Catalogue no. 11F0019MIE — No. 162
ISSN: 1205-9153
ISBN: 0-660-18422-2

Research Paper

The Evolution of Job Stability in Canada: Trends and Comparisons to U.S. Results

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October 16, 2002

An earlier draft of this paper co-authored with Mark Walsh was presented at the meetings of the Canadian Economics Association at University of British Columbia in May 2000. Valuable comments were received from David Green.

Aussi disponible en français

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Abstract

Using data from the 1976-2001 Canadian Labour Force Survey, we examine the stability of currently held jobs in a manner similar to Diebold, Neumark and Polsky (1997) and Neumark, Polsky and Hansen (1999, 2000) who analyzed data from the U.S. Current Population Survey. The distribution of in-progress job tenure filled up with more long jobs, and more shorter jobs—suggesting a polarization of job tenure. However, an examination of retention rates—the conditional probability that a job will last one or four more years—indicates that jobs have remained stable over the period. A closer look reveals two phases in the Canadian data. The period 1977 to 1993 was characterized by declining job stability, particularly for jobs with initial tenure of less than one year. The second phase, 1993-2001, was characterized by a reversal of this trend such that by the end of the period, jobs of all lengths were equally as stable as in the late 1970s. In all there was no period long trend towards declining job stability among any age, gender or education group.

Following U.S. methods allows us to undertake an international comparison. We find that job stability rose by 1.2 percentage points in Canada and fell by 1.0 percentage points in the U.S. between 1987 and 1995. Retention rates for jobs with short initial tenure (of two years or less) rose similarly in the U.S. and Canada, while the U.S. saw more significant declines in job stability for medium and long-tenured workers. We speculate that this difference is due to a relatively slow recovery in Canada in the 1990s which reduced job mobility for medium tenured workers relative to the earlier decade. This is supported by an examination of the elasticity of job stability, which was found to be counter-cyclical, and larger for medium tenured workers.

Keywords: Job stability, Job security, Employment
JEL: J21, J60

I. Introduction

In 1995 Henry Farber wrote that “reports of the death of “the great American Job” are greatly exaggerated”. He was referring to results which showed that the distribution of job tenure had not changed in any remarkable way in the United States from 1973 through 1993, with the notable exception that long term jobs appeared to have become more scarce for the least educated—particularly among men. Diebold, Neumark and Polsky (1997) used a different methodology and concluded similarly. Neumark, Polsky and Hansen (1999) updated this latter work, and found that aggregate job stability declined slightly in the first half of the 1990s, and more so for long tenured workers.

The evidence to date suggests that job stability in Canada has evolved very differently from the U.S., particularly in the 1990s. Work by Green and Riddell (1997) examined the job tenure distribution from 1979 through 1989 and 1991 and found that there had been a “hollowing out” of the tenure distribution such that by the end of the period there were more short term and more long term jobs. There was also a tendency towards shorter jobs for the youngest and least educated. Heisz (1999) reported a fall in job duration for older and less educated workers from 1981 to 1996. While these findings are not surprising in light of changes in the United States, developments in the later 1990s appear very different indeed. Updating Heisz (1999), Picot, Heisz and Nakamura (2000) found that job stability rose substantially through the 1990s, offsetting declines in the 1980s, and rising to its highest levels since 1981, presumably driven partly by slow economic growth, and reflected in a low hiring rate.

In this paper we have two objectives. First, we wish to understand relative Canadian and U.S. trends. The strategy is simple—to try to replicate as closely as possible methodologies used in American studies using Canadian data. In particular, we focus on the approaches used in Diebold, Neumark and Polsky (1997) which was continued in Neumark, Polsky and Hansen (1999, 2000) (hereafter referred to as DNP and NPH respectively).

The second objective is to update evidence on job stability in Canada to the end of 2001. In doing this we wish to understand both what is happening to the distribution of in-progress jobs—in a manner similar to Farber (1995) and Green and Riddell (1997), and to the underlying survivor function in a manner similar to the American researchers. To make our analysis comparable to those done in the U.S., we omit from our sample the unincorporated self-employed. Hence, the fraction of Canadian workers covered by this study was close to 90% in most years.

Findings

We address our second objective first. Examining the distribution of in-progress (or current) tenure we find that the average length of jobs surveyed in-progress rose substantially over the period. Furthermore, similarly to Green and Riddell, we find that there was a polarization of the in-progress job tenure distribution following 1983. For men this polarization resulted mostly from a rise in the fraction of jobs that were, at the time they were surveyed, found to be short tenure. For women, the distribution of jobs was dominated by a rising fraction of long jobs, likely caused by their historical rise in labour force participation rates.

Changes over time in the distribution of in-progress jobs are difficult to interpret. As a result, the bulk of this paper focuses on changes in retention rates, which are the conditional probability that a job will last one (1) or 4 more years.

Job stability measured by average one year retention rates trended upwards over the period—buoyed by rising retention rates in the late 1990s. It is shown that the conditional probability of retaining a job rises with initial tenure (up to at least 15 years). Thus, much of this trend in retention rates was related to rising initial tenure among workers. Holding this composition constant, the trend rise was reduced substantially.

Looking at retention rates for jobs of various initial lengths, there were no strong period long trends in retention rates for short, medium or long jobs. A closer look revealed two separate phases in the data—one lasting from the late 1970s to about 1993, and a second lasting from 1993 to at least 2001. The former period was characterized by decreasing job stability for jobs less than one year in length. This trend reversed after 1993, such that by 2001 stability for jobs less than one year in length had returned to levels seen in the 1970s. Jobs with initial tenure of one to less than 2 years enjoyed increased stability between 1990 and 1994. We also note modest declines in job stability for jobs which were between 2 and 9 years long over the past two decades. The net effect of the changes was a small decline in job stability across the 1980s, offset by a larger rise in the 1990s.

Underlying changes in aggregate retention rates are events affecting different demographic groups. The finding of no change in job stability over this period may have masked changes experienced by specific sub-groups of workers. We control for the cyclical position of the economy by focussing on changes at similar points in the business cycle. Thus, comparing the years 1978-1980 to 1987-1989 and 1999-2001 we find that the pattern of change in retention rates observed in the aggregate also reflects the experience of most sub-groups. The 1980s were characterized by declining stability of jobs for most demographic groups—but especially low educated and younger workers. The 1990s were characterized by a reversal of these trends, with retention rates rising for most groups. It appears based on these trends that the 1980s were somehow different, particularly for jobs with short current tenure, and in the 1990s job stability returned to levels seen in the 1970s.

While retention rates observed in the late 1990s were, for most groups, equal to or above those in the late 1970s, there were some exceptions. Job stability fell for young women aged 15 to 24, and for women with high school or less education (although it rose across the 1990s for both groups the increases were not enough to offset the declines in the 1980s). These changes may reflect changing labour force and post-secondary participation patterns of young women. There was also a small decline in job stability for men with 2 to 9 years of tenure across the 1980s, but not in the 1990s. It is not clear that these changes indicate long term trends.

It is difficult to relate these changes in job stability to changes in the distribution of in-progress tenure since the latter distribution is influenced by changes in historical inflow and retention rates. However, as the investigation into retention rates demonstrates, increases in the fraction of short term jobs in-progress in the late 1980s does appear to be based in a change in the underlying job tenure distribution, as does the shift away from medium term jobs in this same period. Other changes, such as the increase in the fraction of workers with long in-progress tenure, must have been due to other factors such as historical changes in inflow rates.

Finally, turning to a comparison of Canadian and U.S. retention rates, we find that job stability fell more in Canada between 1987 and 1991, and correspondingly rose more between 1991 and 1995. (Only results for 1987, 1991 and 1995 are available for the U.S.). Between 1987 and 1995 the average probability that a job would last four more years rose by 1.2 percentage points in Canada but fell in the U.S. by 1.0 percentage points. Retention rates for jobs with short initial tenure (of two years or less) rose similarly in the U.S. and Canada, while the U.S. saw more significant declines in job stability for long-tenured workers. Declines in job stability were seen across all age categories in the U.S., but only for workers aged 15-24 in Canada. Job stability rose for women in Canada and the U.S. For men, job stability declined in the U.S. but remained stable in Canada. In all, over the 1987 to 1995 period Canada saw a relative increase in job stability compared to the U.S. for most job categories. It is possible that the relative increase in the 90s in Canada was due to the relatively slower pace of recovery across the first half of the 1990s. Job stability tends to fall during economic expansions as workers, reacting to a scarcity of labour, tend to quit jobs more often. By this logic, a relatively slower recovery would be reflected in a relative rise in retention rates.

2. Data and Measurement Issues

Measuring Job Stability

There are a number of different meaningful ways to measure job stability. One commonly used approach measures the average tenure of currently employed individuals. This is sometimes referred to as the average in-progress job duration. This statistic is annually produced by Canada's Labour Force Survey (LFS) and is shown in Figure 1. It does not reflect the completed tenure of jobs, but rather the length of jobs at the point in time of the survey. Nevertheless, it is useful since it gauges the tenure status of those workers currently employed. From Figure 1 it can be seen that the average in-progress tenure of workers rose substantially over this period.

However, the distribution of in-progress spells is inappropriate for examining changes in job tenure over time. To illustrate this point, consider the following formula for the average in-progress job length:

$$\begin{array}{c}\textit{Average In-Progress}\\ \textit{Job Length}_c\end{array} = \frac{\sum_{t=1}^{n} N_{0,c-t} S_{t,c-t} \cdot t}{\sum_{t=1}^{n} N_{0,c-t} S_{t,c-t}} \quad . \tag{1}$$

$N_{0,c-t}$ is the number of workers starting jobs in period c-t and $S_{t,c-t}$ is the survival rate, or the probability that a job which begins at time c-t will last at least t periods. The average in-progress job length in period c, is affected by the level of inflows (or job entry rates) in all previous periods in which someone currently with a job became employed, and all the respective survival rates in those periods. In a similar manner, all points in the distribution of current job lengths are also affected by changes in past inflows and survival rates. Thus changes in these statistics over time tend to be difficult to interpret.

It is also important to note that the distribution of in-progress tenure is a biased distribution of spell lengths. First, the spells are sampled in-progress. They may end the next day, or they may end far in the future. Second, in a point-in-time survey, the probability of sampling a spell is proportionate to its length, making the distribution of in-progress jobs heavily weighted by long spells.

A second commonly used tool for measuring job stability is the *retention rate* which is the conditional probability that a job will continue for some specified period of time, given that it has reached a certain initial level of tenure. Denoting the amount of tenure the worker has already experienced as t , the time as c and the retention rate $R_{t,c}$, the retention rate can be derived using two consecutive surveys as

$$R_{t,c}=N_{t,c}/N_{t-i,c-i}. \qquad (2)$$

This is simply the number of respondents reporting tenure of t in the present survey divided by the number of respondents reporting tenure of $t-i$ in a previous survey[1]. $R_{t,c}$ is one minus the hazard rate, and a full set of retention rates defines a survival function. In standard survival model terminology, $N_{t,c}$ is the group surviving, and $N_{t-i,c-i}$ is the group at-risk. The value t is referred to as the initial tenure. The computation of the retention rate is an application of the *synthetic cohort* approach, so named because representative individuals from the same cohort, rather than the same specific individuals are sampled for the numerator and denominator. The symbol ***i*** refers to the interval width, or the spacing of the surveys which is measured in the same units as ***t***.

Retention rates can be computed over any interval permitted by the data. Since the Labour Force Survey has been conducted monthly since 1976, and because tenure in that survey is coded in months, retention rates could be computed for intervals as short as one month. Shorter retention rates allow one to more effectively tie changes in retention rates to actual events. This paper focuses on retention rates calculated across one year intervals. Shorter intervals of less than one year tended to be unstable, reflecting sampling error introduced into the process by the synthetic cohort approach. Due to data limitations (described in more detail below), American retention rates are computed for 4 and 8 year intervals. Longer retention rates such as these vary over time because of changes that occurred between c and c-4 (or 8) years, while one year rates vary because of changes over the preceding year making one year rates preferable for understanding changes over time. In what follows we compute one year retention rates for an analysis of Canadian trends and 4 year retention rates for an analysis of inter-country differences.

Retention rates can reveal the conditional probability that a job of any given length will last another year, and one can ask whether retention rates are constant over time. Relating (2) to (1),

$$S_{t,c-t}=R_{1,c-t+1}*R_{2,c-t+2}*R_{3,c-t+3}\dots*R_{t,c.} \qquad (3)$$

Past and present retention rates, plus past inflow rates combine to generate the present distribution of in-progress job tenure.

