27] See Schirlie (2008) for a discussion.

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Figures and Tables

Figure 1:
Self-Employment Rates by Year and Gender

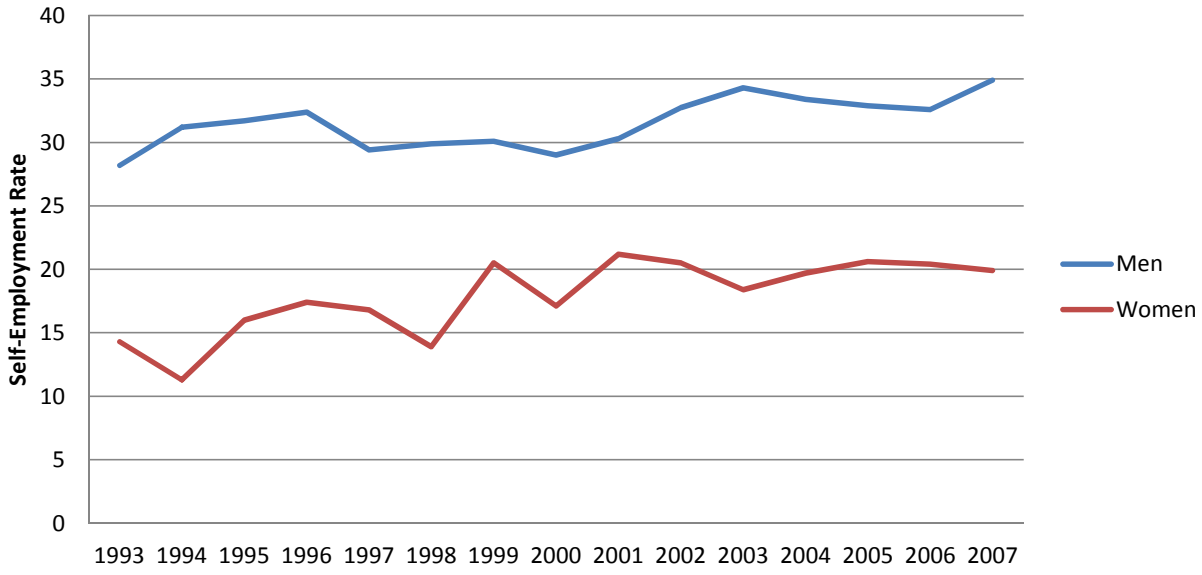

Table 1
Self-Employment Rates by Age and Gender

Age	Men		Women	
	SE Rate	Employment Rate	SE Rate	Employment Rate
55	24.4	76.8	15.4	58.9
56	27.3	72.9	14.9	54.6
57	28.9	69.6	17.5	48.4
58	29.3	66.7	17.5	47.5
59	30.3	60.6	19.3	43.1
60	30.6	56.9	16.6	36.6
61	31.4	50.5	17.7	29.6
62	34.6	42.7	19.4	25.6
63	33.7	38.1	19.4	23.6
64	37.1	34.2	19.6	20.7
65	42.2	30.9	22.5	17.1
66	48.0	21.8	34.3	10.8
67	49.2	16.2	33.8	7.9
68	54.0	12.6	39.8	7.5
69	58.6	10.8	30.6	4.9
Age Group				
55-61	28.5	64.9	16.7	45.5
62-69	40.5	25.9	23.9	14.8

Entries are self-employment rates [(# self-employed/# total employed)*100] and employment rates [# employed/population]
Source: SLID confidential files, using SLID longitudinal weights

Table 2
Transition Matrices, Ergodic Distributions and Steady-State Rates of Self-Employment: younger v.s. older, males and females

Men

Probability Matrix 54-61 Year Olds

E_t	S_t	N_t	
0.8605	0.0446	0.0850	E_{t+1}
0.0133	0.8989	0.0245	S_{t+1}
0.1262	0.0565	0.8905	N_{t+1}

Steady-State Distribution

E	0.3492
S	0.1640
N	0.4868

Steady-State Self-Employment Rate = 0.3196

Probability Matrix 62-69 Year Olds

E_t	S_t	N_t	
0.7521*	0.0323	0.0191*	E_{t+1}
0.0147	0.8426*	0.0094*	S_{t+1}
0.2333*	0.1252*	0.9714*	N_{t+1}

