Catalogue No. 97-12

LABOUR MARKET INTERMITTENCY AND EARNINGS IN CANADA

Product Registration Number 75F0002M

August 1997

Wayne Simpson, Department of Economics, University of Manitoba

The Income and Labour Dynamics Working Paper Series is intended to document detailed studies and important decisions for the Income and Labour Dynamics program. It is a continuation of the SLID Research Paper Series. These working papers are available in English and French. To obtain a summary description of available documents or to obtain a copy of any, please contact the Dissemination Unit, at 7-C6 Jean Talon Building, Statistics Canada, Ottawa, Ontario, CANADA K1A 0T6, by INTERNET (DYNAMICS@STATCAN.CA), by telephone (613) 951-4633, or by fax (613) 951-3012.

EXECUTIVE SUMMARY

In its preliminary interview, SLID collects retrospective information on a person's work experience: years of full-time work, part-time work and no work. These data are generally not available on survey datasets. Alone with data on current Labour market activity, these work experience variables are used to study the effect of Labour market intermittency (or time not in a full-time job) on current employment earnings. Not surprisinely, there is a relationship between intermittency and current earnings. However, the effect of past work is not as strong as current job tenure.

TABLE OF CONTENTS

1. Introduction

Assessment of Canadian economic performance during the 1990s varies, depending in large part on how much attention is paid to the performance of the labour market. Despite evidence of a long and sustained recovery on many fronts, earnings and employment growth has been uncharacteristically weak. Fortin (1996), for example, characterizes the 1990s as "the great slump" because of a declining employment rate and continuing high unemployment. The concern is not only for foregone output, but for a permanent reduction in employment arising from interrupted work careers. Moreover, employment growth may be even weaker than it appears because much of it is part-time rather than full-time. Indeed, between 1976 and 1995, part-time employment grew at three times the rate of full-time employment and the percentage of employment that is part-time grew from 13% to 20%.[1] It is often argued that the pool of good jobs is declining, characterized by increased earnings inequality or a flattening of the earnings distribution, as the returns to employment change (Beach and Slotsve, 1994).

What seems clear from recent developments is that the typical work career is changing. Intermittent work activity, both intended and unintended, is more common. Intermittencies involve both periods without employment and periods with less than full-time work. How do these intermittencies affect career progress in earnings? Do these effects differ for younger workers? To what extent do these intermittencies account for differences in earnings between men and women?

---

[1] Part-time employment grew at an annual rate of 1.76% between 1976 and 1995, whereas full-time employment grew at an annual rate of only 0.50% (Statistics Canada Labour Force Survey, Cansim Database series D20872 and D20873).

This paper examines the extent of intermittent work among Canadian men and women and assesses its impact on earnings formation. The next section reviews the literature and develops a general model to assess the impact of intermittency on earnings. We then turn to the Canadian evidence from the new Survey of Labour and Income Dynamics, which gathers summary retrospective evidence on career work activity as well as detailed evidence on currect employment. We then present some econometric estimates of the effects of intermittency on earnings.

2. Earnings Formation with Intermittent Work Activity

The familiar human capital earnings function often assumes that work activity is continuous and full-time once formal education is completed. Sometimes this assumption is made for analytical convenience; at other times it is dictated by the available evidence, which may be limited to educational attainment and age. At time t during the postschool period, observed earnings, E_t, may be approximated as

$$E_t = \ln E_0 + (r - \rho)s + \int_{x=0}^{t-s} [rp(x) - \rho]dx \qquad \textbf{(1)}$$

(e.g., Polachek and Siebert, 1993, 73), where s is the duration of schooling, r is the rate of return to schooling and postschool investment or work experience, p(x) is the proportion of time spent in postschool investment while working in year x, and ρ is the depreciation rate of human capital. If $p(x)=\theta-\gamma x$ declines linearly with the duration of work experience ($\theta,\gamma>0$) then we have the familiar Mincerian earnings function

$$\ln E_t = \ln E_0 + (r - \rho)s + (\theta - r - \rho)e - \gamma re^2 \qquad \textbf{(2)}$$

where e=t-s is years of potential work experience. This function has been widely estimated, although recent studies have questioned its ability to capture fully the

observed systematic variation in earnings (e.g., Murphy and Welch, 1990, and Dougherty and Jimenez, 1991).

This standard function has been extended to capture various aspects of work intermittency. Mincer and Polachek (1974) focus on the discontinuous work experience of married women, especially mothers. According to the 1967 National Longitudinal Survey of Work (NLS), married women with children 30-44 years of age spent less than 50% of their postschool years working full-time (more than 6 months per year) compared to 90% for never-married women in that age group. Their evidence divides postschool years for mothers into three categories: prematernal employment, e_1, non-participation or home time, e_2, and current employment, e_3. They rewrite equation (2) as

$$\begin{aligned} \ln E_0 = (r\&*)s + \int_0^{e_1} [r(\"_1\&\$_1 x)\&*_1]dx + \int_0^{e_2} [r(\"_2\&\$_2 x)\&*_2 \\ \int_0^{e_3} [r(\"_3\&\$_3 x)\&*_3]dx \end{aligned} \qquad \textbf{(3)}$$

$$\ln E_0 = (r\&*)s + (r\"_1\&*_1)e_1\&r\frac{\$_1}{2}e_1^2 + (r\"_2\&*_2)e_2\&r\frac{\$_2}{2} (r\"_3\&*_3)e_3\&r\frac{\$_3}{2}e_3^2]$$

where $\"_i, *_i > 0$ (i=1,2,3) and $\$_i < 0$, although $\$_i = 0$ is possible for shorter intervals. If $\$_i = 0$ (i=1,2,3), then equation (3) simplifies to

$$\ln E_t = \ln E_0 + r_s s + r_1 e_1 + r_2 e_2 + r_3 e_3 \qquad \textbf{(4)}$$

and the coefficients on e_1, e_2, and e_3 reflect the returns to postschool investment net of depreciation, which may be negative for e_2. Their estimates for women by race, marital status, level of schooling, and the presence of children suggest that

the coefficient for non-participation is generally negative and greater (in absolute value) for women with more schooling.