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1 Hall (1982), computed retention rates using a single cross section of data. Ureta (1992) demonstrates that retention rates calculated from a single survey are biased. To illustrate this consider a retention rate $R'_{t,c}$ computed from a single cross sectional survey:

$$R'_{t,c}= N_{t,c}/N_{t-i,c},$$

Assuming a stable survivor function, $R'_{t,c}$ will be biased if $N_{t-i,c}\neq N_{t-i,c-i}$ which will occur if inflows to new jobs are changing.

Upon examination of the retention rate it is clear that it does not suffer from the biases which affect the distribution of in-progress tenure. First, it measures changes in the survivor function across a fixed period of time, so changes in retention rates can be associated with events that occurred between those periods. Second, since it measures changes for a single entry cohort, it is not affected by changes in inflow rates between cohorts. A full set of retention rates can be used to compute unbiased estimates of the average complete duration of a new job—an approach that was demonstrated in Heisz (1999).

Once a full set of retention rates are computed, a single average retention rate can be derived by:

$$R_c=\gamma_0 R_{1,c} + \gamma_1 R_{2,c} + \gamma_2 R_{3,c} + \ldots \tag{4}$$

Where γ_i is a weight which represents the fraction of the "at-risk" population in the tenure category *i* —that is the denominator from equation (2). Likewise, sub-groups of retention rates can be combined into reasonable groups to reduce the number of rates to analyze. This is the approach taken by DNP and NPH who group 4 year rates into those faced by workers with 0 to <2 years of initial tenure, 2 to <9 years tenure, 9 to <15 years tenure and 15+ years tenure. This has the advantage of producing summary job stability information for what can be termed short, medium, and long initial tenures. We follow this grouping here, but further divide the first rate into <1 year and 1 to <2 years since it was shown in Heisz (1999) that rates for these two current tenure intervals evolved differently over the period 1981-1996. Specifically, we analyze the 6 groups of combined retention rates outlined in Table 1.

Note that *t* (initial tenure) is indexed in years such that $R_{1,c}=N_{13\text{-}24\ months,c}/N_{1\text{-}12\ months,c\text{-}12}$. Although LFS tenure data is available monthly, we convert current tenure to years before computing retention rates (but not for computing moments of the in-progress tenure distribution). Also, weights are defined such that the sum of γs equals one for whichever summary retention rate is being derived. Four year rates are defined similarly with $R_{1,c}=N_{49\text{-}60\ months,c}/N_{1\text{-}12\ months,c\text{-}48}$. The convention is to define retention rates according to the time period identified in the numerator. Thus, using 1976 to 2001 data we can compute monthly one (1) year retention rates for 1977-2001, and four (4) year rates for 1980-2001.

Retention rates and their averaged values defined in Table 1 reflect the average experience of the currently employed, and examining job stability conditional upon these initial tenure groups is one way to account for rising in-progress tenure among workers. However, it is useful to generate a single indicator of job stability that is not affected by changes in the in-progress tenure distribution. The solution is to set initial tenure at its value observed in a single year. In the notation of Table 1 we hold γ_i values at period start values. This yields a job stability indicator for a representative group of jobs with fixed initial tenure[2].

It is worth pointing out how this approach differs from an alternative—the average duration of a new job. This approach was derived in Heisz (1999) and used in Picot and Heisz (2000) and Picot, Heisz and Nakamura (2000). It estimates the completed job spell length for a cohort of workers just

2 We also examined fixed current tenure indicators for the other grouped retention rates $R_{2\text{-}9}$, $R_{9\text{-}15}$, and R_{15+}. Changes in these composition constant retention rates tended not to be statistically different from changes in raw retention rates, so we do not report them.

starting a new job at a point in time. It likewise applies retention rates, but uses them to approximate a survivor function from which complete spell lengths are estimated. Using one year retention rates such as those defined in (2), average complete job duration at time c is simply:

$$Avgdur_c=1+R_{1,c} + R_{1,c}*R_{2,c} + R_{1,c}*R_{2,c}*R_{3,c} + R_{1,c}*R_{2,c}*R_{3,c}*R_{4,c}\ldots \quad (5)$$

Equation (5) represents the discrete time version of the finding that the expected duration of a spell equals the integral of the survivor function[3]. Relative to the average retention rate R_c, the average new job duration will be particularly sensitive to changes in job stability that affect short jobs (this is clear from the number of times short current duration retention rates such as R_1 appear in (5)). Besides this there is the conceptual difference that the average retention rate R_c measures actual job stability for the cohort of currently employed persons, rather than expected job stability for workers just starting new jobs. However, when trying to understand changes in employment over time, the average duration of a new job is most useful since in a steady state changes in employment equal changes in inflows to employment (job entry rates) multiplied by changes in average job duration—which allows for a clear understanding of the effects of job dynamics on aggregate employment.

While our main focus is on changes in job stability as measured directly using retention rates, we acknowledge that changes in the in-progress tenure distribution are also informative. It may be that changes in the distribution of in-progress job spells feed worker insecurity, regardless of the fact that these changes may be caused by historical events. Said differently it is this distribution that tells us where we are, if not how we got here. Furthermore, we wish to pursue the finding reported by Green and Riddell (1997) of a "Hollowing out" of the tenure distribution—that is a shift in in-progress spells towards more spells with longer and shorter current job tenure.

We proceed as follows:

- Describe the relevant data issues and discuss the comparability of Canadian and U.S. job tenure data.
- Examine the distribution of in-progress tenure: What has happened to the "hollowing out" of the job tenure distribution?
- Examine one year retention rates for Canada: How has job stability evolved from 1976 to 2001?
- Compare job stability in Canada and the United States: Are there differences in the evolution of job stability between these countries?
- Conclude: What is the state of job stability in Canada? What are some underlying factors that may explain this evolution?

Data

We obtain job tenure information from the Canadian Labour Force Survey (LFS) which has been conducted monthly with few important changes since 1976, and is a representative sample administered on approximately 60,000 households. The LFS is similar in content to the American Current Population Survey (CPS) which provides the data used in the American studies which we

[3] In fact, the methodology outlined in Heisz (1999) used retention rates ranging from 2 months (for the shortest part of the spell distribution) up to 5 years in width (for the longer part of the spell distribution).

try to replicate. There are some important differences between the two surveys which, we think, make the LFS much better suited to studying job tenure:

- Canadian tenure data is available monthly, compared to that in the U.S. which is available only in intervals of at least two years. This allows the computation of retention rates at narrower intervals than is possible with U.S. data and permits us to evaluate changes in job stability for shorter jobs. Also, U.S. tenure supplements tend to be irregularly spaced making retention rates of comparable intervals difficult to compute. In what follows we compare four year retention rates computed with LFS data to U.S. rates computed by NPH in 1987, 1991, and 1995[4]. The CPS supplements used by Farber and DNP/NPH are conducted in January, while we potentially have estimates for each month from the LFS.

- The LFS is conducted using a rotational design which has households rotating into the sample for six months at a time, and one sixth of the sample is replaced each month. The job tenure question is asked with the first interview and then validated in subsequent interviews. When computing descriptive statistics and charts we use all 12 months of data, however, for the purposes of computing tables which contain standard errors we use only the March and November surveys. These surveys are 7 months apart and represent two independent samples, which we can use to compute retention rates and their standard errors in each year. We sum the at-risk group in March and November and the corresponding surviving group in March and November of the next year before computing retention rates. This tends to add additional stability to retention rates when computing them for small sub-groups of data[5]. Choosing other months does not affect the results, as one would expect given that the rotational design of the survey determines that only a minority of the sample changes from month to month.

- The question asked of Canadians has been consistent throughout the time frame while in the U.S. the data series is broken by a change in the question between the 1981 and 1983 tenure supplements. The question in Canada is more similar to the initial question asked in the U.S. In Canada, LFS respondents are asked: "When did ... start working for the current employer". This was shown by DNP (1997) to supply less response bias than an alternate question, asked of U.S. respondents after 1983: "How long has ... been working for his present employer (or as self employed)". This latter question has been shown to produce a "heaping" of responses around regular intervals, such as 5 years. Since U.S. data before and including 1983 showed little sign of heaping we expect not to find important heaping in our data. Note that in either survey, the question measures the length of tenure with a specific employer. Changes in jobs within a single employer will not be captured by either survey.

- With the exception of jobs less than one year, the data on job duration is collected in units of years in the CPS. In effect this makes the distribution a "step function". Changes after one year

[4] The CPS tenure supplement was conducted in 1996, five years after 1991. To compute four-year retention rates for 1995, NPH used the 1995 Contingent Worker Supplement. The questions were slightly different in the Contingent Worker Supplement than the Displaced Worker, Job Tenure and Occupational Mobility Supplement used in other years. Furthermore, the Contingent Worker Supplement was administered in February rather than January. This added another degree of complexity to their estimation, which is reflected in their reporting of upper and lower bounds for this retention rate estimate.

[5] For data in tables that are presented as 3-year averages, we sum at-risk and survival groups across 6 independent samples.

could be masked as percentiles move along a step until the next step is reached. Since LFS job tenure data is measured in months, this problem is not encountered. This is a particularly relevant concern when computing percentiles of the in-progress tenure distribution, and is not an issue when computing retention rates.

- The tenure questions are asked as part of the regular LFS, while in the U.S. they are asked in a supplement to the CPS, resulting in substantial non-response which does not occur in Canada.

While the surveys are similar, the differences pointed out above suggest that one should be cautious when comparing levels of job stability between the two countries. However, differences in changes over time in the two countries' estimates should be more comparable, and it is these that we focus on in the analysis.

We select our sample to mimic those used in the U.S. studies, with some minor differences which should not be very important. We include workers aged 15+ who are paid employees or self employed owners of incorporated firms (U.S. studies exclude 15 year olds). Unlike DNP and NPH we do not exclude agricultural workers. This is because the LFS has moved from the Standard Industrial Classification of 1980 (SICC80SE) to the North American Industrial Classification Standard (NAICS) between 1998 and 1999 making it impossible to exclude the exact same classes of agricultural workers, which may affect retention rates. Since we also wish to examine the most up-to-date data possible, we regard the inclusion of agricultural workers as necessary. With the exceptions of including 15 year olds and agricultural workers, there are no other differences in sample selection. The fraction of Canadian workers covered in this study declined from 90.4% in 1976 to 88.3% in 1998, to recover to 90.1 in 2001. These trends are mostly due to the unexplained rise in the unincorporated self-employed in the mid to late 1990s (See Picot, Heisz and Nakamura, 2000). Comparing years close to cyclical peaks, the fraction of workers covered was 90.7% in 1980, 90.6 % in 1989 and 90.1% in 2001.

Heaping

In our discussion of the LFS data we stated that the type of question used in Canada results in an in-progress job spells distribution that is less affected by heaping problems than the type used in the U.S. following the 1983 tenure supplement. DNP and NPH smooth heaped data in the latter supplements, but add that heaping was of little consequence for the earlier tenure supplements, so unadjusted data could be used. In Figure 2 we display the empirical distribution of job tenure data for various years. While heaping is muted compared to that seen in U.S. data (for example see DNP Figure 1), there does appear to be some clustering of responses around 5 year intervals. Whether this is an important amount of heaping is open to debate. Certainly, it affects retention rates centered around 5 year intervals of in-progress tenure. According to DNP, adjusting for heaping affects the levels of estimates, but does not greatly affect retention rate changes over time. As a result, we do not attempt to adjust for heaping in LFS data.

Education Questions

An important change was introduced to the education question in the LFS, which resulted in some re-grouping of responses, by educational attainment in and after January 1990. It is unclear what effect, if any, changes in the education question will have on retention rates. While the change certainly affects the proportions of respondents reporting certain educational attainments, it may be that these changes cancel out in the numerator and denominator of the retention rate, leaving the rate unaffected, as long as the same question was applied in period c and c-t. This approach precludes computing a one year retention rate for 1990, and four year retention rates from 1990-1993. Visual inspection of the retention rates seems to support this approach, with changes across the survey designs being attributable to cyclical factors. A second point is that the education question in the CPS asks for the number of years of education completed, compared to the LFS which asks for the highest level completed. This makes job stability by education group difficult to compare across countries.

