

**The Returns to Flexible Postsecondary Education:  
The Effect of Delaying School**

**Ana M. Ferrer**  
**Department of Economics**  
**University of Waterloo**  
**aferrer@uwaterloo.ca**

**Alicia Menendez**  
**Harris School of Public Policy**  
**University of Chicago**  
**menendez@uchicago.edu**

March 3, 2014

**Abstract.** We compare the returns to education between graduates of post secondary institutions who delayed their tertiary education for some time and those that proceeded with no delays. Using a unique survey that collects information on a representative cohort of graduates, we are able to estimate the effects of delaying school among successful graduates abstracting from specific macroeconomic conditions at the time of graduation. Our results show that graduates that delayed their education enjoy a premium relative to graduates that did not, even after considering other factors such as experience or labor market connections. These estimates are robust to the possibility of selection in the decision to delay school.

**JEL classification:** J24, I2

**Keywords:** Human capital, postsecondary education, flexible school choice, school delay

## 1. Introduction

This paper estimates the effect of delaying schooling on the wages of postsecondary graduates using the Canadian National Survey of Graduates (SOG). For the 1995 cohort of graduates, we find a substantial short term premium among those who delayed schooling relative to continuously enrolled students. The premium exists for both types of institutions, colleges and universities, and in some case, persists still five years after graduation. These estimates are, in general, robust to the possibility of selection in the decision to delay postsecondary schooling.

The theoretical context that guides the interpretation of our results is one of postsecondary schooling decisions taken under uncertainty about returns, skills and preferences. We compare the wages of graduates who completed their first postsecondary degree right after high school with the wages of graduates who were not in school before enrolling in that same program. We use variation in the labor market conditions at the time schooling decisions are made to assess the causal effect of the delay. Our results show that delay of postsecondary education among successful graduates involves a substantial short term premium over what could be expected given greater experience levels of this group. The premium seems robust to the possibility of selection in the decision to return to school.

There exists ample evidence on the benefits of education.<sup>1</sup> The general framework used to estimate these effects implicitly assumes that individuals acquire education continually until the gains of an extra year of education equal the costs, at which point they enter the labor market. However, maintaining this assumption is increasingly problematic in light of the changes in the economic environment surrounding the decisions to attend postsecondary institutions. First, the demands of emerging technologies are inducing more individuals to return to school after a period of absence to acquire new or upgrade existent skills. Second, the increasing costs of postsecondary education force some students to delay the completion of a degree until they have a clearer picture of the rewards involved, or until they are able to finance their education.<sup>2</sup> As a result, more and more individuals engage in education after some time away from learning institutions. The image of the “typical” graduate that proceeds

---

<sup>1</sup> See Oreopoulos and Salvanes (2011), Boudarbat et al. (2010) and references therein

<sup>2</sup> An extended discussion of the complexities of the decision to attend postsecondary education can be found in Altonji et al. (2012). See also Finnie, Sweetman and Usher (2008) for a review that applies to the Canadian case..

in a linear, uninterrupted fashion from primary school to the highest level of education desired is becoming less and less common, and the common perception is that the fortunes of postsecondary graduates differ considerably depending on the paths they take.<sup>3</sup>

This work fits naturally within empirical studies on the returns to human capital, which consistently find substantial returns to a variety of postsecondary degrees.<sup>4</sup> Several studies confirm the disparities in returns to different types of postsecondary education. Kane and Rouse (1995) investigate the returns to 2 and 4 years college degrees and find substantial differences between the two. Leigh and Gil (1997) answer the same question but focusing on older individuals, for whom they find higher returns to formal certification. Altonji et al. (2012) discuss the evidence reporting substantial variance in the returns to different majors, even after accounting for tested ability and labour market participation. Our work relates to this line of investigation but focus specifically on interruptions in the education path.

One of the first attempts to obtain empirical estimates of the returns to discontinuous schooling can be found in Griliches (1980). Subsequent work by Light (1995a) explores the effects of school interruption on the wages of a cohort of young white men using more accurate schooling information contained in the National Longitudinal Survey of Youth (NLSY). That paper shows that, controlling for the number of years of education, individuals who interrupted their schooling earn generally less than those educated continuously – with the exceptions of those with exactly 12 years of education, and those with more than 16 years of education, for whom there is no difference between returns to continuous or interrupted education. The study also finds that the earnings gap between individuals with similar amounts of schooling and total experience, but who differ in the timing at which these were acquired, tends to diminish and generally disappears over time (after 4 years of post-schooling experience). This is in contrast to other studies that look at the effects of delay on a

---

<sup>3</sup> According to the 2001 Canadian Census of Population, 21% of postsecondary students are 25 to 29 years old, and 13% are between 30 and 34 years of age. In the US one third of the 1995-96 starting class of postsecondary students waited a year or more after finishing high school to enrol (US Dpt. of Education, NCES 2005-152). In Canada, 28% of the class of 1995 had delayed their first postsecondary degree by one year or more. This is in line with estimates from other surveys which show that 20% of 20 year-olds postsecondary students had delayed their enrolment for at least one year (Bushnik and Tomkowicz., 2003)

<sup>4</sup> See Card (1999) and Heckman, Lochner and Todd (2006) for exhaustive surveys on the literature of the returns to education.

sample of individuals, including drop outs and non-enrolled individuals (DesJardins et al. (2006)).