Steady-State Distribution

E	0.0745
S	0.0588
N	0.8666

Steady-State Self-Employment Rate = 0.4412

Change in Steady-State Self-Employment Rate Older-Younger = 0.1216

Women

Probability Matrix 54-61 Year Olds

E_t	S_t	N_t	
0.8750	0.0637	0.0443	E_{t+1}
0.0093	0.8596	0.0088	S_{t+1}
0.1158	0.0767	0.9468	N_{t+1}

Steady-State Distribution

E	0.2686
S	0.0600
N	0.6714

Steady-State Self-Employment Rate = 0.1825

Probability Matrix 62-69 Year Olds

E_t	S_t	N_t	
0.7485*	0.0582	0.0093*	E_{t+1}
0.0091	0.8136*	0.0031*	S_{t+1}
0.2425*	0.1282*	0.9876*	N_{t+1}

Steady-State Distribution

E	0.0390
S	0.0174
N	0.9435

Steady-State Self-Employment Rate = 0.3088

Change in Steady-State Self-Employment Rate Older-Younger = 0.1263

Note: * denotes change in element p_{ij} Older-Younger is statistically significant at the five percent level

Table 3

Regression Results Employment State Choice Model: Multinomial Logit

	Men				Women			
	Wage Employed at t		Non-Employed at t		Wage Employed at t		Non-Employed at t	
Variable	**Coefficient**	**P-Value**	**Coefficient**	**P-Value**	**Coefficient**	**P-Value**	**Coefficient**	**P-Value**
age 55	1.007	0.002	0.316	0.535	0.258	0.623	0.074	0.866
age 56	0.919	0.016	0.278	0.481	0.192	0.726	-0.522	0.192
age 57	0.071	0.875	0.551	0.219	0.422	0.422	-0.481	0.249
age 58	0.543	0.169	-0.290	0.606	-0.346	0.592	-0.209	0.595
age 59	0.299	0.567	0.100	0.829	-0.825	0.212	-0.546	0.316
age 60	0.100	0.834	-0.288	0.509	0.477	0.374	-0.829	0.057
age 61	0.499	0.299	-0.189	0.696	0.353	0.536	-0.611	0.187
age 62	0.007	0.991	-0.951	0.049	0.147	0.841	-0.975	0.068
age 63	0.921	0.038	-0.777	0.060	-1.372	0.145	-2.042	0.000
age 64	0.659	0.337	-0.764	0.125	0.201	0.828	-1.269	0.008
age 65	1.157	0.017	-1.043	0.090	1.595	0.017	-1.933	0.000
age 66	1.204	0.036	-0.924	0.046	-0.763	0.510	-0.970	0.041
age 67	-0.418	0.615	-2.199	0.000	-0.008	0.993	-1.756	0.001
age 68	-13.410	0.000	-1.550	0.008	0.490	0.594	-2.888	0.000
Highschool	-0.654	0.085	0.410	0.183	0.030	0.953	-0.264	0.490
Post(no cert.)	0.175	0.654	0.094	0.791	0.807	0.134	0.954	0.007
Post (cert.)	-0.264	0.392	0.447	0.082	0.672	0.066	0.642	0.022
Bachelor's	0.412	0.463	0.872	0.005	1.657	0.000	1.143	0.008
> Bachelor's	0.704	0.123	0.587	0.080	1.306	0.022	1.724	0.000
immigrant	0.135	0.572	-0.113	0.672	-0.556	0.327	-0.228	0.577
minority	-1.534	0.018	0.394	0.327	0.588	0.387	-0.173	0.812
disability	0.135	0.560	-0.854	0.000	0.287	0.377	-0.246	0.296
investinc	0.021	0.001	0.005	0.039	0.014	0.493	0.010	0.078
capgaininc	-0.011	0.838	-0.066	0.376	-0.219	0.623	0.002	0.441
spouse	-0.313	0.335	-0.227	0.365	0.240	0.391	-0.578	0.012
spouse retire	-0.154	0.665	0.249	0.562	-0.003	0.995	-0.076	0.863
spouse earn	0.007	0.132	0.008	0.021	-0.003	0.287	0.001	0.064
wages	0.000	0.994	NA	NA	0.020	0.095	NA	NA
tenure	-0.003	0.002	NA	NA	-0.002	0.085	NA	NA
pension	-0.468	0.031	NA	NA	-0.795	0.005	NA	NA
public	-0.070	0.775	NA	NA	-0.357	0.239	NA	NA
manager	0.881	0.002	NA	NA	0.473	0.283	NA	NA
constant	-3.903	0.005	-4.631	0.000	-3.757	0.027	-5.007	0.000
N	13451		18418		13937		27865	
pseudo R^2	0.081		0.127		0.096		0.135	

Entries are coefficents from the multinomial logit regressions described in the text.