Cyclical Adjustment

In DNP(1997) and NPH(1999) the authors cyclically adjusted their results, while in NPH(2000) they did not[6]. The decision to not adjust results in the most recent version was apparently due to the recognition that the direction of adjustment was ambiguous, as we confirm below with Canadian data. Accordingly for Canada/U.S. comparisons we do not cyclically adjust the data[7].

Standard Errors

We compute standard errors of estimates according to the manner outlined in NPH(2000). This method models the retention rate as a binomial random variable where the retention rate is the proportion of successes, and the variance is appropriately adjusted upward to account for the fact that we are using synthetic cohort data rather than actual longitudinal data. Unweighted cell counts were used to compute standard errors. As an alternative to this, we also tested for significant changes across time periods using a weighted least squares regression where the dependent variable was the log of the retention rate and the weights used were the count of observations observed to be at-risk. This method provided highly similar standard errors, and did not affect our results in any important way.

3. Job Stability: The Hollowing Out of the Canadian Distribution of In-progress Job Tenure

[6] More specifically, NPH(1999) reported unadjusted retention rate data for 1987 and 1991 but not 1995.

[7] To obtain cyclically adjusted estimates, Neumark, Polsky & Hansen (1999) adjust the retention rate (as in (2)) by the factor…

[1 / (Ex(1)Ex(2)……Ex(12t-1)]

So the adjusted retention rate becomes…
Retention Rate * [1 / (Ex(1)Ex(2)……Ex(12t-1)]

…where Ex(m) = 1 – (Ux(m) – Ux(m-1)) and Ux(m) is the residual from a regression of the monthly civilian unemployment rate on a linear time trend. If unemployment flows were always on trend, then Ux(m) = 0 and Ex(m) = 1 and the adjustment factor would be unity. Under this adjustment, retention rates are lowered over expansions and raised over contractions. Our results suggest that this adjustment method is inappropriate for Canadian data. For example, using Canadian data we see that retention rates *fall* over periods of economic expansion in the late 1970s and 1980s. An appropriate adjustment method would raise retention rates over expansions.

We first turn our attention to conducting a review of developments in Canadian job tenure. Our first objective is to find out what happened to the "Hollowing Out" of the in-progress spell distribution as reported by Green and Riddell. Our approach is to examine the distribution at specific percentiles, the 50th, 25th, and 75th and ask what has happened to the spread of this distribution from 1976-2001. We consider raw and composition constant results, but unlike Green and Riddell we do not attempt to control for entry rate effects.

Figure 3 illustrates median in-progress tenure. Over the period, median tenure increased considerably (from 39 months in 1976 to 48 months in 2001). The increase was particularly large in the 1990s. There was also some cyclical movement as median tenure rose during recovery periods, and fell during expansions. Figure 4 provides median figures by sex. The trend rise in the 1990s has been propelled by women, who closed the gap significantly with their male counterparts in the 1990s. Median tenure for women grew 50% (30 months to 45 months) between 1976 and 2001. For men, median tenure only grew 6.1% (49 months to 52 months) over the same period. This long-term change for women may be due to the rising attachment of females to the workforce since the 1960s. That is, females were less likely to withdraw from the workforce, thereby increasing the probability that longer tenured female workers would be drawn from the survey.

The fact that there was an increase in the length of in-progress job spells is not surprising considering the aging of the Canadian workforce, a phenomenon that has been well documented. In Figure 5 we examine median tenure by various age groups. The relatively flat "within group" median tenures reveal no large structural changes over time for any age group. Instead, rising aggregate tenure is more likely attributed to "between group" shifts to those with traditionally longer tenures (i.e. 40-54 and 55+). Among age categories, median tenure has increased most for 40 to 54-year olds (an increase of 13.7% between 1976 and 2001), which may reflect an aging of the population within that range.

To examine changes in job stability it is useful to control for demographic changes. We compute the 25th and 75th percentiles of in-progress tenure for 54 demographic groups where the groups are defined by gender, three educational attainment levels and 9 age groups[8], dropping the 15-20 year group from this analysis to diminish the effect of changing youth participation rates which are dictated largely by changing trends in school enrolment. Weighted average percentiles for the employed population are then computed across these 54 cells holding demographic composition at its 1976 values. Cell weights are the unweighted count of observations in each cell, however using survey weights produced similar results.

We first focus on the distribution for men, which would not have been affected by changes in past inflow rates in the same manner as for women. Composition constant values for the 25th, 75th and inter-quartile ranges are given in Figure 6. The bottom quartile rose by 7 months from 1976 through 1983, and afterward fell steadily through the 1980s and 1990s ending in 2001, 14 months lower than the 1983 peak. The 75th percentile rose by 7 months to 1984, stayed high until 1996 then fell up to 2001. The net result of these changes is that the inter-quartile range rose by 5 months between 1976 and 1989, and remained that high through the 1990s. While this analysis controls for the age, education and gender composition of the labour force, it does not attempt to control for changes in

8 21-25 and 5 year intervals up to 61-65.

inflow rates. Nevertheless, the results are similar to those found by Green and Riddell, who do control for inflow rates. Here we see a hollowing out of the tenure distribution through the 1980s, as the distribution fills with more long jobs in-progress, and more short jobs in-progress. The hollowing out trend does not seem to continue or reverse itself through the 1990s as indicated by the inter-quartile range remaining 5 months higher though 2001. We also see a trend towards more short in-progress job spells. Most of the rise in inter-quartile range that follows 1983 is associated with a fall in the spell length at the 25th percentile. The top quartile spell length was relatively constant from 1983 to 1996, and fell in 1997-2001 contributing negatively to the inter-quartile range.

Figure 7 shows results for women. As was the case discussing median tenure above, spell lengths at the 75th percentile rose steadily for women throughout the period—although the rate of growth slowed slightly in recession years. Increasingly more women are in the midst of long job spells. As a result, the inter-quartile range of spell lengths for women also rose steadily.

While not conclusive, these results suggest that the hollowing out of the in-progress tenure distribution identified by Green and Riddell for the late 1980s was sustained through the 1990s. This result is more convincing for men for whom it is less likely that changing inflow rates play a large role. However, in the preceding analysis it was difficult to see how much this was derived from entry effects. Ultimately to understand job stability one must move away from studies of the distribution of in-progress spells. In the next section we directly examine the job survival function by examining retention rates[9].

4. One year retention rates

All Workers

Figure 8 shows the average one year retention rate for all jobs in-progress. The data is characterized foremost by a positive trend and broad cyclical swings. Cyclical movements in job stability are the net outcomes of changes in the quit rate and the permanent layoff rate. The magnitudes of each of these effects are such that the pro-cyclical quit rate tends to dominate during boom periods, but the counter-cyclical permanent layoff rate dominates in the event of economic downturn. In 1977, 74.4% of jobs were expected to last another year. Through the 1980s and early 1990s the one year rate tended to rise during periods of labour market slack, such as between 1982 and 1983, and 1991 and 1994, and fall during boom periods like 1979-80 and 1983-88, when opportunities to advance through changing jobs were most likely to be present. It also dropped in 1982, and was low in 1991, consistent with relatively higher layoffs in those years (Picot and Lin, 1997). Interestingly, one year retention rates continued to rise into the late 1990s—a period thought to be one of recovery. The fact that the average retention rate did not fall in 1998 or 1999 suggests that labour markets remained unfavourable to workers through those years. The rate dropped more between 2000 and 2001, consistent with an improving labour market. Looking forward to comparisons with U.S. results for which we have data points for 1987, 1991 and 1995, job stability in Canada appears to be high in 1995 relative to 1987 and 1991.

[9] We performed a similar analysis to look at the proportion of jobs with current length in the ranges: less than one year, 1-<2 years, 2-<9 years, 9-<15 years and 15+ years. The results confirmed these findings on changes in the distribution of in-progress job spells.

Data points in Figure 8 represent the average retention rate faced by workers in each respective year. Underlying changes in average job stability are changes in job stability conditional on initial job length. Figure 9 shows retention rates for all workers according to their initial tenure. Job stability rises up to 9 to <15 years of initial tenure, after which stability falls. However, unlike the aggregate retention rate shown in Figure 8, there does not appear to be any strong trend increases in retention rates. In fact, the most striking change is a rise after 1993 in the probability that a job with initial tenure of 1-12 months will continue for one more year. This statistic dropped from a 1977 level of 46 percent to 40 percent in 1993, and rose steadily in the 1990s to 54 percent by 2001. Job stability for other initial tenure groups showed less clear patterns. The one year retention rate for jobs between 1 and 2 years long rose in the early 1990s as workers who entered jobs in the 90s recession held their jobs longer than in other years. Medium job stability—the one year retention rate for jobs initially 2 to <9 years long rose in the recoveries of the 1980s and 1990s. Long job stability did not change substantially over the period.

Figure 1 shows that average in-progress tenure rose over this period. Given the fact that there were no large trend increases in job stability by initial tenure groups, then we are led to the conclusion that much of the trend rise in the one-year retention rate was due to a rise in in-progress tenure. In Figure 10 we show average one year retention rates holding the in-progress tenure distribution constant at its 1976 value. Here we see a much less dramatic rise in retention rates. The raw retention rate rose 3.8 percentage points between 1977 and 2001 compared to 1.6 percentage points for the composition constant retention rate over the same period. This is as expected given the muted period long trend increases in job stability by in-progress tenure seen in Figure 9.

In Table 2 we apply some statistical tests to these results. The top panel of the table compares retention rates observed during three periods—1978-1980, 1987-1989 and 1998-2001—chosen because they represent expansion phases of the business cycle. Changes in retention rates described above are all statistically significant. There was also a drop in retention rates for workers with between 2 and 9 years of initial tenure of a modest 1.7 percentage points, which occurred over the 1980s.

The lower panel of Table 2 presents the results of two regression estimations designed to capture the influence of the cycle on retention rates. The first column in the lower panel shows results from a regression featuring a linear trend variable. The raw one year retention rate rose by 6.1% over the period. This was driven partly by a substantial increase in the stability of jobs with current tenure less than one year and one to two years which rose 10.0% and 3.6% respectively. However, most of the increase was due to a shift in composition towards jobs with longer current tenure. Holding this composition constant reduces the trend increase to 2.2%.

However, results in the first column of Table 2 are somewhat misleading given that we know job stability has not followed a linear course over this period. First, we have seen a general decline in stability across the 1980s followed by a rise in stability in the 1990s. Second, we have also seen cyclical movements in the data. Model 2 controls for the trend quadratically, and adds the log of the unemployment rate as a cyclical control. Here we see that the positive trend was not a period long phenomenon, and in fact job stability fell significantly over the 1980s and rose over the 1990s for men and women. This change was concentrated mainly among workers with current tenure of less than one year. After controlling for this non-linear trend, job stability is shown to be counter-cyclical—rising during recessions and falling during recoveries. Most of this counter-cyclical movement appears to come from medium initial length jobs of 2 to 15 years long.

Do these results appear to be driving the hollowing out of the job tenure distribution? In Figure 11 we show the steady state job tenure distribution implied by the one year retention rates. In fact, short jobs did become more common between 1977 (when 54% of jobs were less than one year in length) and 1993 (when 60% of jobs lasted this long). Over the same period the fraction of jobs which lasted 1-2 years fell from 14% to 9%. The fraction of jobs lasting more than 2 years showed no distinct trend. After 1993, the fraction of jobs expected to be short jobs declined substantially, while the fractions lasting 1 to <2 years and 2 to <9 years each rose. Thus, changes in job stability may have played a role in the widening of the current job tenure distribution up to 1993 by supplying more short term jobs, and increasing the length of medium term jobs, essentially hollowing out the job tenure distribution. However there is no evidence that job stability has increased for longer current tenures, thus the rise in the fraction of long job spells must be due to historical factors such as higher retention rates in the past, or a change in job entry rates.

From the preceding discussion, one would correctly suspect that much of the trend variation in job tenure was driven by changes in stability of short initial tenured jobs. Figure 12 shows predicted one year retention rates after holding the initial tenure distribution constant and fixing the values of R1 and R2 (the one year retention rates for jobs with initial tenure less than one year and one to two years respectively) at their 1977 values. This removes the contribution of changes in job stability at the short end of the tenure distribution from overall changes in stability. In Figure 12, any trend in retention rates is negligible, and the 2001 point is at a similar level as those seen in the late 1980s or 1970s. This demonstrates that the most dynamic part of the job survival function is that which represents the stability of short initial tenured jobs.

