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Summary of: Participation in Adult Schooling and its Earnings Impact in Canada

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1. Introduction

More adult Canadians are returning to school for additional education, a trend closely related to technological changes that create new jobs, destroy old ones, and render some knowledge and skills obsolete. For workers who apply for jobs requiring new knowledge and skills, as well as workers for whom job retention or promotion requires updated knowledge and skills, going back to school is an option. In this study, we look at adult schooling, or those educational activities undertaken by individuals who have left school and have been working for some time before returning. We focus on formal adult schooling in an educational institution such as community college, institute of applied arts and technology, CEGEP (in Quebec), or university. Drawing upon data from Statistics Canada's Survey of Labour and Income Dynamics (SLID), we ask who participates in adult schooling, who benefits, and by how much.

In section 2, we discuss the characteristics of the selected sample. Section 3 investigates the characteristics of adult schooling participants. Section 4 presents our empirical results on the earnings impact of adult schooling, and the summary and conclusions are in section 5.

2. Sample Characteristics

Statistics Canada's Survey of Labour and Income Dynamics (SLID), a longitudinal household survey, covers roughly 97% of the population. Our sample is drawn from two complete panels of respondents (1993 to 1998 and 1996 to 2001). Each panel comprises approximately 15,000 households and 30,000 adults. Respondents are surveyed twice a year for six consecutive years. In SLID, each respondent's level of education is established during the first interview. Subsequent educational activity is reported yearly, including school attendance and post-secondary certificates received. Thus, year 1 to year 6 changes in wages and earnings can be compared between those who did not attend school in the 6-year period and those who attended at some point between years 2 and 5. Schooling participants can be further classified between those who received a post-secondary certificate and those who did not.¹

We select workers who responded to the surveys in each year (95% of respondents). To eliminate those who had not yet entered the labour market and those who were approaching retirement, we include only persons between the ages of 17 and 59 in the first year of observation. We exclude those aged between 50 and 59 in the first year who received pension benefits at any time during the 6-year period. We exclude students in the first and last years of observation. Since we do not know if an individual who attended school in the first year was a continuing student, excluding those attending school in the first year ensures that we are dealing with workers who returned to school, not continuing students. For students in the 6th year, some might have no earnings data, and others might work less than a year; hence a comparison of annual earnings in years 1 and 6 would not be meaningful.

1. Persons receiving a high-school diploma are included in this group: there were too few to warrant a separate group.

We only include workers who worked full-time for at least part of the year, or whose main job was either full-time or involuntary part-time.² Further, because we focus on the impact of adult schooling on wages and earnings from paid employment, people with any self-employment earnings are excluded. Finally, those with unknown initial level of education are excluded, leaving a sample of 10,999, 59% of which are men, and 41% women.

We use individual age in the first year of a panel to separate young (17 to 34 years) from older (35 to 59 years) workers: 42% of men and 36% of women in our sample were young workers. We also examine marital status: at the end of the first year of observation, 73% of men and 70% of women were married; 21% of men and 19% of women were single (never married). We use the level of education in the first year of observation to classify individuals into low- and high-educated workers. We define high school graduates and those with less than high school education as low-educated; those with more than a high school education are defined as high-educated. Twenty-one percent of men and 23% of women were high school graduates; 20% of men and 15% of women had less than high school education. Among the remaining workers, 15% of men and 14% of women had a bachelor or higher degree; 45% of men and 48% of women had an education above high school but below the bachelor level.

3. Participation in Adult Schooling

In our sample, 14% of men and 15% of women participated in adult schooling, and more than half of them (roughly 8%) obtained a post-secondary certificate.

We found that age affects adult schooling participation: young workers were more likely to participate and more likely to obtain a post-secondary certificate than older workers. Initial level of education is another factor: workers with less than a high school education were least likely to participate in adult schooling and to obtain a post-secondary certificate; workers with a college-level education were most likely to participate and to obtain a certificate.

Single (never married) workers were most likely to participate in adult schooling. They were also most likely to obtain a post-secondary certificate, particularly among women: close to 12% of single women obtained a post-secondary certificate, while less than 5% of divorced women did so. The effect of marital status was not as strong for men as for women.