Mincer and Ofek (1982) use this framework to analyze panel data from the NLS for mature women. They confirm that wages decline as a result of nonparticipation episodes, but that wages rebound quickly when women return to work. Hence, the long run impact of nonparticipation is much lower than the short run impact. Other aspects of intermittency, such as the impact of part-time work, are ignored.

What about the effect of part-time work, rather than nonparticipation, on the evolution of earnings? Gullason (1990) argues that "the contribution of the total package of work experience at the margin to current earnings on a full-time job will be a positive function of R," where R is defined as the proportion of work experience spent in full-time employment (p.231). He then specifies an earnings equation of the form

$$\ln E_t = \ln E_0 + rs + (r - \rho)e - \$e^2 + (R \qquad \textbf{(5)}$$

and finds that (is positive and significant for full-time men in occupations with high skill atrophy but insignificant for full-time men in occupations with low skill atrophy.

How can we generalize and reconcile these results? First, we may reinterpret Gullason's argument as follows. To simplify initially, take $=0 in equation (2) and rewrite it as

$$\ln E_t = \ln E_0 + (r-\rho)s + (\rho - r)e$$
$$= \ln E_0 + r_s s + \sum_{i=0}^{e} r_f \qquad \textbf{(6)}$$

where r_f="r-* is the return on postschool investment for continuous full-time employment. Now let this return vary for each year, depending upon whether the individual works full-time, part-time, or does not work during that year. Let r_p be the return for part-time employment and let r_n be the return when not working. Let total work experience, e=t-s, be divided into episodes of full-time work of duration e_f, part-time work of duration e_p, and non-work of duration e_n. Then we can write a simple analogy of equation (4) as

$$\begin{aligned} \ln E_t &= \ln E_0 + r_s s + r_f e_f + r_p e_p + r_n e_n \\ &= \ln E_0 + r_s s + r_f [1 - (1 - \frac{r_p}{r_f})\frac{e_p}{e} - (1 - \frac{r_n}{r_f})\frac{e_n}{e}]e \\ &= \ln E_0 + r_s s + r_f (\frac{e_p}{e}, \frac{e_n}{e})e \end{aligned} \quad \textbf{(7)}$$

The difference between equation (7) and equation (6) is that the returns to postschool investment depend on the distribution of postschool time between full-time work, part-time work, and non-work.

If we allow postschool investment to decline with work experience, as seems likely for longer jobs, then we encounter the problem of the timing of different work experiences, which is typically unknown without career-long longitudinal data. If we ignore the timing problem for the moment, then we can rewrite equation (3) as

$$\begin{aligned} \ln E_t &= \ln E_0 + r_s s + r_f (\frac{e_p}{e}, \frac{e_n}{e})e - r_{f,2} e_f^2 - r_{p,2} e_p^2 - r_{n,2} e_n^2 \\ &= \ln E_0 + r_s s + r_f (\frac{e_p}{e}, \frac{e_n}{e})e - r_{f,2} [\frac{e_f^2}{e^2} + \frac{r_{p,2}}{r_{f,2}}\frac{e_p^2}{e^2} + \frac{r_{n,2}}{r_{f,2}}\frac{e_n^2}{e^2}]e^2 \\ &= \ln E_0 + r_s s + r_f (\frac{e_p}{e}, \frac{e_n}{e}) - r_{f,2} (\frac{e_f^2}{e^2}, \frac{e_p^2}{e^2}, \frac{e_n^2}{e^2})e^2 \end{aligned} \quad \textbf{(8)}$$

With regard to the timing of work experiences, we typically know current job tenure and whether it is full-time or part-time. Moreover, whether the returns to current job tenure are interpreted as returns to work experience plus specific training, returns arising from deferred compensation or effort-enhancing contracts, or returns to job matching, there is now ample evidence that they should be analyzed separately from work experience prior to the current job.[2] Thus, if total experience, e, is divided into previous full-time work of duration e_f, previous part-time work of duration e_p, previous non-work of duration e_n, current full-time job tenure j_f, and current part-time job tenure j_p, then we can extend equation (7) straightforwardly to

$$\ln E_t = \ln E_0 + r_s s + r_f\left(\frac{e_p}{e}, \frac{e_n}{e}, \frac{j_f}{e}, \frac{j_p}{e}\right)e \qquad \textbf{(9)}$$

and equation (8) to

$$\ln E_t = \ln E_0 + r_s s + r_f\left(\frac{e_p}{e}, \frac{e_n}{e}, \frac{j_f}{e}, \frac{j_p}{e}\right)e + r_{f,2}\left(\frac{e_f^2}{e^2}, \frac{e_p^2}{e^2}, \frac{e_n^2}{e^2}, \frac{j_f^2}{e^2}, \frac{j_p^2}{e^2}\right)e^2 \qquad \textbf{(10)}$$

The approach here is not very different from the approach of Mincer and Polachek. The linear form of equation (9) is identical to the Mincer-Polachek equation (4)

[2] Polachek (1995) reviews effort-enhancing contracts within a human capital framework. Topel (1991), correcting for biases associated with mobility decisions in longitudinal data, finds a strong connection between job seniority and wages for white males in the U.S.

expanded to include current job tenure. The difference between equations (4) and (9) lies in the interpretation of the experience coefficients. Each experience coefficent in equation (9) is interpreted as the effect on the return to a year of potential work experience of the proportion of past experience spent in a particular activity (non-work, part-time work, full-time work, current part-time tenure, or current full-time tenure). The corresponding coefficient in equation (4) would be interpreted as the effect of an additional year in that activity on current earnings.