By Demographic Group

While aggregate trends are slight, these may mask trends within specific demographic sub-groups. Figure 13 shows one year retention rates by sex. Rates evolved similarly for men and women up to 1989, with one year retention rates averaging about 3 percentage points higher for men. In 1990 and 1991 women closed the gap with men, and after 1991, retention rates were virtually equal for men and women. Table 3 shows one year retention rates for men and women. Patterns seen in the results for all workers are mirrored here, showing job stability declining across the 1980s and then rising in the 1990s, driven by changes in short tenured jobs. There were no statistically significant changes for jobs of longer initial lengths except for a small decline in job stability for men with initial tenure of 2-9 years across the 1980s.

Figure 14 shows results by age. Retention rates are lowest for the youngest workers and rise as workers age, up to age 55+ when rates fall again. This is strongly related to differences in job stability by initial tenure which was likewise shown to rise in this manner. This makes sense because as workers age they will have had more opportunities to find a good job match and more time to accumulate tenure. As with retention rates by initial tenure, retention rates by age rose little over the period. In fact, retention rates appear to fall slightly for the 15-24 group, possibly reflecting the trend towards increased school participation (and falling participation rates) for young workers. Table 4 shows one year retention rates by sex and age. The now familiar patterns of decline across the 1980s and rise across the 1990s are again reflected by age groups. Concerning the composition constant retention rate, the only significant period-long change was a decline in stability for jobs held by women aged 15-24. However, this rate had risen over the 1990s. That there were no significant period long increases in job tenure after holding current tenure and age constant suggests that some of the rise in the composition constant retention rates observed in Table 2 and 3 reflect worker aging within initial tenure categories.

Figure 15 shows retention rates by education. Retention rates rise with educational attainment, and appear to have increased over the period for workers with some post-secondary education. Statistical results are shown in Table 5. The decline in job stability across the 1980s appears to be concentrated in the high school or less category with the university category declining but not significantly. Increases across the 1987-89 to 1999-2001 period should be interpreted with caution due to the change in education questions in the LFS in 1990. However, that retention rates rose for all education groups across this period is consistent with the patterns of results we saw with other groups. While estimated retention rates rose substantially across the 1990s for the some post secondary group, it is possible that this increase is overstated due to the change in the survey question, and the result should be interpreted with caution.

5. Job Stability: Canada – U.S. Comparisons

Four Year Retention Rate Results

For comparisons to U.S. data, we now report results for the four year retention rate shown in Figure 16. The four year retention rate shows similar movements over the period as the one year retention rate (although at a lower level). As with the one year rate, the probability that all jobs would last an additional four years appears high in the late 1990s. However any trend in the four year retention rate is overshadowed by cyclical movements. U.S. values are also shown in Figure 16. Despite the differences in the survey instruments the four year retention rates are quite similar in level, and also show qualitatively similar changes across the three points for which we have U.S. results.

Table 6 shows results for the four-year retention rate for the U.S. and Canada. Over the 1987 to 1995 period average retention rates rose in Canada by 1.2 percentage points and fell in the U.S. by 1.0 percentage points. As indicated by NPH, these changes are not likely indicative of long term trends, a fact underscored by the cyclical volatility of the Canadian four year retention rate as indicated in Figure 16. Job stability rose substantially for low initial tenure jobs in both countries with the bulk of the growth happening the 1990s, indicating that the shift towards higher job stability for low tenured jobs was a phenomenon occurring in both countries in that decade. However, declines in job stability for jobs longer than 2 years was noted in the U.S. but not in Canada. In the U.S. there were declines in job stability for each age group, while in Canada declines were only noted for the youngest workers. Women enjoyed increased job stability in both countries, while men appear to have lost job stability in the U.S. but not Canada.

Why the relative increase in job stability in Canada across the 1990s? One possible explanation relates to the slow economic recovery in Canada in that decade. Job stability tends to decline in periods of economic recovery as workers change jobs more often. For example, across 1987 to 1991, job stability fell for most workers in both countries reflecting economic expansion in the late 1980s. However, the 1990s decade was particularly hard for Canadian workers. It may be that in the face of poor alternative job prospects, Canadian workers tended to stay longer on their jobs than in previous recoveries, and in turn longer than their American counterparts who enjoyed the benefits of a quicker recovery and expansion in the 1990s. This seems to have affected medium to longer tenured workers since short tenured workers have increased job stability in both countries. In fact we saw above that job stability does tend to move in a counter-cyclical manner, and that the cyclical elasticity of tenure is higher for jobs with medium-length initial tenure. A relative rise in unemployment in Canada may have driven an increase in job stability for medium tenured workers —seen in Table 5 as a relative rise in retention rates for workers aged 25 to 39 and workers with 2-9 years initial tenure. These facts are all consistent with the argument that a slower recovery in Canada underlies the relative increase in job tenure over this period. It appears that a faster recovery in the U.S. may have made it easier for medium and long tenured workers to change jobs. However, as stated above, one should be cautious about making strong statements about trends inferred from three data points, particularly when it is shown using Canadian data that job stability can change substantially with changes in the business cycle.

6. Conclusion

Using data from the Canadian Labour Force Survey from 1976 to 2001 we examine job tenure, through looking at the tenure distribution of in-progress jobs, plus looking at the stability of jobs as measured by retention rates—the probability that a job will last one or four more years. To make results comparable to U.S. literature, we include in our sample paid workers plus incorporated self-employed workers, accounting for about 90% of employment in most years. We find that there was a polarization of the Canadian in-progress spell distribution that took place over the first half of the 1980s such that there were more jobs in-progress with short tenure, and more jobs in-progress with long tenure. Polarization continued through the 1990s and corresponds to Green and Riddell's (1997) finding of the "hollowing out" of the in-progress tenure distribution.

However, we do not find a strong period long shift in the stability of jobs as measured by retention rates—a fact which is particularly apparent after controlling for changes in the initial tenure distribution. Before controlling for initial tenure, aggregate job stability appeared to be on the rise for Canadians, but the trend increase in job stability was mainly due to the rise in the in-progress tenure distribution, which is related to the aging of the workforce. A closer look reveals two phases in the data: between 1977 and 1993 there was a drop in the stability of short initial tenured jobs (less than one year long), and in the early 1990s a rise in the stability of medium tenured jobs (from one to less than two years long). Following 1993 these factors reversed, essentially returning to the levels of job stability seen in the late 1970s. This is the most salient change in the Canadian job tenure distribution we observed over this period.

Reconciling changes in retention rates with changes in the distribution of in-progress job tenure, we find that the hollowing out of the in-progress job tenure distribution had some basis in changes in job stability, at least from 1977 to 1993. During this period, job retention rates changed such that the distribution of in-progress jobs filled with more short tenured jobs and fewer medium tenured jobs (particularly of around 2 years in length). However, the rise in the fraction of jobs with long in-progress tenure and the continued increase in the fraction of jobs with short in-progress tenure following 1993 appears to be due to other factors such as a rise in job entry rates.

Comparing our results to trends in the U.S., we find that job stability in Canada rose relative to the U.S. between 1987 and 1995. We note that there are a number of data differences which force one to use caution in making this comparison, and that one must be wary in making trend conclusions based upon only a few data points. However, this finding is consistent with the fact that economic growth was relatively slow in Canada. Job stability tends to move counter-cyclically and Canada’s relatively slower economic growth in the 1990s might underlie its relatively larger increase in job stability. However, this is speculative, and other factors should not be discounted including (unobserved) changes in demographics, and changes in institutions. Also this paper does not examine the influence changes in industrial structure may have had on job stability.

Interestingly, the strong trend towards increased stability of jobs with short initial tenure across the 1990s seems to have occurred in both Canada and the U.S. Further research could focus on short initial tenured jobs in the effort to explain the countervailing trends across the 1980s and 1990s. In any case, short term jobs seem to have become less common in both countries. To modify the statement which appears at the beginning of this paper, it appears that in both Canada and the U.S. in the 1990s, reports of the rise of short-term jobs are also “greatly exaggerated”.

Table 1: A Summary Of Retention Rate Groupings We Use In This Study

Description	Formula
Average Retention Rate	$=\gamma_0 R_{1,c} + \gamma_1 R_{2,c} + \gamma_2 R_{3,c} + \ldots + \gamma_{29} R_{30,c}$
By Initial Tenure	
Retention Rate for jobs with initial tenure <1 year	R_1
Retention Rate for jobs with initial tenure from 1 to <2 years	R_2
Retention Rate for jobs with initial tenure from 2 to <9 years	$=\gamma_2 R_{3,c} + \gamma_3 R_{4,c} + \gamma_4 R_{5,c} + \ldots + \gamma_8 R_{9,c}$
Retention Rate for jobs with initial tenure from 9 to <15 years	$=\gamma_9 R_{10,c} + \gamma_{10} R_{11,c} + \gamma_{11} R_{12,c} + \ldots + \gamma_{14} R_{15,c}$
Retention Rate for jobs with initial tenure of 15 years or more	$=\gamma_{15} R_{16,c} + \gamma_{16} R_{17,c} + \gamma_{17} R_{18,c} + \ldots + \gamma_{29} R_{30,c}$

Table 2: One Year Retention Rates, All Workers

	Period 1978-1980 (1)	Period 1987-1989 (2)	Period 1998-2001 (3)	Difference between periods[a] (2)-(1)	Difference between periods[a] (3)-(1)
Initial Tenure					
0-<1	0.475	0.42	0.547	-0.055*	0.072*
1-<2	0.737	0.733	0.743	-0.004	0.005
2-<9	0.862	0.845	0.845	-0.017*	-0.017*
9-<15	0.963	0.965	0.959	0.002	-0.004
15+	0.932	0.934	0.94	0.002	0.008
Total	0.764	0.744	0.799	-0.020*	0.035*
Initial tenure distribution held constant	0.765	0.743	0.778	-0.022*	0.013*

	Model 1[b] Trend	Model 2[c] Trend	Model 2[c] Trend-squared	Model 2[c] ln(UR)
Initial Tenure				
0-<1	0.100~	-0.972*	1.043*	0.011
1-<2	0.036+	0.119	-0.08	0.033
2-<9	-0.004	-0.063	0.056	0.061*
9-<15	0.003	0.006	0	0.051+
15+	0.011	-0.055	0.061	0.01
Total	0.061*	-0.231*	0.281*	0.103*
Initial tenure distribution held constant	0.022*	-0.179*	0.193*	0.044*

*, ~, and + indicate that the difference is significantly different from zero at the 1%, 5% and 10% level respectively.

a: For the top panel, standard errors are computed as described in the text.

b: Weighted least squares regression of the log of the retention rate on a linear trend and monthly dummies. Weights are given by the unweighted count of observations at-risk. The trend coefficient is scaled so that the estimate represents the percentage change in the dependent variable over the 1977 to 2001 period.

c: As in (b) but adding the trend squared and the log of the unemployment rate. The unemployment rate is averaged across the 13 months comprising t to t-12.

Table 3: One Year Retention Rates, by Initial Tenure and Sex

		Period		Difference between periods	
	1978-1980 (1)	1987-1989 (2)	1998-2001 (3)	(2)-(1)	(3)-(1)
Men					
Initial tenure					
0-<1	0.448	0.415	0.531	-0.033*	0.082*
1-<2	0.748	0.733	0.77	-0.015	0.022+
2-<9	0.876	0.851	0.844	-0.025*	-0.032*
9-<15	0.964	0.98	0.968	0.016	0.004
15+	0.942	0.941	0.948	-0.001	0.006
Total	0.778	0.761	0.804	-0.017*	0.026*
Initial tenure distribution held constant	0.779	0.761	0.791	-0.018*	0.012*
Women					
Initial tenure					
0-<1	0.508	0.424	0.564	-0.084*	0.056*
1-<2	0.724	0.732	0.715	0.008	-0.01
2-<9	0.843	0.839	0.847	-0.003	0.004
9-<15	0.962	0.944	0.95	-0.018	-0.012
15+	0.895	0.92	0.927	0.024	0.032+
Total	0.741	0.722	0.793	-0.019*	0.051*
Initial tenure distribution held constant	0.742	0.716	0.758	-0.026*	0.017*

*, ~, and + indicate that the difference is significantly different from zero at the 1%, 5% and 10% level respectively.

Standard errors are computed as described in the text.