The P-Values are based on White's robust standard errors clustered by person id to account for the fact that individuals may enter the data more than once.

Table 4
Probit Regression Estimates: Probablity of Continuing to Work

	Men					Women				
Variable	**Self Employed**		**Wage-Employed**			**Self Employed**		**Wage-Employed**		
age56	**-0.056**	**(0.095)**	0.021	(0.270)	*	**0.058**	**(0.102)**	0.019	(0.316)	
age57	-0.016	(0.618)	0.023	(0.186)		0.015	(0.720)	0.003	(0.878)	
age58	-0.044	(0.204)	-0.025	(0.220)		0.041	(0.322)	-0.014	(0.484)	
age59	-0.040	(0.287)	**-0.043**	**(0.040)**		-0.018	(0.705)	-0.033	(0.128)	
age60	**-0.095**	**(0.013)**	**-0.044**	**(0.040)**		-0.018	(0.691)	**-0.063**	**(0.004)**	
age61	-0.050	(0.134)	**-0.039**	**(0.084)**		-0.024	(0.623)	-0.028	(0.230)	
age62	-0.057	(0.135)	-0.030	(0.202)		0.072	(0.062)	-0.038	(0.141)	*
age63	**-0.077**	**(0.047)**	-0.040	(0.115)		0.005	(0.925)	**-0.042**	**(0.123)**	
age64	-0.047	(0.202)	-0.040	(0.177)		-0.004	(0.938)	**-0.085**	**(0.008)**	
age65	**-0.146**	**(0.001)**	**-0.264**	**(0.000)**	*	0.061	(0.185)	**-0.304**	**(0.000)**	*
age66	**-0.256**	**(0.000)**	**-0.125**	**(0.001)**	*	-0.056	(0.372)	**-0.184**	**(0.000)**	
age67	**-0.129**	**(0.006)**	-0.068	(0.136)		0.009	(0.863)	**-0.218**	**(0.000)**	*
age68	-0.068	(0.196)	**-0.124**	**(0.021)**		-0.085	(0.232)	**-0.187**	**(0.000)**	
Highschool	0.026	(0.292)	0.025	(0.121)		**0.056**	**(0.061)**	0.000	(0.995)	*
Postsecondary (no cert.)	0.018	(0.575)	-0.008	(0.708)		**0.065**	**(0.078)**	0.021	(0.311)	
Postsecondary (cert.)	0.005	(0.796)	0.013	(0.318)		**0.053**	**(0.047)**	0.016	(0.253)	*
Bachelor's	0.005	(0.860)	-0.003	(0.872)		**0.057**	**(0.102)**	**0.032**	**(0.098)**	
Degree > Bachelor's	**0.049**	**(0.081)**	**0.034**	**(0.090)**		0.028	(0.534)	0.012	(0.680)	
Immigrant	-0.003	(0.892)	-0.009	(0.537)		-0.033	(0.228)	-0.009	(0.544)	
Minority	-0.016	(0.627)	**-0.081**	**(0.002)**		0.039	(0.347)	**-0.056**	**(0.025)**	*
Disability	**-0.069**	**(0.000)**	**-0.063**	**(0.000)**		**-0.044**	**(0.084)**	**-0.088**	**(0.000)**	
Investment Inc./10,000	0.004	(0.121)	**-0.010**	**(0.067)**	*	0.003	(0.675)	-0.007	(0.328)	
Capitalgains Inc./10,000	**-0.005**	**(0.106)**	0.001	(0.852)		**0.005**	**(0.100)**	0.014	(0.196)	*
Spouse present	**0.075**	**(0.004)**	**0.051**	**(0.002)**		-0.024	(0.345)	0.004	(0.727)	
Spouse Retired	**-0.403**	**(0.000)**	**-0.299**	**(0.000)**	*	**-0.464**	**(0.000)**	**-0.258**	**(0.000)**	*
Spouse Earnings/1000	0.000	(0.162)	**0.001**	**(0.027)**		**0.001**	**(0.001)**	0.000	(0.995)	*
Year Controls	YES		YES			YES		YES		
Provincial Controls	YES		YES			YES		YES		
Industry Controls	YES		YES			YES		YES		
Adjusted R^2	0.132		0.059			0.1413		0.056		
N	5441		13964			2501		12962		
Predicted Probabilities										
Full Sample	0.843	(0.008)	0.772	(0.006)	*	0.838	(0.011)	0.794	(0.005)	*
Aged 55-61 Sample	0.856	(0.019)	0.793	(0.006)	*	0.843	(0.013)	0.815	(0.006)	
Aged 62-68 Sample	0.799	(0.014)	0.706	(0.013)	*	0.823	(0.020)	0.715	(0.013)	*