Although the equivalence of equations (4) and (9) does not extend to more complex versions, such as equations (3) and (10) which involve squared experience terms, there is not a great deal of difference between the two models. J-tests for men and women failed to discriminate between the second-order models provided by equations (3) and (10).[3] We therefore concentrate on the models represented by equations (3) and (4) for estimation. These models encompass previous approaches to the problem of assessing the effect of labour market intermittencies on earnings, but generalize the model to include both part-time work and nonparticipation, to distinguish between past experience and current job tenure, and to permit nonlinear effects of various types of experience on earnings.

No wage is observed for individuals currently without work. Selection bias arising from nonparticipation is examined in a later section of the paper.

---

[3] For men the J-test to reject the model represented by equation (10) in favour of equation (3) yields a t-statistic of 8.9 while the test to reject equation (3) in favour of equation (10) yields a t-statistic of 47.2, indicating that neither model could be rejected in favour of the other. Statistically, the models are virtually indistinguishable. For women the J-test could not be computed because of multicollinearity.

3. Evidence on Intermittent Work Activity for Canada

What do the experience profiles of Canadian men and women look like? The Survey of Labour and Income Dynamics (SLID) provides retrospective information on work experience since the respondent's first full-time job. This information classifies work experience by year as full-time, part-time, or part-year. Full-time and part-time jobs refer to jobs held "full year," that is for at least six months of the year. Part-year jobs are held for less than six months.[4] In addition, SLID provides information on the full-time/part-time status, start date and end date (if any) for the current job. This information allows us to calculate the tenure of the last job held and classify it as full-time, part-time, or part year.

The literature on labour market intermittency has differentiated experience according to gender, marital status and the presence of children to capture differences in non-market work opportunities or responsibilities. In this spirit, Table 1 presents the work experience profiles for all men, never married men, ever married (or common law) men, all women, never married women, ever married (or common law) women, and ever married women who have borne or raised at least one child. The results are typical of the earlier literature from the U.S. Men have spent 81.4% of their time in full-time work with a mean of 19.1 years of full-time work whereas women have spent 51.8% of their time in full-time work with a mean of 9.8 years of full-time work. Men have spent 8% of their years not working compared to 29.7% for women. More than half (51.8%) of men have spent every year since their first full-time job in full-time work compared to 20.5% of women, and 72.9% of men have spent every year since their first full-time job working at least part-time or part-year compared to 39.7% for women.

---

[4] Part-year jobs constitute a very small proportion of total experience and are given little attention in subsequent discussion.

The nature of experience profiles differs according to marital status, but more substantially for women. About 40% of never-married men and women have worked full-time every year and about 70% have spent every year in the work force; the figures for never-married women are only slightly lower than for never-married men. For married men and women the gap is much wider. More than half (53.4%) of married men worked continuously full-time and almost three-quarters (72.6%) worked every year, compared to 18.2% and 36.2%, respectively, for married women and 13.4% and 29.4% for married women with children. In other words, a large majority of married men have had no work interruptions since their first full-time job, but very few married women fall into this category.

The figures at the bottom of the table for current job tenure show some interesting patterns. About 40% (7.4/19.1) of mean full-time years of employment for men is accounted for by the current full-time job, compared with about 30% (3.1/9.8) for women. This figure is similar for married men and women as well. The job tenure of part-time and part-year jobs is negligible, indicating their short-term nature. This is perhaps obvious for part-year employment but less so for part-time employment.

Mean years of full-time work are lower for never-married men than for married men, reflecting the younger age of the former group. For women, however, mean years of never-married and ever-married women are about the same; most of the difference in total years since the first full-time job is accounted for by the difference in years out-of-work (6.4 for married women vs. 1.5 for never-married women).

It would be interesting to isolate the effects of age because modern labour market developments, associated with rising part-time employment and intermittency, will

be concentrated on younger workers. The problem, however, is that "job shopping" early in work careers means that we are likely to observe more voluntary interruptions and part-time or part-year work for younger workers regardless of labour market conditions (Johnson, 1978; Jovanovic, 1979). Hence, isolating the effects of recent conditions on experience profiles will be a hazardous task at best. With this confounding effect in mind, Table 2 presents experience profiles for men and women born before and since 1960. Young men have spent less of their work career in full-time employment, but also less time without work. The difference lies in young men having spent 17% of their time in part-time or part-year work, compared to 8% for older men. To what extent this is an element of job turnover for young workers that has endured over time, and to what extent it reflects more difficult entry into the modern labour market, cannot be determined. Young women have also spent more time in part-time and part-year employment, 22.6% compared to 16.9% for older women, but they have also spent more time in full-time jobs. Their pattern reflects the fact that most young women will not yet have raised children, which is likely the major cause of the interruption of full-time work for older women.

4. Estimates of the Effect of Intermittency on Earnings

In this section we estimate and evaluate the specifications of earnings as a function of labour market experience considered in section 2. Three models are considered: (i) the basic Mincerian function (BM) expressed by equation (2); (ii) the linear-in-experience-variables function (LEV) expressed by both the Mincer-Polachek equation (4) and equation (9); and (iii) the nonlinear-in-experience variables equation (3) consistent with the Mincer-Polachek approach (NEVM). Each model is estimated separately for men and women and includes the following control variables: the logarithm of average hours worked per week in 1993; the logarithm

of weeks worked;[5] dummy variables to identify members of a visible minority, immigrants, or persons educated outside Canada; and dummy variables to differentiate regions. Sample means for the relevant variables are presented in Table 3.