Table 4: One Year Retention Rates, by Sex and Age

		Period		Difference between periods	
	1978-1980 (1)	1987-1989 (2)	1998-2001 (3)	(2)-(1)	(3)-(1)
Men					
Total					
Age 15-24	0.593	0.519	0.574	-0.074*	-0.019~
Age 25-39	0.808	0.794	0.811	-0.014~	0.003
Age 40-54	0.878	0.874	0.888	-0.004	0.01
Age 55+	0.82	0.787	0.817	-0.033~	-0.002
Initial tenure distribution held constant					
Age 15-24	0.596	0.544	0.584	-0.052*	-0.012
Age 25-39	0.808	0.796	0.814	-0.011~	0.007
Age 40-54	0.877	0.871	0.888	-0.006	0.011
Age 55+	0.818	0.797	0.816	-0.021	-0.002
Women					
Total					
Age 15-24	0.601	0.53	0.556	-0.071*	-0.045*
Age 25-39	0.777	0.756	0.801	-0.021*	0.024*
Age 40-54	0.845	0.82	0.879	-0.025*	0.034*
Age 55+	0.807	0.763	0.82	-0.045*	0.013
Initial tenure distribution held constant					
Age 15-24	0.601	0.553	0.571	-0.049*	-0.030*
Age 25-39	0.778	0.754	0.788	-0.024*	0.01
Age 40-54	0.845	0.823	0.856	-0.022~	0.01
Age 55+	0.807	0.783	0.818	-0.024	0.011

*, ~, and + indicate that the difference is significantly different from zero at the 1%, 5% and 10% level respectively.

Standard errors are computed as described in the text.

Table 5: One Year Retention Rates, by Sex and Educational Attainment

	Period 1978-1980 (1)	1987-1989 (2)	1998-2001 (3)	Difference between periods (2)-(1)	(3)-(1)
Men					
Total					
High School or Less	0.771	0.733	0.77	-0.038*	-0.001
Some Post-Secondary	0.755	0.771	0.813	0.017~	0.058*
University	0.856	0.85	0.853	-0.005	-0.003
Initial tenure distribution held constant					
High School or Less	0.773	0.737	0.766	-0.035*	-0.006
Some Post-Secondary	0.755	0.777	0.795	0.021~	0.040*
University	0.853	0.835	0.842	-0.018	-0.011
Women					
Total					
High School or Less	0.739	0.697	0.76	-0.042*	0.021*
Some Post-Secondary	0.728	0.736	0.796	0.009	0.068*
University	0.798	0.795	0.845	-0.003	0.048*
Initial tenure distribution held constant					
High School or Less	0.74	0.691	0.726	-0.048*	-0.014~
Some Post-Secondary	0.728	0.738	0.764	0.01	0.036*
University	0.79	0.777	0.815	-0.013	0.025

*, ~, and + indicate that the difference is significantly different from zero at the 1%, 5% and 10% level respectively.

Standard errors are computed as described in the text.

Table 6: Four Year Retention Rate Comparisons Canada and U.S.

(Selected Years 1987, 1991, 1995)

	Canada					United States (a)				
	1987	1991	1995	87-91 Change	87-95 Change	1987	1991	1995	87-91 Change	87-95 Change
Total	0.556	0.517	0.568	-0.039*	0.012*	0.561	0.539	0.551	-0.022*	-0.010*
Initial Tenure										
0-<2	0.297	0.285	0.343	-0.012*	0.047*	0.344	0.348	0.396	0.004	0.052*
2-<9	0.635	0.58	0.628	-0.054*	-0.007	0.611	0.552	0.572	-0.059*	-0.039*
9-<15	0.759	0.761	0.762	0.002	0.002	0.861	0.821	0.758	-0.040*	-0.103*
15+	0.788	0.769	0.772	-0.019	-0.016	0.653	0.706	0.641	0.053*	-0.012
Age										
15-24(b)	0.39	0.309	0.371	-0.081*	-0.019*	0.318	0.282	0.296	-0.036*	-0.022*
25-39	0.629	0.566	0.622	-0.063*	-0.007	0.609	0.58	0.58	-0.029*	-0.029*
40-54	0.699	0.685	0.692	-0.014	-0.007	0.715	0.687	0.683	-0.028*	-0.032*
55+	0.414	0.412	0.404	-0.002	-0.01	0.489	0.471	0.457	-0.018	-0.032*
Sex										
Men	0.588	0.542	0.586	-0.046*	-0.003	0.601	0.566	0.568	-0.035*	-0.033*
Women	0.515	0.488	0.55	-0.027*	0.035*	0.514	0.509	0.532	-0.005	0.018*

* Denotes change is significant at 5% level
(a) Source: Neumark, Polsky and Hansen (2000)
(b) 16-24 for the U.S. results

Figure 1: Average In-Progress Tenure

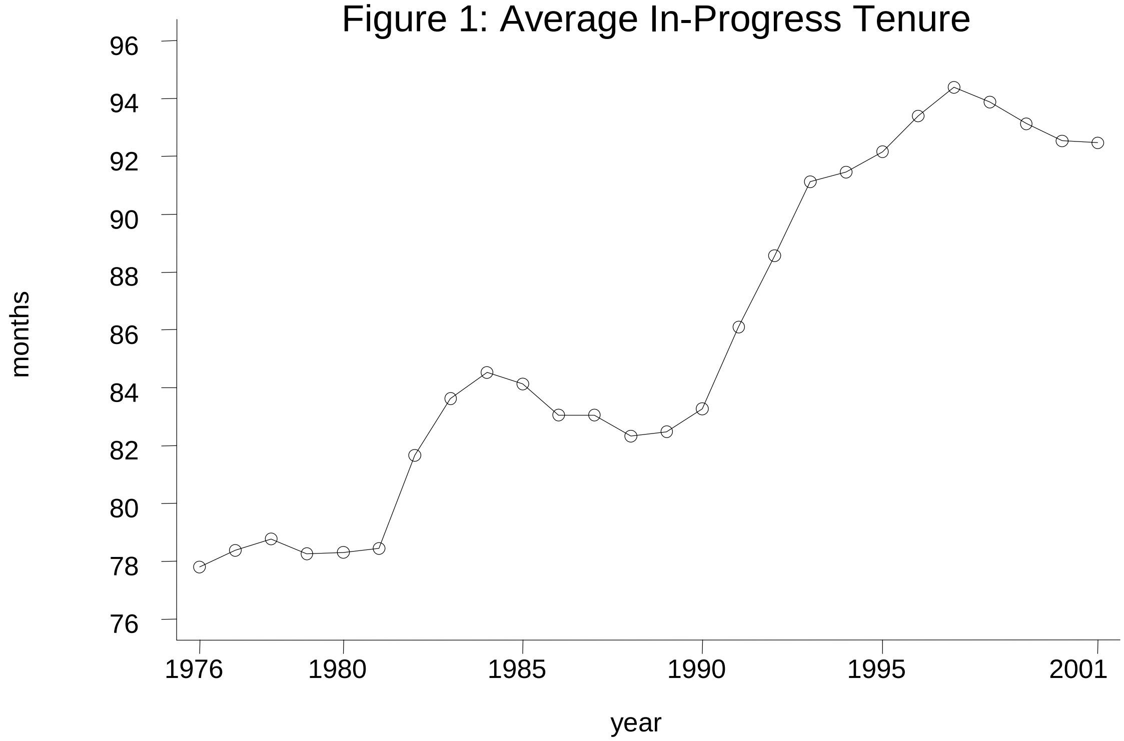


Figure 2: Empirical Distributions for Tenure

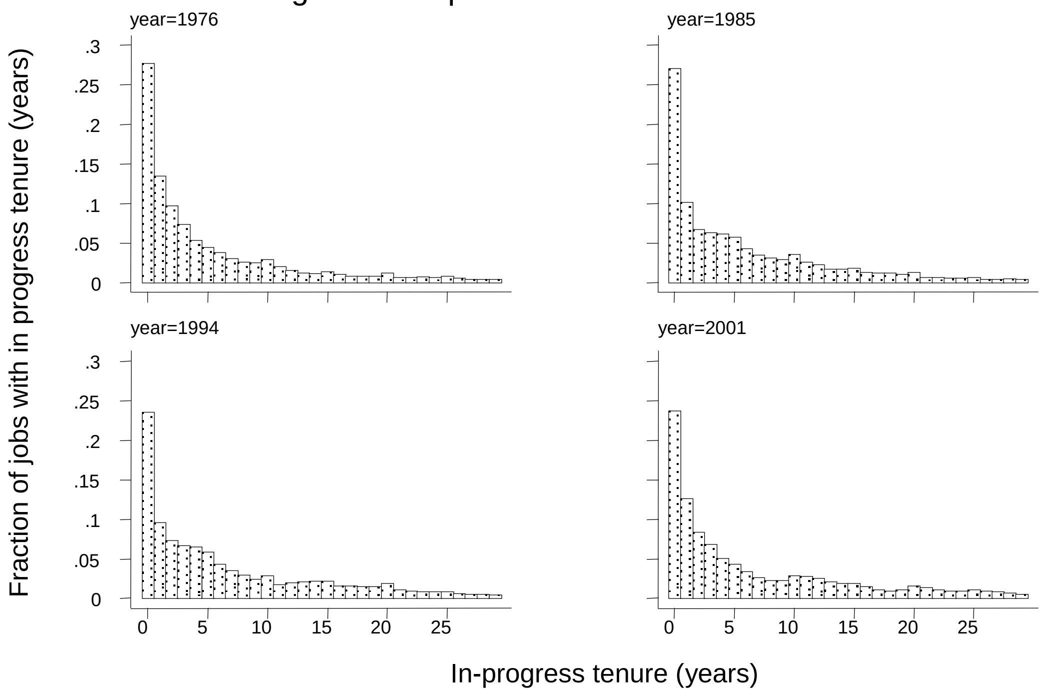
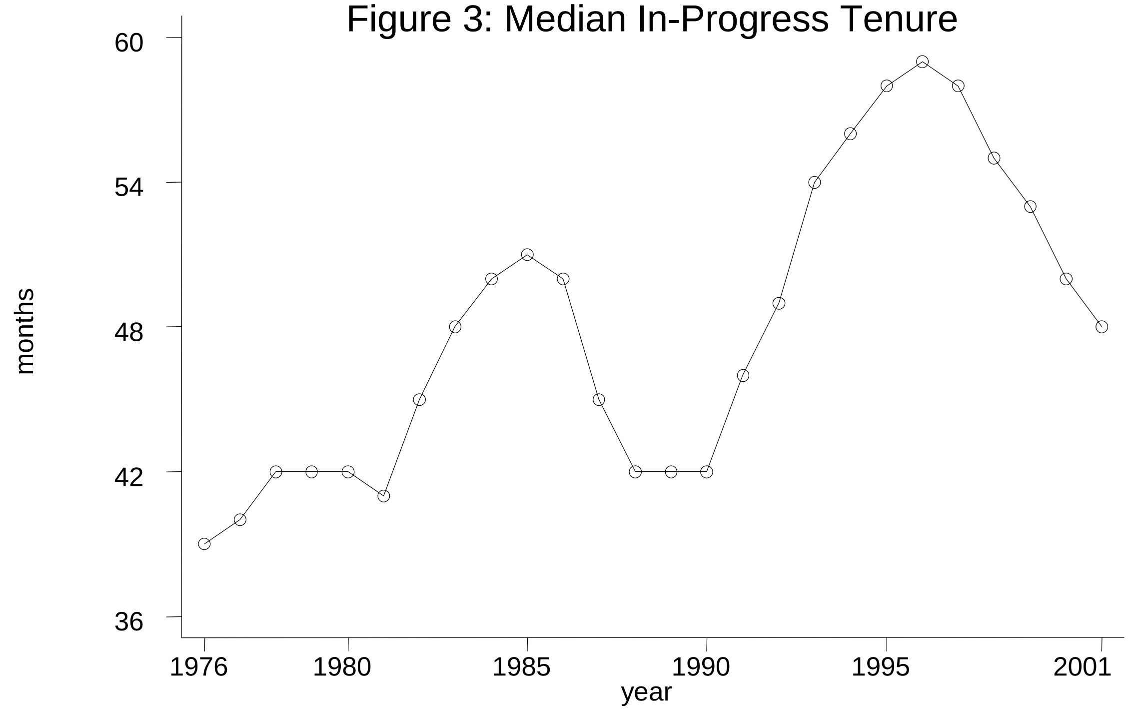