Whether they obtained a post-secondary certificate or not, adult students most frequently attended non-university post-secondary institutions, such as community colleges, institutes of applied arts and technology, and trade or vocational schools: 59% of adult students who did not obtain a certificate attended at least one of these institutions. Among those who did obtain a certificate, more than 88% did so at a non-university post-secondary institution.

Turning to multivariate analyses, separating those who obtain a post-secondary certificate or diploma from those who do not results in a dependent variable with three possibilities: not participating,

2. The main job is considered to be involuntary part-time if the reason given for being part-time is “could only find part-time work.”

participating but no certificate received, or participating with a certificate received. We calculate the predicted probabilities of each, using both logit and multinomial logit models.

Since participation in adult schooling is closely related to labour supply decisions, and the labour supply decisions of men and women are affected by different factors, we examine adult schooling participation of men and women separately. Explanatory variables include hourly wage rate, family income, marital status, and the presence of young children. Since older workers have fewer years to recover schooling costs, we include age (young/old) as a key explanatory variable. Other variables included are initial level of education, parents' education, union status, industry, occupation, firm size, and full- and part-time employment.

Results from the multivariate models indicate that young workers were more likely than older workers to participate in adult schooling, and they were more likely to obtain a post-secondary certificate. Workers with less than high school education were least likely to participate in adult schooling and were also least likely to obtain a post-secondary certificate, a finding consistent with the “learning begets more learning” hypothesis. But it does not imply a simple monotonic relation between adult schooling and the initial level of education. The probabilities of obtaining a post-secondary certificate for high school, college, and university graduates were practically the same.

Marital status played an important role among women. Single women were twice as likely as divorced women to obtain a post-secondary certificate. While the presence of young children (less than 6 years old) did not affect men's participation in adult schooling, it mattered for women. The predicted probability of obtaining a post-secondary certificate for women was lowered by two percentage points by the presence of young children, and this decrease was statistically significant.

When workers receive high wages, their opportunity cost of attending school is also high, and we would expect a negative relationship between wage rate and participation in adult schooling. In the logit model, the effect of hourly wage on participation in adult schooling was negative for both men and women, although the estimates were not statistically significant. The estimates were less clear in the multinomial logit model, except for men who participated in “no-certificate” adult schooling: a one dollar increase in hourly wage rate lowered the participation probability by 0.1 percentage point.

Men's participation in adult education and their receipt of a post-secondary certificate were negatively related to family income, but these relationships were not statistically significant. For women, the logit model indicates that women whose family income was in the lowest quartile were more likely to participate in adult schooling than those in the highest quartile, but this relationship does not hold strongly in the multinomial logit model.

Male workers with a part-time job were more likely than full-time counterparts to participate in adult schooling. However, the participation difference between part- and full-time men was largely confined to the “no-certificate” case. Men who worked for larger firms were more likely to participate in adult schooling than men who worked for the smallest firms, but firm size effect was confined to the “no-certificate” case.

Participation probabilities of men working in professional services, transportation, and warehousing industries were significantly lower than men in manufacturing. The participation probabilities for women in financial services, and to a lesser extent in retail trades and primary industries, were higher than women in manufacturing. Men in information services, transportation, and warehousing industries were also less likely to obtain a post-secondary certificate, while men in public services were more likely to obtain a post-secondary certificate. The effect of industry on post-secondary certificate was not significant for women.

4. The Earnings Impact of Adult Schooling

Earnings growth over the six-year period of observation is assessed in terms of hourly wage rate and annual earnings. Comparing average earnings in the first and last years, it is apparent that those who went back to school had greater gains than those who did not: the annual earnings of men who participated in adult schooling grew by 24%; the annual earnings of those who did not, grew by only 15%. However, if participants in adult education are divided into those who did (CERT) and those who did not (NOCERT) obtain a post-secondary certificate, those who obtained a certificate had the largest earnings gains, particularly among women. Wage rates and annual earnings of women who obtained a certificate grew at almost double the rate of women who did not participate. But women who went back to school without obtaining a certificate had a slower earnings growth than women who did not participate.