OLS estimates may be biased because of the exclusion of those not working in 1993. To test for this bias, we constructed the inverse Mills ratio term in the conventional way (Heckman, 1979). Schooling, age, marital status, fertility and region of residence are specified as the determinants of a probit model of labour force participation in 1993. The standard errors are corrected for heteroskedasticity using White's (1980) covariance matrix estimator. Results for the Mills ratio term are mixed. For men, the hypothesis of no selection bias is accepted for the BM specification but rejected for the LEV and NEVM models at the 5% level of significance. For women, the hypothesis of no selection bias is accepted for the BM and NEVM model but rejected for the LEV model. Given the mixed results here (and the presumption that current nonparticipation is nonrandom and may induce bias into OLS estimates) we provide results for men and women that include the inverse Mills ratio term in Table 4.

J-tests to discriminate pair-wise between the non-nested BM and LEV or BM and NEVM models are inconclusive. For men, we are unable to reject the LEV model (J=19.7) nor the BM model (J=11.0); similarly, we are unable to reject the NEVM model (J=22.0) nor the BM model (J=8.5). For women, it is much the same story: We cannot reject the LEV model (J=18.7) nor the BM model (J=5.7) and we

[5] The convention is to interpret log annual earnings as the sum of log hourly earnings, which depends on schooling and experience as described in section 2, log weekly hours, and log weeks worked (e.g., Mincer and Polachek, 1974).

cannot reject the NEVM model (20.8) nor the BM model (J=3.9).[6] Akaike's information criterion favours the LEV model (AIC=-123.2) and the NEVM model (AIC=-196.1) over the BM model. Comparison of the LEV and NEVM models favours the NEVM model (F=23.0). Hence, there is some evidence in favour of the NEVM model, and we focus on this model is subsequent discussion.

Exclusion of the current job tenure variables as a group is soundly rejected (F=131.9 for men and 77.1 for women). The past experience variables are significant as a group (F=4.7 for men and 2.5 for women) but the nonparticipation variables (the linear and quadratic terms together) have no significant effect for men (F=1.6, p=0.21). The full-time experience, part-time experience and nonparticipation variables (linear and quadratic terms collectively in each case) are each insignificant for women at the 5% level of significance (F=1.7, 2.5, 2.9; p=0.19, 0.08, 0.06, respectively). For men, full-time experience significantly increases earnings (F=11.5) and part-time experience reduces earnings (F=5.3).

Previous results, primarily from the U.S. for married women, indicate that human capital, and hence earnings, depreciate with non-participation but earnings recover fairly rapidly once women return to work. Our results for women indicate rapid restoration of earnings from bouts of nonparticipation and part-time work, since job tenure, rather than past experience, dominates earnings determination. The results for men are similar, although there is some evidence that part-time work permanently reduces earnings. Note, however, that this effect declines with the length of the part-time experience and that current job tenure again dominates

[6] The J-statistic is asymptotically normally distributed (Davidson and MacKinnon, 1993, 382-3).

earnings.[7] We will evaluate the size of the impact of part-time experience and nonparicipation on subsequent earnings in section 6.

Years of schooling, hours per week, and weeks per year are individually significant and the other control variables, excluding the Mills ratio term, are significant as a group (F=15.9 for men and 14.1 for women). The pattern of generally rising earnings moving from East to West across Canada is reflected in the regional identifiers, most of which are individually significant.

5. Results for "Generation X"

How much different are the results for men and women born after 1959? If labour market intermittency has become more frequent and poses a more serious problem for younger workers, then we should observe differences in earnings determination which reflect greater penalties for part-time work and nonparticipation and/or greater rewards for full-time work. Table 5 provides estimates for men and women born after 1959 which may be compared to the results for all adult men and women.

J-tests now reject the BM model in favour of the NEVM model for men (J=12.0 and 1.4, respectively)[8] and women (J=15.1 and 1.6). Comparison of the LEV and NEVM models favours the NEVM model (F=7.9 for men and 5.0 for women). Hence, the NEVM model is now preferred to the other models in Table 5.

---

7 In the LEV model, part-time experience is insignificant for men.

8 That is, when the predicted value of log earnings from the NEVM model is included in the BM equation, its t-value (the J-statistic) is 12.0. When the predicted value of log earnings from the BM model is included in the NEVM equation, its t-value is 1.4.

Qualitatively, the results are quite similar to those for the entire adult sample in Table 4. There is one important difference, however. For the NEVM model, full-time experience is now significant for women (F=5.8, p=0.003), as is part-time experience (F=4.4, p=0.013) and nonparticipation (F=3.3, p=0.036). These variables were insignificant in the full sample. Moreover, if we look at the estimates for these variables in the LEV equation (which is easier to interpret at first glance), we can see that there is a greater premium for full-time experience and greater penalties for part-time work and nonparticipation for younger women. The LEV results indicate that an additional year of full-time experience would increase current earnings by 1.8%, while an additional year of part-time experience would reduce earnings by 1.9% and an additional year of nonparticipation would reduce earnings by 3.3%. The results for younger men show a similar 1.8% premium for full-time experience, but the penalities for part-time work and nonparticipation are small and/or insignificant.

The results for the NEVM model are more difficult to interpret. We estimate these effects in the next section.