Figure 3: Median In-Progress Tenure



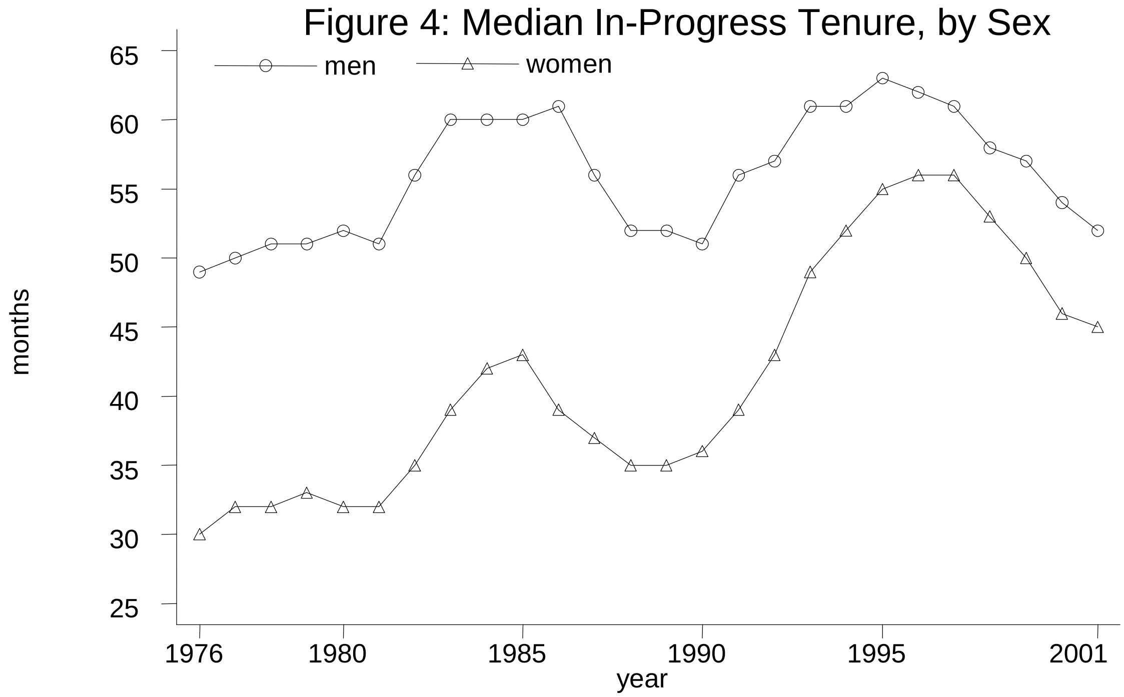


Figure 4: Median In-Progress Tenure, by Sex
men
women
months
65
60
55
50
45
40
35
30
25
1976
1980
1985
1990
1995
2001
year