Entries are maximum-likelihood probit regression marginal effects. The estimates give the change in the probability for an infinitesimal change in independent continuous variables and for a discrete change in indicator variables. Robust standard errors clustered by person id are reported in parentheses. The dependent variable is an indicator variable (equal to 1 if the employee remains employed in year t+1). Bold type indicates statistical significance at the 10 percent level. * Indicates a statistically significant difference in the coefficients between wage employed and self-employed.

Source: SLID confidential files

Table 5
Descriptive Statistics: Long-Term versus Short-Term Workers, by Sector and Gender

Men

	Self-Employed				Wage Employed			
Variable	**Long Tenure**		**Short Tenure***		**Long Tenure**		**Short Tenure***	
Employed at t+1	0.849	(0.358)	0.739	(0.439)	0.780	(0.414)	0.719	(0.449)
age	59.937	(3.714)	59.584	(3.605)	58.896	(3.289)	59.172	(3.444)
< Highschool	0.247		0.248		0.303		0.299	
Highschool	0.143	(0.350)	0.106	(0.308)	0.156	(0.362)	0.129	(0.335)
Postsecondary (no cert.)	0.085	(0.279)	0.070	(0.254)	0.078	(0.268)	0.080	(0.271)
Postsecondary (cert.)	0.267	(0.442)	0.264	(0.441)	0.287	(0.452)	0.319	(0.466)
Bachelor's	0.119	(0.324)	0.176	(0.381)	0.088	(0.283)	0.088	(0.283)
Degree > Bachelor's	0.139	(0.346)	0.137	(0.344)	0.088	(0.283)	0.086	(0.280)
Immigrant	0.307	(0.461)	0.266	(0.442)	0.262	(0.440)	0.248	(0.432)
Minority	0.094	(0.292)	0.089	(0.285)	0.078	(0.267)	0.078	(0.268)
Disability	0.194	(0.395)	0.249	(0.432)	0.197	(0.398)	0.244	(0.430)
Investment Inc./10,000	7372	(28409)	4228	(21137)	1202	(6951)	1014	(8989)
Capitalgains Inc./10,000	3270	(23002)	1301	(7921)	912	(8982)	856	(10636)
Spouse present	0.866	(0.341)	0.857	(0.350)	0.854	(0.353)	0.821	(0.384)
Spouse Retired	0.096	(0.295)	0.116	(0.320)	0.084	(0.278)	0.078	(0.268)
Spouse Real Earnings	23095	(32444)	24074	(45248)	17031	(24005)	15234	(21675)
N	4146		1077		10281		3258	