6. The Effect of Intermittency on Earnings

We now use the results to address three questions. First, what is the effect of past labour market intermittency on current earnings? Second, to what extent do these intermittencies account for differences in earnings between men and women? Third, are the effect of intermittency on earnings greater for younger workers?

Table 6 estimates the effect of a year of part-time work on some past job on current earnings, evaluated at the sample mean characteristics. If that work occurred in place of full-time work on some past job, earnings would decline by

only 0.07% for men and 0.1% for women but by 0.25% for young men and 0.49% for young women. It is also possible, however, that previous part-time work could have occurred at the expense of a year of tenure on a current full-time job. Because job tenure effects are much larger than experience effects in Tables 4 and 5, the effects in column 2 of Table 6 are much bigger--earnings decline by 0.4% for men, 0.51% for women, 0.94% for young men and 1.37% for young women.

Table 6 also estimates the effect of a year of nonparticipa-tion on current earnings. Again, the effect is given for two scenarios. If nonparticipation replace a year of full-time work experience on some past job the effect is negligible for all men and women but more substantial for young men and women--a decline in earnings of 0.19% and 0.54%, respectively. The effects are larger if nonparticipation is at the expense of a year of tenure on a current full-time job--earnings decline by 0.2% for men, 0.46% for women, 0.91% for young men and 1.16% for young women. In the case of both part-time work and nonparticipation the effects are larger for women than men, larger for young workers and larger if current job tenure is affected.

Table 7 decomposes male and female earnings at the sample means in the conventional way for each of the three models to see if accounting for labour market activity in more detail provides a different explanation of the male-female earnings differential. For all adult workers, there is an increase in the proportion of the differential attributed to characteristics, particularly current job tenure, and a decrease in the proportion of the differential attributed to coefficients, which may be labelled discrimination, as we move from the BM model without detailed experience variables to the LEV and NEVM models. For young workers, however, this pattern does not emerge. This result is not necessarily surprising in view of the results in Table 6, which suggest that there is a permanent penalty for

part-time work and nonparticipation which is greater for women than men, and greater for young women than young men, which will become a factor in wage comparisons over time. With little full-time experience, and even less full-time experience on a current job (see Table 2), the penalties may not be apparent for young workers.

7. Concluding Remarks

If labour market intermittency, in terms of both part-time work and nonparticipation, is a more important feature of the modern labour market, at least for younger workers, then should we be concerned? To address this question this paper has extended earlier models of the relationship between labour market intermittency and earnings to include both part-time work and nonparticipation, to include both past work experience and current job tenure, to include nonlinear experience effects, and to account for selection bias arising from the exclusion of nonworkers. The results suggest that past experience is sometimes significant, particularly for younger workers; that current job tenure is always significant and has larger effects than comparable past experience; that nonlinear experience effects are significant; and that selection bias is generally significant. Previous studies have not incorporated these features in their analysis.

Our results suggest that labour market intermittency has consequences for earnings formation. The effects for part-time work and nonparticipation are very similar and some common patterns emerged from our simulations: The effects are larger for women, greater for young workers, and greater when intermittency replaces current job tenure. Hence, our results suggest that the growing frequency of labour market intermittency among "Generation X" workers will have consequences for their subsequent earnings, and will frustrate efforts to eliminate

earnings differences between men and women. It is not clear whether the effects of intermittency for young workers will decline with age as they have for the older cohort.

As always, more research is needed. In particular, it will be important to exploit the longitudinal nature of future waves of the SLID data to track the short-term impact of intermittency in one year on earnings in subsequent years. The short duration of the SLID panel will limit its ability to assess the long-term impact of intermittency on earnings, however, forcing us to continue to rely on the analysis of cross-sectional data to answer these questions.

References

Beach, Charles, and George Slotsve (1994) "Recession and Recovery: Men's Earnings through the 1980s," *Journal of Income Distribution 4*, no.1, 121-46

Davidson, Russell and James MacKinnon (1993) *Estimation and Inference in Econometrics* (Oxford University Press)

Dougherty, Christopher, and Emmanuel Jimenez (1991) "The Specification of Earnings Functions: Tests and Implications," *Economics of Education Review 10*, no.2, 85-98

Fortin, Pierre (1996) "Presidential Address: The Great Canadian Slump," *Canadian Journal of Economics XXIX* no.4, 761-87

Gullason, Edward (1990) "The Effects of Full-Time Versus Part-Time Work Experience on Earnings in `High' and `Low Atrophy' Jobs," *Economics of Education Review 9* no.3, 229-39

Hausman, Jerry (1978) "Specification Test in Econometrics," *Econometric 46*, 1251-72

Heckman, James (1979) "Sample Selection Bias as a Specification Error," *Econometrica 47* 153-61

Heckman, James, and Thomas MaCurdy (1980) " A Life Cycle Model of Female Labor Supply," *Review of Economic Studies 47*, 47-74

Johnson, William (1978) "A Theory of Job Shopping," *Quarterly Journal of Economics 92*, 261-77

Jovanovic, Boyan (1979) "Job Matching and the Theory of Turnover," *Journal of Political Economy 87*, 972-90

Killingsworth, Mark (1983) *Labor Supply* (Cambridge University Press)

Mincer, Jacob, and Haim Ofek (1982) "Interrupted Work Careers: Depreciation and Restoration of Human Capital," *Journal of Human Resources XVII* no.1, 3-24

Mincer, Jacob, and Solomon Polachek (1974) "Family Investments in Human Capital: Earnings of Women," *Journal of Political Economy 82,* Supplement, S76-108

Murphy, Kevin, and Finis Welch (1990) "Empirical Earnings Profiles," *Journal of Labor Economics 8,* 202-29

Polachek, Solomon (1995) "Earnings over the Life Cycle: What do Human Capital Models Explain?" *Scottish Journal of Political Economy 42* no.3, 267-89

Polachek, Solomon, and W. Stanley Siebert (1993) *The Economics of Earnings* Cambridge University Press

Sprague, Allison (1994) "Work Experience, Earnings and Participation: Evidence from the Women and Employment Survey," *Applied Economics 26,* 659-67

Topel, Robert (1991) "Specific Capital, Mobility and Wages: Wages Rise with Job Seniority," *Journal of Political Economy 99* no.1, 145-76

White, Halbert (1980) "A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity," *Econometrica 48,* 817-38

TABLES

Table 1. Labour Market Experience Profiles for Canadian Men and Women by Marital Status.