Figure 5: Median In-Progress Tenure, by Age

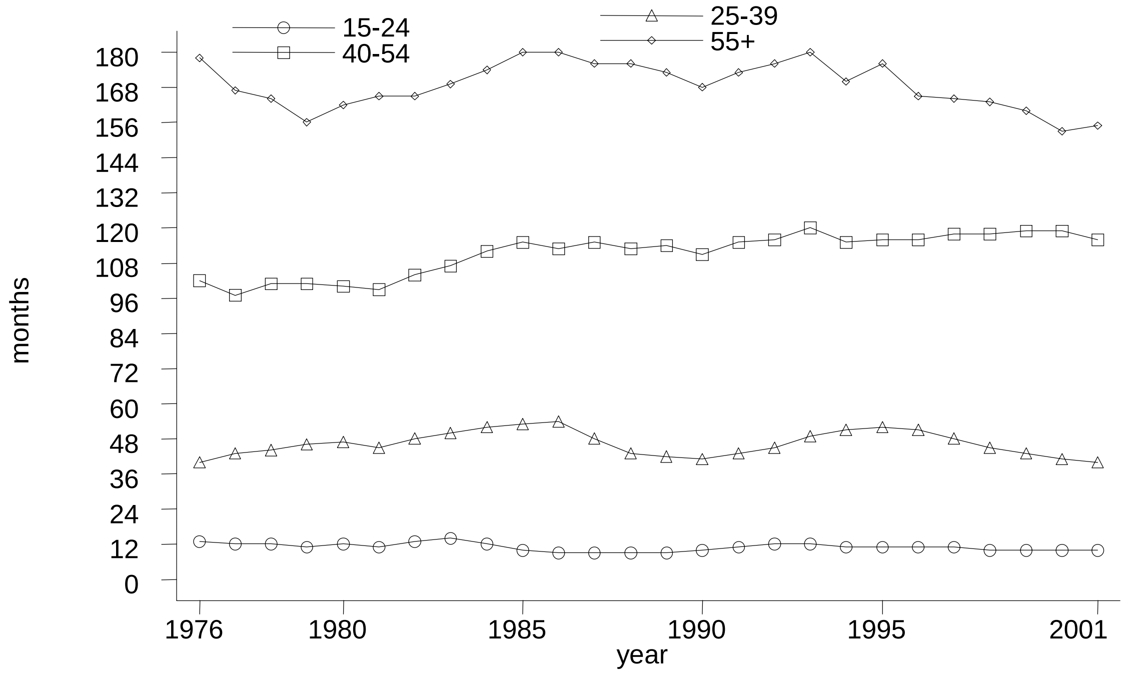


Figure 6: In-Progress Tenure Index, Age and Education Constant, Men

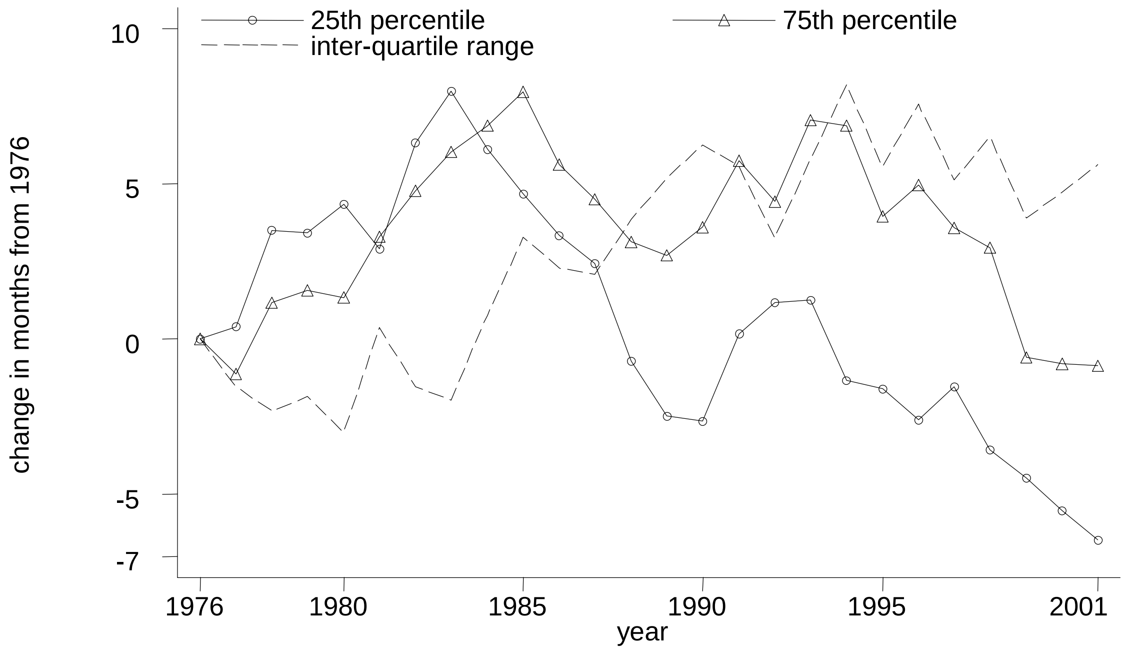


Figure 7: In-Progress Tenure Index, Age and Education Constant, Women

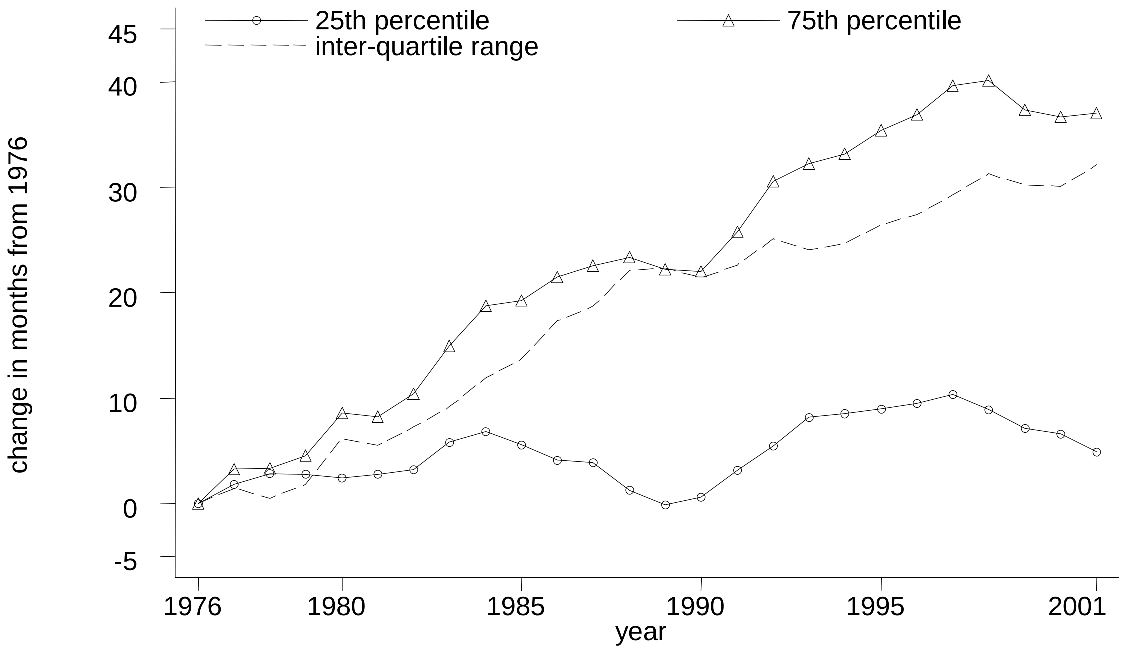


Figure 8: One Year Retention Rate

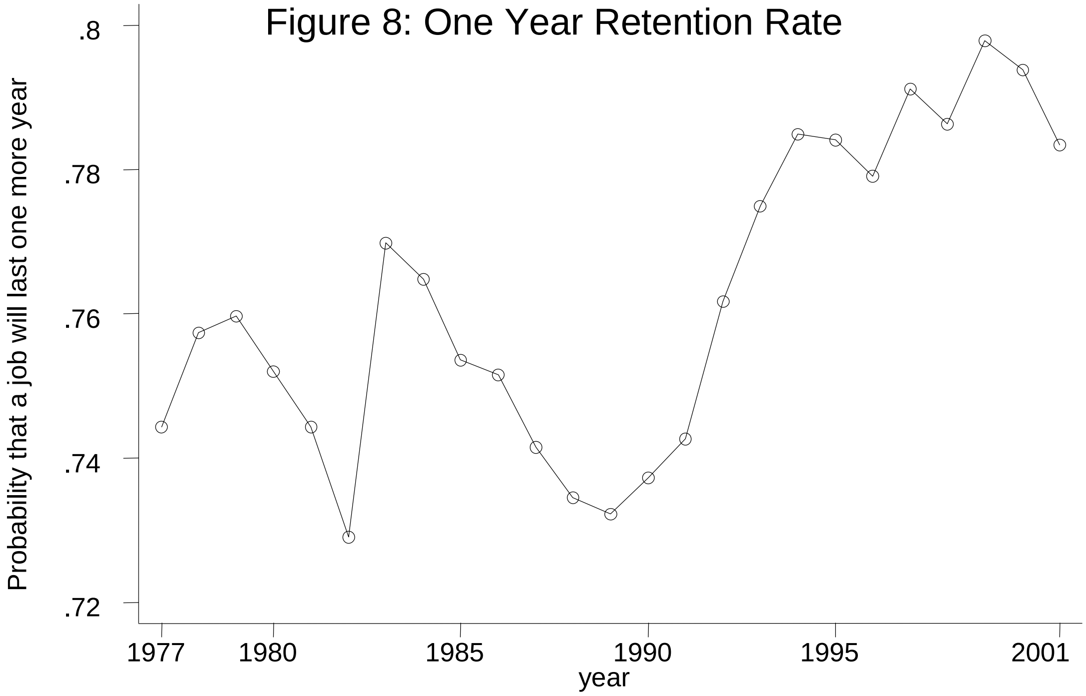


Figure 9: One Year Retention Rate, by Initial Tenure

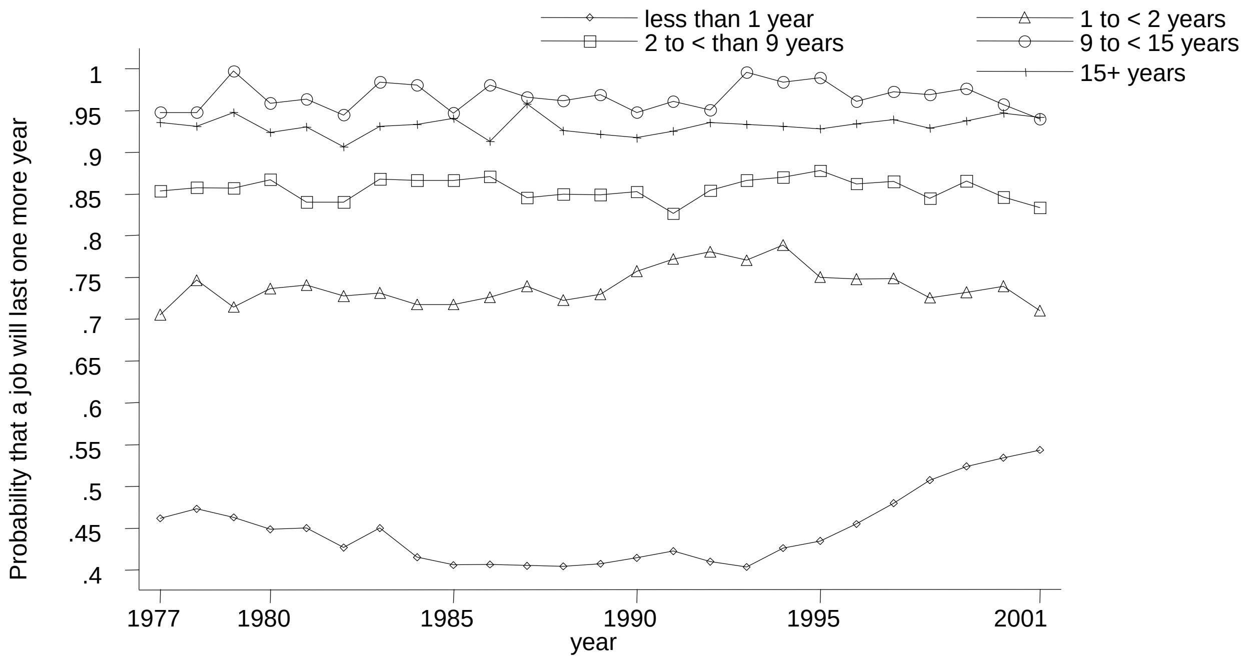


Figure 10: One Year Retention Rate, Initial Tenure Distribution Constant

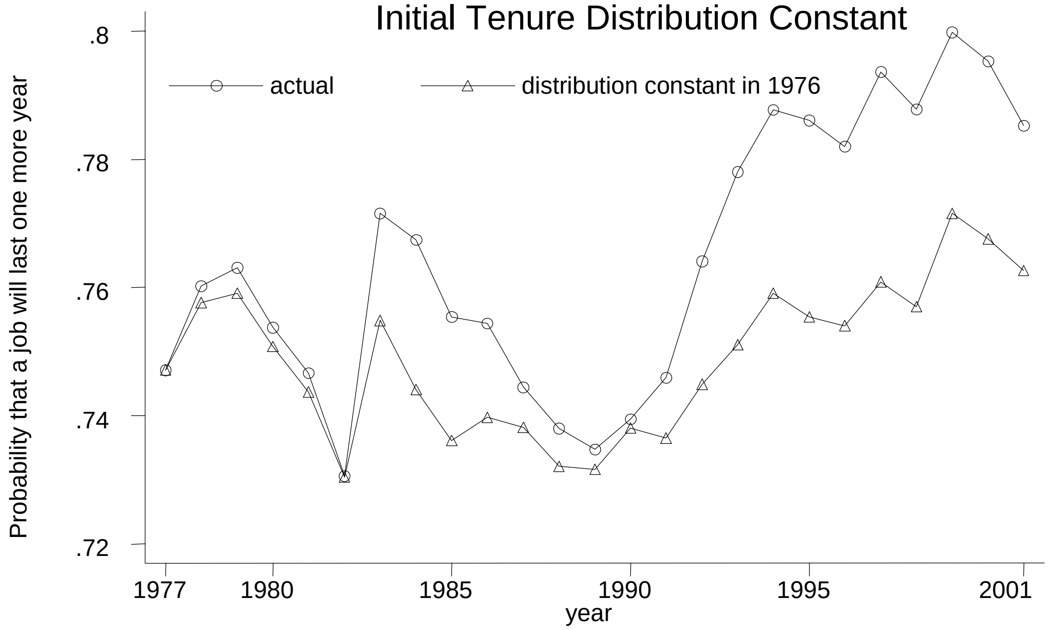
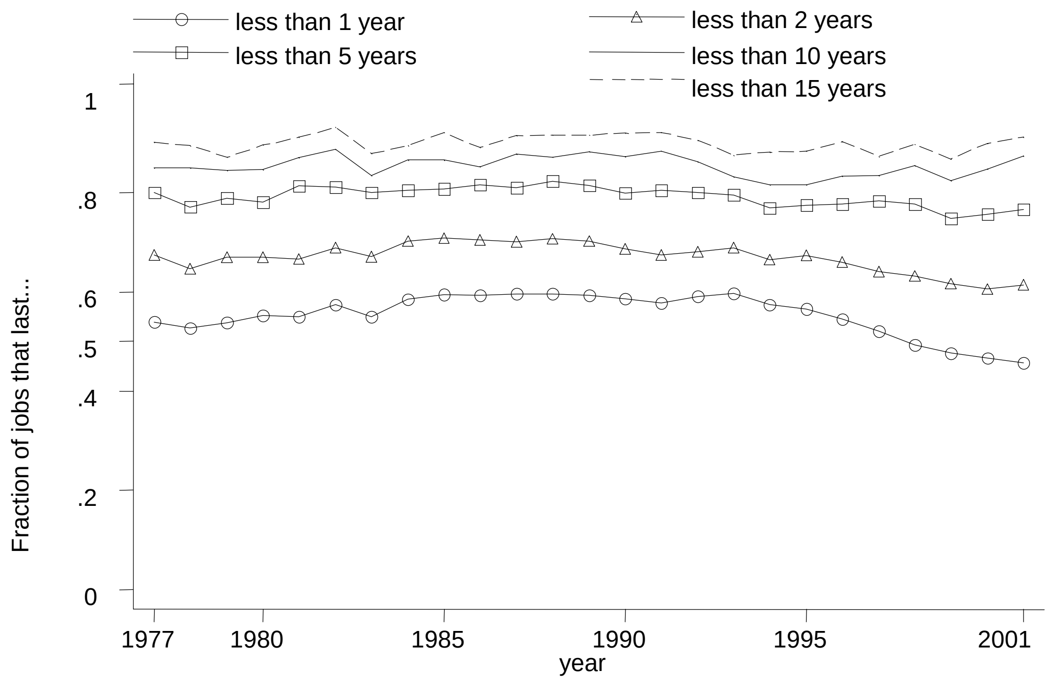


Figure 11: The Steady State Job Tenure Distribution



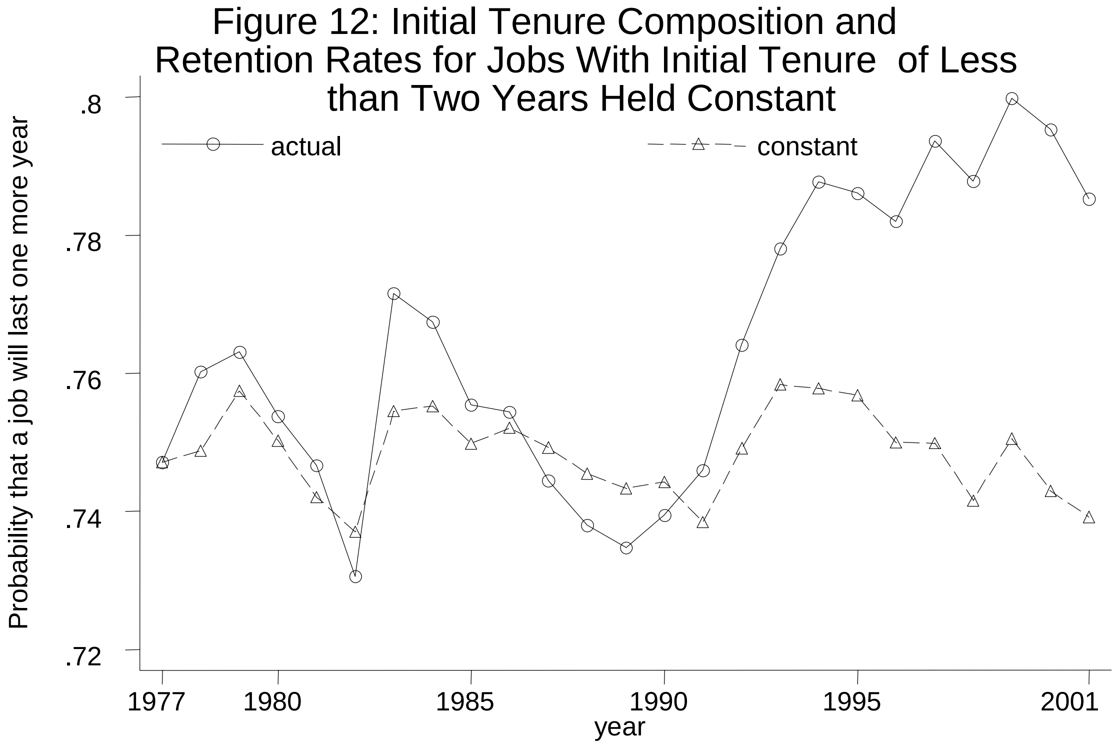


Figure 12: Initial Tenure Composition and
Retention Rates for Jobs With Initial Tenure of Less
than Two Years Held Constant
Probability that a job will last one more year
.8
.78
.76
.74
.72
actual
constant
1977
1980
1985
1990
1995
2001
year

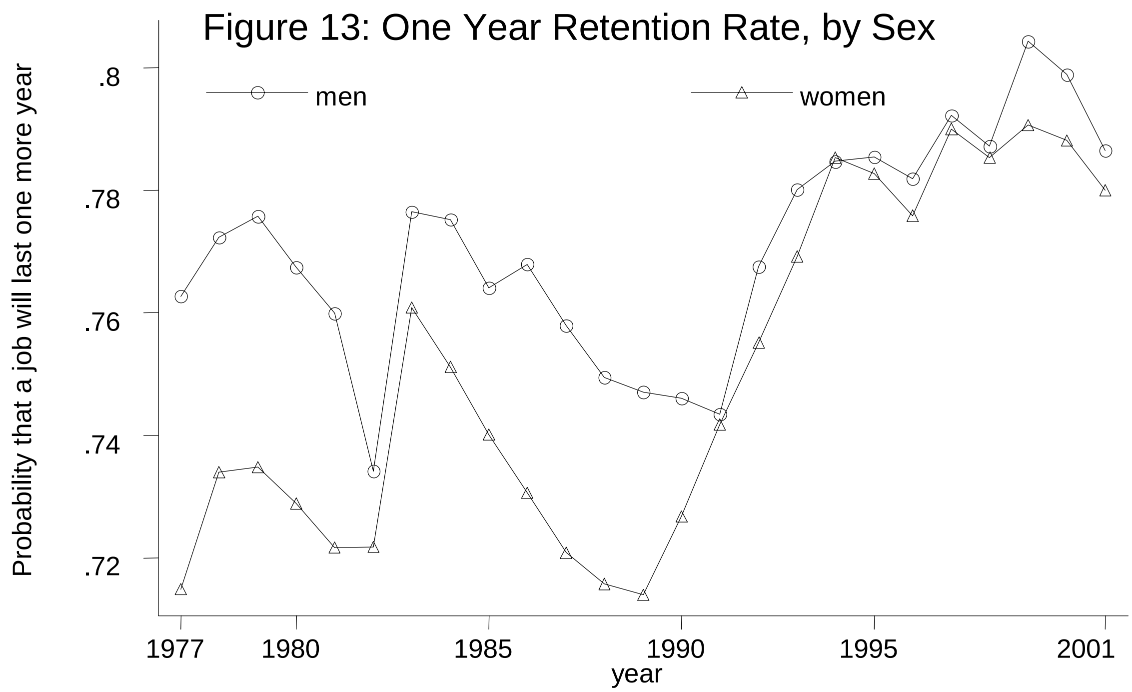


Figure 13: One Year Retention Rate, by Sex
men
women
Probability that a job will last one more year
.8
.78
.76
.74
.72
1977
1980
1985
1990
1995
2001
year