To isolate the association between earnings gains and adult schooling, we estimate a regression model in which other variables associated with earnings gains are controlled. For the CERT group, the returns are positive in terms of annual earnings and hourly wage, though only the latter is significant at the 5% level. However, for the NOCERT group, the estimate for hourly wage was negative and not significant, while the estimated annual earnings change was at -14% and just failed to reach significance at the 5% level. Approximately 20% of the NOCERT group went no higher than high school when going back to school. While only about 10% of adult students who obtained a post-secondary certificate did so at the university level, there were significant hourly wage returns to both non-university and university level certificates (5% and 8%, respectively). Although returns to a university level certificate were higher, the difference is not statistically significant.

Most men and some women who obtained a post-secondary certificate had sizable wage and earnings gains. Overall, the estimated wage and annual earnings returns to men who obtained a certificate were 8% and 7% respectively. All groups of men who obtained a certificate had a significantly higher growth in their hourly wages than those who did not participate in adult schooling; the returns ranged from 6% for men whose initial level of education was college or higher, to 10% for men with high school or less education. In addition, most groups (with the exception of those aged 35 to 59) received substantial returns to their annual earnings, though the results for high- and low-educated men were only significant at the 10% level. Compared with men, where all groups benefited from obtaining a certificate, benefits to women seem limited. Only women aged 17 to 34 had high returns in both hourly wage and annual earnings (11% and 15%, respectively) upon obtaining a certificate. In addition, low-educated women who obtained a certificate received significant returns in hourly wage, but not in annual earnings.

Further investigations show that those who return to school and obtain a post-secondary certificate appear to gain in wage and earnings through two different channels: they progress within their firm, getting a promotion or a raise (job-stayers), or they get a better-paying job elsewhere (job-switchers). Overall, both men and women who obtained a post-secondary certificate while staying with the same employer saw significant wage and earnings gains: 10% and 9% respectively for men, and 6% and 9% respectively for women. Returns were substantial for job-staying men of all ages and education levels; for women, the gains were confined to women aged 35 to 59, and women whose initial level of education was college or higher. Women aged 35 to 59 had substantial gains in both hourly wages and annual earnings, though only the latter was significant at the 5% level. High-educated women who obtained a post-secondary certificate while staying on the same job registered a significant gain in annual earnings but not in hourly wage rate, implying that gains result from an increase in hours worked, rather than an increase in wage rate.

For job-switchers, obtaining a post-secondary certificate only resulted in significant wage returns for young men and women. In fact, older certificate-obtaining women who switched jobs registered some wage loss compared to their counterparts who did not participate in adult schooling. Older job-switchers who go back to school without obtaining a certificate may also register substantial losses, in both hourly wage and annual earnings for men, and annual earnings for women, at least in the short-term. Finally, low-educated women who switch jobs while obtaining a post-secondary certificate may receive a wage return, though the estimate is only significant at the 10% level.

5. Summary and Conclusions

After examining the participation patterns and the earnings and wage impacts of adult schooling, we find that, for both men and women, the participation decision is strongly correlated with age, initial level of education, and marital status. Young and single workers (17 to 34 years old) are more likely than older (35 to 59 years old), married, and divorced workers to participate in adult education and to obtain a post-secondary certificate. Workers with less than high school education are less likely to participate than workers with high school or higher education.

For men, higher wage decreases participation probability, while working part-time or working for a large firm increases participation. For women, the presence of young children decreases their probability of obtaining a post-secondary certificate, while lower family income encourages them to participate in adult education.

All groups of men receive significant hourly wage returns from obtaining a post-secondary certificate, but these returns are largely confined to men who stay with the same employer; among job-switchers, only young men benefit from a certificate. In terms of annual earnings, all groups who stay with the same employer benefit from obtaining a certificate, but none of their job-switching counterparts do so. Among women who obtain a certificate and staying with the same employer, two groups of them benefit substantially: older workers receive both wage and earnings gains, while women whose initial level of education was college or higher receive significant earnings gains only. But among women who obtain their certificate while switching jobs, only young women (17 to 34 years old) and women whose initial level of education is high school or less receive significant wage gains.