	All Men		Single Men		Married Men		All Women		Single Women		Married Women		Married& Children	
Experience in Years since Started Working Full-Time														
	Mean	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**
FY/FT	19.1	81.4	8.6	69.5	21.1	83.7	9.8	51.8	9.2	67.4	9.9	49.9	9.7	44.5
FY/PT	1.0	5.5	1.0	11.5	1.0	4.4	2.3	12.6	1.1	13.1	2.5	12.4	2.8	12.8
PY	0.7	5.0	0.8	10.1	0.6	4.0	0.9	6.0	0.5	6.7	1.0	5.9	1.1	6.2
NW	0.9	8.1	1.0	8.9	0.9	7.9	5.8	29.7	1.5	12.9	6.4	31.7	7.6	36.4
Total	21.7	100	11.4	100	23.6	100	18.8	100	12.3	100	19.8	100	21.2	100
% All FT/FY	51.8%		43.7%		53.4%		20.5%		39.5%		18.2%		13.4%	
% No NW	72.9%		74.5%		72.6%		39.7%		68.2%		36.2%		29.4%	
No. obs.	9,009		1,468		7,541		8,468		913		7,555		5,512	
Current Job Tenure in Years:														
	Mean	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**
FY/FT	7.4	34.1	3.5	30.7	8.1	34.3	3.1	16.5	3.9	31.7	3.0	15.2	2.7	12.7
FY/PT	0.1	0.4	0.1	0.8	0.1	0.3	0.5	2.7	0.2	1.7	0.5	2.6	0.6	3.0
PY	0.0	0.2	0.0	0.4	0.0	0.2	0.0	0.4	0.0	0.7	0.0	0.0	0.0	0.3
No. obs.	8,433		1,317		7,116		8,036		826		7,210		5,295	

Notes: 1) FT=full-time work; FY=worked full year (at least six months); PT=part-time work; PY=worked part year (less than six months); NW=not employed during year.

2) % All FT/FY=% of sample who worked FT/FY every year to date; % No NW=% of sample who worked every year.

3) Current job tenure calculated for those with a job in 1993 from start and end dates; start date for current job missing for about 5% of cases (576 of 9,009 men; 432 of 8,468 women)

4) Single refers to those never married; married refers to those ever married or living common law.

5) Married&Children refers to married women (ever married or common law) who have born or raised at least one child; this information is only available for women.

Source: 1993 Survey of Labour and Income Dynamics; calculations by the author.

Table 2. Labour Market Experience Profiles for Canadian Men and Women by Age.

	Men Born Before 1960		Men Born 1960 or Later		Women Born Before 1960		Women Born 1960 or Later	
Experience in Years since Started Working Full-Time								
	Mean	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**	**Mean**	**%Yrs**
FY/FT	24.0	83.4	6.7	76.2	11.7	83.7	5.0	60.8
FY/PT	1.1	4.1	0.6	9.3	2.8	4.4	1.2	15.6
PY	0.8	3.9	0.4	7.7	1.1	4.0	0.4	7.0
NW	1.2	8.6	0.4	6.7	7.7	7.9	1.2	16.7
Total	27.1	100	8.1	100	23.3	100	7.8	100
FY/FT Current Job Tenure	9.0	33.2	3.1	38.3	3.5	15.0	2.1	26.9
% All FT/FY	51.5%		52.4%		15.9%		32.1%	
% No NW	69.3%		82.2%		30.1%		64.1%	
No. obs.	6,454		2,555		6,082		2,386	

Notes: See Table 1.

Source: 1993 Survey of Labour and Income Dynamics; calculations by the author.

Table 3. Means for SLID Sample of Canadian Men and Women.

	Men	Women
LogEarnings	10.16	9.60
Schooling	12.22	12.51
Experience	18.99	15.79
FT Exp	8.81	5.41
PT Exp	0.82	1.70
PY Exp	0.56	0.67
NW Exp	0.37	2.83
FT Tenure	8.38	4.54
PT Tenure	0.04	0.61
PY Tenure	0.02	0.03
Log Hrs/Wk	3.68	3.40
Log Weeks	3.80	3.79
Visible Minority?	0.03	0.03
Immigrant?	0.10	0.09
Educated Ex Canada?	0.06	0.06
Atlantic Prov.?	0.22	0.21
Quebec?	0.22	0.20
Man./Sask.?	0.13	0.15
Alberta?	0.10	0.10
B.C.?	0.08	0.09
NWT/Yukon?	0.001	0.001
No. Obs.	5,711	4,908

Notes: i) Experience refers to length of accumulated previous jobs; Tenure refers to length of current job

ii) Sample is restricted to those who worked in 1993 and whose job tenure start date was not missing

Table 4. Earnings Estimates for Men and Women (Dependent Variable is Log Annual Earnings; t-values in parentheses corrected for heteroskedasticity using White's (1980) estimator).