Figure 14: One Year Retention Rate, by Age

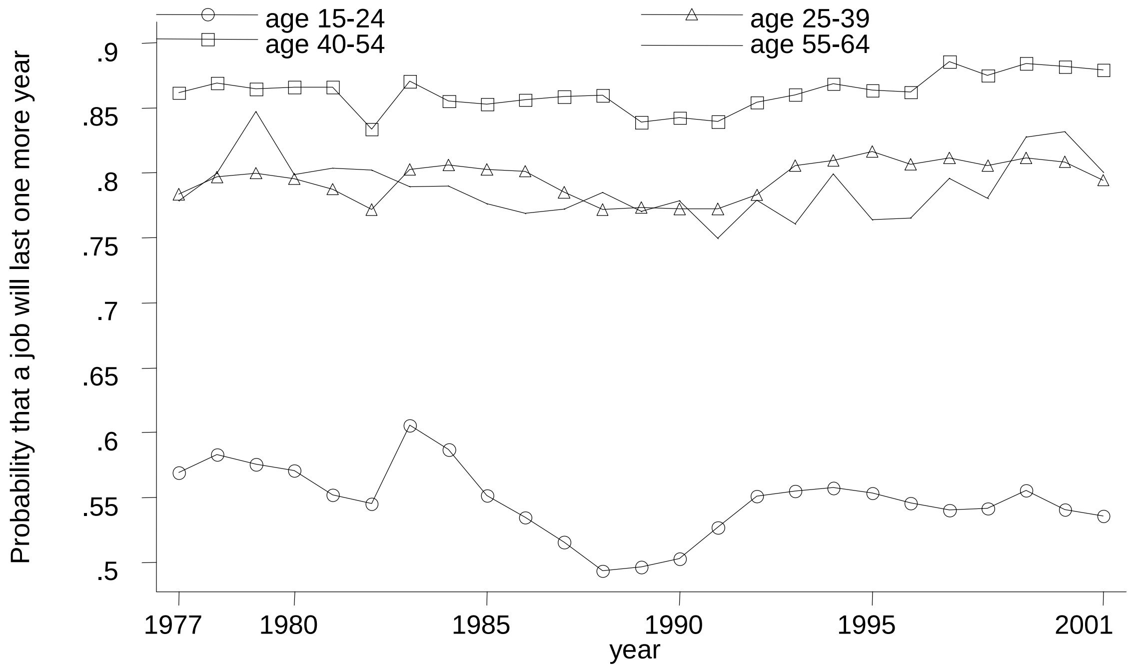


Figure 15: One Year Retention Rate, by Education

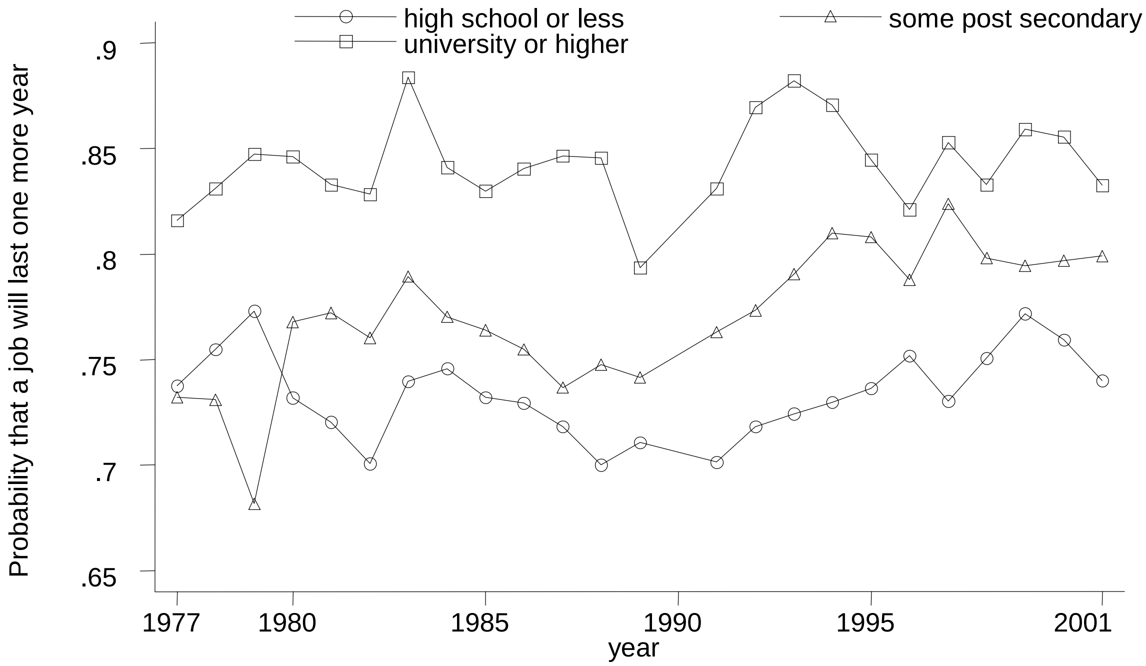
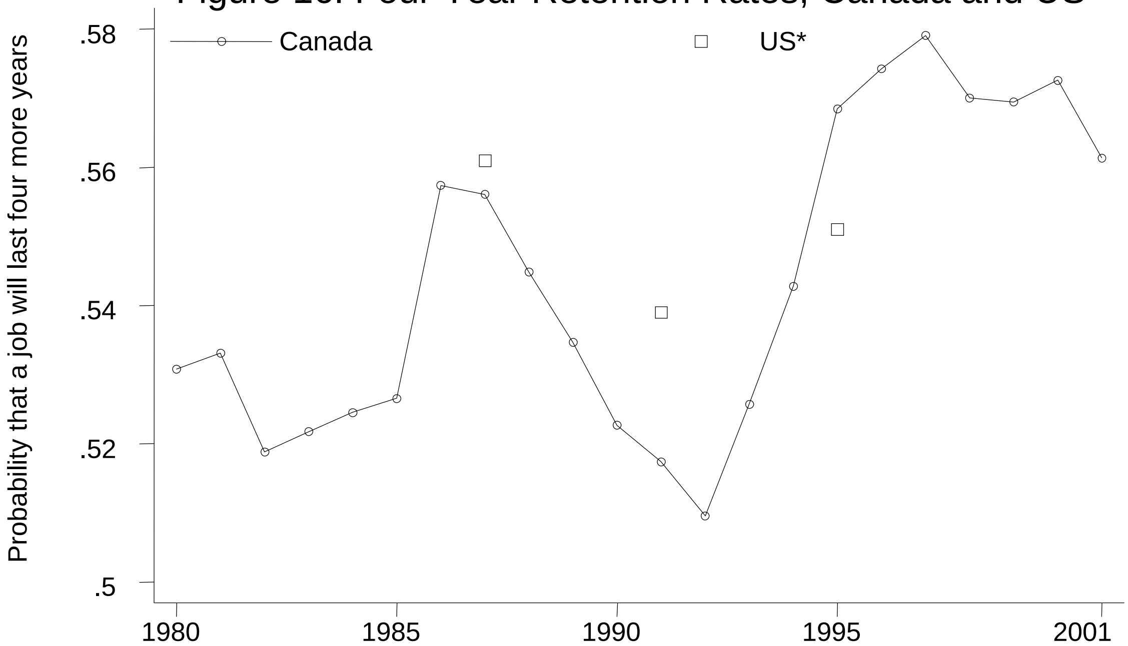


Figure 16: Four Year Retention Rates, Canada and US



* Source: Neumark, Polsky and Hansen, 2000

BIBLIOGRAPHY

Baker, G.M. and P.K. Trivedi (1985). "Estimation of Unemployment Duration from Grouped Data: A Comparative Study." *Journal of Labor Economics*. Vol. 3, pp. 153-174.

Christofides, L. N. and C. J. McKenna (1995). *Employment Patterns and Unemployment Insurance*. Human Resources Development Canada.

Diebold, Francis X., David Neumark and Daniel Polsky (1997). "Job Stability in the United States." Journal of Labor Economics

Diebold, Francis X., David Neumark and Daniel Polsky (1996). "Comment on Kenneth A. Swinnerton and Howard Wial, 'Is Job Stability Declining in the U.S. Economy?'." *Industrial and Labour Relations Review* Vol. 49, pp. 348-352.

Farber, Henry S. (1995). "Are Lifetime Jobs Disappearing? Job Duration in the United States: 1973-1993." National Bureau of Economic Research, Working Paper No. 5014.

Green, David A. and W. Craig Riddell (1997). "Job Durations in Canada: Is Long Term Employment Declining?" In *Transition and Structural Change in the North American Labour Market*, Michael G. Abott, Charles M Beach and Richard P. Chaykowski., IRC press: Kingston.

Hall, Robert E. (1982). "The Importance of Lifetime Jobs in the U.S. Economy." *American Economic Review* Vol. 72, pp. 716-24.

Hasan, Abrar, and P. De Broucker (1985). *Unemployment, Employment, and Non-Participation in Canadian Labour Markets.* Minister of Supply and Services Canada.

Heisz, Andrew (1999). "Changes in Job Duration in Canada." Relations Industrial/Industrial relations, 54 – 2.

Heisz, Andrew and Sylvain Côté (1998). "Are Jobs Less Stable in the Services Sector?" *Canadian Economic Observer*. Statistics Canada Catalogue No. 11-010. (May), pp. 3.1-3.11.

Neumark, David, Daniel Polsky and Daniel Hansen (1999). "Has Job Stability Declined Yet? New Evidence for the 90s!" Journal of Labour Economics, 17,4.

Neumark, David, Daniel Polsky and Daniel Hansen (2000). "Has Job Stability Declined Yet? New Evidence for the 90s!" In *On the Job, Is Long-Term Employment a Thing of the Past?* David Neumark *ed.* Russell Sage Foundation, New York.

Picot, Garnett and Andrew Heisz (2000). "The Performance of the 1990s Canadian Labor Market." Canadian Public Policy, XXVI Supplement, July 2000.

Picot, Garnett and Zhengxi Lin (1997). "Are Canadians More Likely to Lose Their Jobs in the 1990s?" Analytical Studies Branch Research Paper No. 96, Statistics Canada.

Picot, Garnett , Andrew Heisz and Alice Nakamura (2000). "Worker Mobility, Hiring and the Youth Labour Market During the 1990s". Paper presented at the 34th Annual CEA Meetings, June 2000, University of British Columbia. Vancouver Canada.

Osberg, L., F. Wein and J. Grude (1994). "*Technology, Employment and Social Policy,*" James Lorimer & Co.

Salant, Stephen (1977). "Search Theory and Duration Data: A Theory of Sorts." *Quarterly Journal of Economics*. Vol. 91, pp. 39-57.

Swinnerton, Kenneth A. and Howard Wial (1995). "Is Job Stability Declining in the U.S. Economy?" *Industrial and Labour Relations Review* Vol. 48, pp. 293-304.

Swinnerton, Kenneth A. and Howard Wial (1996). "Is Job Stability Declining in the U.S. Economy? Reply to Diebold, Neumark, and Polsky" *Industrial and Labour Relations Review* Vol. 49, pp. 352-355.

Statistics Canada (1992). *Guide to Labour Force Survey Data*. Catalogue Number 71-528.

Ureta, Manuelita (1992). "The Importance of Lifetime Jobs in the U.S. Economy, Revisited." *American Economic Review* Vol. 82, pp. 322-34.