Women

	Self-Employed				Wage Employed			
Variable	**Long Tenure**		**Short Tenure***		**Long Tenure**		**Short Tenure***	
Employed at t+1	0.843	(0.364)	0.735	(0.442)	0.799	(0.400)	0.741	(0.438)
age	59.586	(3.807)	59.719	(3.678)	58.849	(3.302)	58.696	(3.285)
< Highschool	0.226		0.238		0.245		0.264	
Highschool	0.173	(0.379)	0.093	(0.290)	0.196	(0.397)	0.186	(0.389)
Postsecondary (no cert.)	0.090	(0.286)	0.106	(0.308)	0.077	(0.266)	0.080	(0.272)
Postsecondary (cert.)	0.328	(0.470)	0.338	(0.473)	0.338	(0.473)	0.325	(0.469)
Bachelor's	0.106	(0.308)	0.129	(0.336)	0.087	(0.282)	0.098	(0.298)
Degree > Bachelor's	0.077	(0.266)	0.096	(0.294)	0.057	(0.232)	0.045	(0.208)
Immigrant	0.299	(0.458)	0.279	(0.449)	0.227	(0.419)	0.244	(0.430)
Minority	0.063	(0.243)	0.120	(0.325)	0.073	(0.260)	0.085	(0.280)
Disability	0.228	(0.420)	0.318	(0.466)	0.192	(0.394)	0.228	(0.419)
Investment Inc./10,000	5386	(18338)	2957	(10454)	1211	(6384)	941	(3841)
Capitalgains Inc./10,000	3527	(35013)	1160	(12130)	555	(5380)	511	(5740)
Spouse present	0.701	(0.458)	0.642	(0.480)	0.676	(0.468)	0.677	(0.468)
Spouse Retired	0.080	(0.271)	0.087	(0.282)	0.083	(0.275)	0.073	(0.260)
Spouse Real Earnings	27454	(54842)	22425	(45499)	20540	(42024)	20894	(60500)
N	1812		609		9614		2958	

Entries are weighted means of variables. Standard deviations are reported in parentheses

* Short tenure defined as 3 years or less

Source: SLID confidential files

Table 6
The Effects of Recent Entry and Self-Employment on Labour Market Continuation

	Men		Women	
Variable				
Self-Employed	0.087	(0.000)	0.059	(0.000)
Short Tenure (3 Years or Less)	-0.063	(0.000)	-0.068	(0.000)
Self-Employed X Short Tenure	-0.040	(0.001)	-0.022	(0.459)
Predicted Probabilities				
Long-Tenure Self-Employed	0.874	(0.000)	0.870	(0.000)
Short-Tenure Self-Employed	0.772	(0.000)	0.780	(0.000)
Long-Tenure Wage-Employed	0.787	(0.000)	0.811	(0.000)
Short-Tenure Wage-Employed	0.724	(0.000)	0.743	(0.000)
Short-Tenure Self minus Long-Tenure Self	-0.103	(0.000)	-0.089	(0.001)
Short-Tenure Self minus Long-Tenure Wage	-0.015	(0.446)	-0.030	(0.230)
Short-Tenure Self minus Short-Tenure Wage	0.048	(0.036)	0.037	(0.165)
Variable				
Self-Employed	0.091	(0.000)	0.059	(0.000)
Short Tenure (4 Years or Less)	-0.050	(0.000)	-0.061	(0.000)
Self-Employed X Short Tenure	-0.049	(0.001)	-0.019	(0.487)
Predicted Probabilities				
Long-Tenure Self-Employed	0.877	(0.000)	0.871	(0.000)
Short-Tenure Self-Employed	0.778	(0.000)	0.791	(0.000)
Long-Tenure Wage-Employed	0.786	(0.000)	0.812	(0.000)
Short-Tenure Wage-Employed	0.736	(0.000)	0.751	(0.000)
Short-Tenure Self minus Long-Tenure Self	-0.099	(0.000)	-0.080	(0.001)
Short-Tenure Self minus Long-Tenure Wage	-0.008	(0.691)	-0.021	(0.366)
Short-Tenure Self minus Short-Tenure Wage	0.042	(0.048)	0.040	(0.107)
Variable				
Self-Employed	0.093	(0.000)	0.063	(0.000)
Short Tenure (5 Years or Less)	-0.046	(0.000)	-0.056	(0.000)
Self-Employed X Short Tenure	-0.048	(0.000)	-0.027	(0.306)
Predicted Probabilities				
Long-Tenure Self-Employed	0.879	(0.000)	0.876	(0.000)
Short-Tenure Self-Employed	0.785	(0.000)	0.793	(0.000)
Long-Tenure Wage-Employed	0.786	(0.000)	0.812	(0.000)
Short-Tenure Wage-Employed	0.741	(0.000)	0.757	(0.000)
Short-Tenure Self minus Long-Tenure Self	-0.094	(0.000)	-0.082	(0.000)
Short-Tenure Self minus Long-Tenure Wage	-0.001	(0.967)	-0.019	(0.385)
Short-Tenure Self minus Short-Tenure Wage	0.045	(0.024)	0.037	(0.115)
Sample Size	19290		15447	

Entries are maximum-likelihood probit regression marginal effects and predicted probabilities as described in the text.
P-Values are reported in parentheses. Source: SLID confidential files