	Men			Women		
	(2) BM	**(4,9)LEV**	**(3) NEVM**	**(2) BM**	**(4,9)LEV**	**(3) NEVM**
Constant	4.319 (21.8)	5.052 (24.1)	5.238 (24.4)	2.768 (9.6)	3.952 (16.0)	3.721 (10.8)
Schooling	0.034 (10.8)	0.026 (8.7)	0.026 (9.1)	0.055 (10.4)	0.044 (10.4)	0.045 (8.5)
Experience	0.041 (13.0)			0.056 (6.3)		
Exp^2	-0.0007 (8.3)			-0.0012 (4.1)		
FT Exp		0.007 (6.5)	0.005 (2.0)		0.0001 (0.6)	0.0003 (1.0)
PT Exp		0.001 (0.3)	-0.016 (2.6)		-0.001 (1.7)	0.001 (0.8)
PY Exp		0.004 (1.2)	-0.002 (0.2)		-0.002 (2.0)	-0.002 (1.8)
NW Exp		0.010 (1.3)	0.009 (0.8)		0.012 (1.7)	0.029 (2.1)
FT Tenure		0.027 (23.7)	0.054 (17.2)		0.030 (19.1)	0.063 (16.7)
PT Tenure		-0.124 (3.3)	0.133 (1.8)		0.010 (2.2)	0.013 (1.4)
PY Tenure		0.205 (1.7)	0.063 (0.2)		0.199 (1.7)	0.333 (1.6)
FT Exp^2			0.0000 (0.4)			0.000 (0.1)
PT Exp^2			0.0007 (3.3)			-0.000 (1.3)
PY Exp^2			0.0003 (1.1)			-0.000 (0.9)
NW Exp^2			0.0002 (0.9)			-0.001 (0.8)
FT Tenure^2			-0.001 (9.1)			-0.002 (10.2)
PT Tenure^2			0.004 (0.4)			0.0001 (0.2)
PY Tenure^2			0.127 (0.6)			-0.097 (0.9)
Log Hrs/Wk	0.388 (9.7)	0.346 (8.9)	0.349 (9.0)	0.610 (18.9)	0.530 (15.5)	0.505 (14.6)
Log Weeks	0.975 (28.7)	0.905 (21.7)	0.831 (18.1)	0.963 (22.5)	0.913 (18.2)	0.889 (16.9)
Visible Minority?	-0.126 (2.1)	-0.116 (2.0)	-0.098 (1.7)	0.015 (0.2)	0.010 (0.2)	0.020 (0.3)
Immigrant?	0.016 (0.3)	0.026 (0.6)	-0.009 (0.2)	0.075 (1.3)	0.091 (1.6)	0.077 (1.4)

	Men			Women		
	(2) BM	**(4,9)LEV**	**(3) NEVM**	**(2) BM**	**(4,9)LEV**	**(3) NEVM**
Educ Ex Canada?	0.042 (0.8)	0.035 (0.7)	0.036 (0.7)	-0.094 (1.4)	-0.101 (1.6)	-0.097 (1.5)
Atlantic Prov.?	-0.238 (9.4)	-0.213 (8.6)	-0.215 (8.7)	-0.278 (9.3)	-0.261 (9.0)	-0.301 (7.4)
Quebec?	-0.103 (4.2)	-0.093 (3.9)	-0.092 (3.9)	-0.124 (3.9)	-0.084 (2.8)	-0.130 (3.0)
Man./Sask.?	-0.189 (6.2)	-0.181 (6.0)	-0.180 (6.1)	-0.157 (4.8)	-0.129 (2.5)	-0.182 (3.0)
Alberta?	-0.053 (1.6)	-0.018 (0.6)	-0.020 (0.6)	-0.060 (1.6)	-0.095 (2.5)	-0.087 (2.2)
B.C.?	0.042 (1.4)	0.084 (2.8)	0.080 (2.7)	-0.022 (0.5)	0.091 (0.9)	-0.016 (0.1)
NWT/Yukon?	0.164 (0.7)	0.295 (1.0)	0.399 (1.4)	-0.242 (1.5)	-0.274 (1.7)	0.001 (0.0)
Mills Ratio	-0.110 (1.6)	-0.381 (7.2)	-0.289 (5.2)	0.040 (0.3)	-0.225 (2.3)	-0.103 (0.6)
R^2	0.441	0.469	0.482	0.497	0.531	0.543
F	299.0	251.7	195.6	322.4	290.8	214.4
No. Obs.	5,711			4,908		

Notes: i) Experience refers to length of accumulated previous jobs; Tenure refers to length of current job

ii) Sample is restricted to those who worked in 1993 and whose job tenure start date was not missing, but the results are corrected for bias arising from sample selection. Probit model used to correct for sample selection bias includes schooling, age, marital status, region of residence, and fertility variables.

Table 5. Earnings Estimates for Men and Women Born in 1960 or Later (Dependent Variable is Log Annual Earnings; t-values in parentheses corrected for heteroskedasticity using White's (1980) estimator).

	Men			Women		
	(2) BM	**(4,9)LEV**	**(3) NEVM**	**(2) BM**	**(4,9)LEV**	**(3) NEVM**
Constant	5.294 (14.5)	5.672 (15.1)	5.896 (15.0)	4.040 (9.4)	4.836 (11.0)	5.027 (10.9)
Schooling	0.021 (2.5)	0.020 (2.5)	0.018 (2.2)	0.036 (4.2)	0.036 (4.5)	0.037 (4.7)
Experience	0.065 (5.0)			0.077 (4.6)		
Exp^2	-0.002 (2.9)			-0.003 (3.1)		
FT Exp		0.018 (4.4)	0.003 (0.3)		0.018 (3.5)	0.007 (0.5)
PT Exp		0.007 (0.7)	-0.030 (1.6)		-0.019 (1.8)	-0.058 (2.3)
PY Exp		0.009 (0.7)	0.042 (1.3)		-0.010 (0.6)	-0.065 (1.5)
NW Exp		-0.017 (0.0)	-0.029 (0.6)		-0.033 (1.9)	0.005 (0.2)
FT Tenure		0.061 (14.1)	0.137 (10.7)		0.077 (15.4)	0.142 (9.7)
PT Tenure		-0.010 (0.2)	-0.222 (1.3)		0.004 (0.2)	-0.027 (0.6)
PY Tenure		0.109 (0.7)	0.310 (0.8)		0.149 (0.9)	0.160 (0.5)
FT Exp^2			0.001 (1.4)			0.001 (0.8)
PT Exp^2			0.004 (2.5)			0.005 (1.4)
PY Exp^2			-0.003 (0.9)			0.006 (1.6)
NW Exp^2			0.008 (0.7)			-0.004 (1.4)
FT Tenure^2			-0.006 (6.7)			-0.006 (5.7)
PT Tenure^2			0.055 (1.8)			0.008 (1.5)
PY Tenure^2			-0.168 (0.9)			-0.010 (0.1)
Log Hrs/Wk	0.273 (3.5)	0.287 (3.9)	0.272 (3.8)	0.512 (8.2)	0.403 (6.6)	0.373 (6.1)
Log Weeks	0.936 (16.9)	0.834 (12.1)	0.776 (9.7)	0.866 (12.5)	0.770 (9.3)	0.723 (7.9)
Visible Minority?	-0.075 (0.9)	-0.039 (0.5)	-0.044 (0.5)	0.020 (0.2)	0.038 (0.4)	0.038 (0.4)
Immigrant?	-0.069 (0.7)	-0.056 (0.6)	-0.052 (0.5)	0.139 (1.2)	0.148 (1.4)	0.134 (1.3)

	Men			Women		
	(2) BM	**(4,9)LEV**	**(3) NEVM**	**(2) BM**	**(4,9)LEV**	**(3) NEVM**
Educ Ex Canada?	0.003 (0.0)	0.006 (0.1)	0.020 (0.2)	-0.087 (0.6)	-0.098 (0.7)	-0.115 (0.9)
Atlantic Prov.?	-0.323 (6.3)	-0.303 (6.0)	-0.311 (6.2)	-0.267 (5.5)	-0.270 (5.9)	-0.269 (5.9)
Quebec?	-0.137 (3.1)	-0.125 (2.9)	-0.121 (2.8)	-0.115 (2.0)	-0.148 (2.7)	-0.149 (2.7)
Man./Sask.?	-0.213 (3.9)	-0.210 (4.0)	-0.206 (4.0)	-0.175 (3.3)	-0.144 (2.8)	-0.141 (2.8)
Alberta?	-0.052 (1.0)	-0.036 (0.7)	-0.028 (0.5)	-0.144 (2.1)	-0.114 (1.8)	-0.103 (1.6)
B.C.?	0.205 (3.8)	0.205 (3.9)	0.211 (4.0)	-0.093 (1.2)	0.140 (2.0)	0.160 (2.3)
NWT/ Yukon?	-0.517 (2.6)	-0.307 (1.4)	-0.182 (0.8)	-0.300 (3.9)	-0.164 (1.6)	-0.078 (0.6)
Mills Ratio	-1.496 (5.4)	-1.389 (5.1)	-1.363 (5.0)	0.669 (3.9)	-0.555 (3.5)	-0.473 (3.0)
R^2	0.450	0.473	0.488	0.452	0.508	0.518
F	102.6	84.4	66.1	89.9	84.2	64.7
No. Obs.	1,900			1,651		

Notes: i) Experience refers to length of accumulated previous jobs; Tenure refers to length of current job

ii) Sample is restricted to those who worked in 1993 and whose job tenure start date was not missing, but the results are corrected for bias arising from sample selection. Probit model used to correct for sample selection bias includes schooling, age, marital status, region of residence, and fertility variables.

Table 6. Estimates of the Effect of Intermittency on Earnings.

	Effect of Part-time Work		Effect of Nonparticipation	
	Full-time Experience	**Full-time Tenure**	**Full-time Experience**	**Full-time Tenure**
All Men	-0.07%	-0.40%	0.04%	-0.20%
All Women	-0.10%	-0.51%	-0.05%	-0.46%
Young Men	-0.25%	-0.94%	-0.19%	-0.91%
Young Women	-0.49%	-1.37%	-0.54%	-1.16%

Notes: (i) Effect of one additional year of part-time work (nonparticipation) instead of last year of full-time work experience (or current full-time job tenure) is calculated at the sample mean using the NEVM model results from Tables 4 and 5.

(ii) Young men and women are those born after 1959.

Table 7. Decomposition of Male and Female Earnings.

Model:	BM	LEV	NEVM
All Men vs. All Women:			
Total Log Differential	0.556	0.556	0.556
Attributed to Characteristics	0.182	0.282	0.259
Past Experience	0.019	0.023	0.017
Current Tenure		0.116	0.106
Attributed to Coefficients	0.374	0.291	0.297
Past Experience	0.147	0.038	0.028
Current Tenure		-0.052	-0.026
Young Men vs. Young Women:			
Total Log Differential	0.421	0.421	0.421
Attributed to Characteristics	0.223	0.237	0.226
Past Experience	0.008	0.029	0.031
Current Tenure		0.041	0.048
Attributed to Coefficients	0.198	0.184	0.195
Past Experience	0.000	0.034	0.028
Current Tenure		-0.051	-0.025