In this work, we evaluate the effects of delaying post-secondary education by focusing on graduating cohorts, rather than on age cohorts. This is, we analyze earning differences between same class graduates that studied continuously and those that spent some time out of school before enrolling in the same program (delayers). Examining the heterogeneity in returns to post-secondary education due to the timing of school acquisition using a representative survey of graduates is a distinct exercise. Compared to the usual estimates obtained using a cross section of individuals, we provide program specific estimates of delay for different types of postsecondary education. Also, in contrast with estimates obtained using a panel of individuals of similar age, we are able to abstract from the effect of macroeconomic conditions at the time of entering the labor market on wages.<sup>5</sup>

Examining the returns to post-secondary education accounting for all diversions from the presumed linear path ideally requires panel data that tracks an age cohort of students as they age and make choices regarding schooling and work. Lacking this, standard models of the returns to education typically rely on cross-sectional data. The Census or the Labour Force Survey collect only very limited information about education and experience, and the estimates they produce have to average over age cohorts and ignore differences in macroeconomic conditions at the time of graduation. Even estimates from short panel data such as the Survey of Labour and Income Dynamics (SLID) only have limited information about the final educational attainment, making impossible to learn much about differences across educational paths. We use an alternative source: the 1995 Survey of Graduates (SOG). The SOG collected information about labor market experiences of the 1995 cohort since graduation, first in 1997 and again during its Follow-up Survey (FSOG) in 2000. Ours is, to our knowledge, the first study to analyze the returns to delaying postsecondary education using a representative survey of graduates. The data is uniquely suited for the analysis. First, the sample is large enough to obtain precise estimates of the effect of less traditional patterns of educational choices, such as delays and multiple degrees. In addition, since all individuals

---

<sup>5</sup> For evidence on the importance of labor market conditions at the time of entering the labor market see (Beaudry and DiNardo (1989), Jacobson et al. (1992) and Oreopoulos et al. (2006))

graduated at the same time, we are able to avoid the confounding effects of differences in the economic environment at the time of graduation which could potentially bias the estimates. The SOG is not perfect but allows us a unique opportunity to improve our understanding of the returns to alternative educational pathways by allowing us to account for interruptions and complex educational choices within the limits of the survey design. Further, the richer information regarding educational trajectories also allows us to control for issues like potential experience with better information that is typically available in standard data sets. Hence, we see our research as improving on current estimates in two ways, by introducing more information about educational pathways and by eliminating concern over differences in macro-economic conditions at the time of graduation.

Recent studies that look at the returns to adult education are also related to this paper. Although generally no specific mention of delay is used in these studies, it is implied that those attending adult education programs have interrupted (and therefore delayed) their education. In the U.S., Jacobson et al. (2005) study the impact of adult education programs and find substantial returns to formal certification for older individuals. In Canada, Zhang and Palameta (2006) also look at the short term returns of adult schooling using data from the SLID and find positive returns to this type of education.

The consequences of recognizing the flexibility of educational choices are not trivial. The estimates of the returns to postsecondary education motivate education related policies, including subsidies to postsecondary education and regulation of tuition fees. They are also central to labor market access policies, like training programs for unemployed youth or displaced workers. However, under the assumption of linear investments in education these estimates may be non-representative for substantial subgroups of the population. Further, understanding the effects of school delay on labor market outcomes becomes crucial to guide policies that affect school enrolment incentives.

The next section reviews the literature on post-secondary schooling decisions related to this paper. In section 3 we present the methodology and the data we use. The results are presented in section 4 and the final section concludes.

## **2. Methodology**

## 2.1 An Empirical Framework for Analyzing School Delay

The general empirical framework to analyze earnings generation proposes a reduced form equation of individual wages stated as a function of different measures of skills, usually education and experience. The coefficients of these skill measures can, under certain assumptions, be interpreted as the rate of return of education and experience. This framework has been widely used in labor economics to assess the effect of schooling on earnings. The education estimates rest under the assumption that individuals follow a linear and continuous education path, progressing uninterruptedly in their schooling, from high school into college or university. Schooling continues until the returns to one more year of education do not compensate the costs involved in the acquisition of additional education. Therefore, if a student delays her schooling, the effect of this delay is not considered to affect the returns to education. Within this framework one could disaggregate the returns to postsecondary schooling by the type of activity before enrollment (schooling or no schooling) to provide a measure of the differences in returns between those students proceeding in the linear and continuous manner described above and those who choose to delay.

$$\ln Y_i = \beta X_i + \gamma S_i + \varphi D_i + u_i \quad (1)$$

where  $Y$  represents wages or a close measure of productivity,  $S$  is a vector of human capital and skills variables, such as education and experience,  $X$  is a vector of additional controls and  $D$  is an indicator variable for whether the individual was engaged in non-schooling activities before enrolling in the program for her last educational degree, that is, if she has delayed schooling. The coefficients  $\beta$  and  $\gamma$  are vectors of parameters summarizing the effect of  $X$  on earnings and the returns to human capital respectively and  $\varphi$  is a parameter reflecting the effect of delaying postsecondary education. Finally,  $u$  is a vector of independently and identically distributed error terms.

To the extent that individuals are not homogeneous, unobserved heterogeneity introduces a bias in standard (OLS) estimates of the returns to education.<sup>6</sup> Caponi and Plesca (2009) document the existence of a positive ability bias in access to Canadian post-secondary education and report that the returns to education are still substantial after accounting for it. In

---

<sup>6</sup> For a survey of the implications of the selection problem and empirical methods to address it see Goldberg and Smith (2007).

our case, because all individuals in our sample graduate from at least one postsecondary degree, the extent of the ability bias in the choice of education is bound to be much reduced, more so, since we consider separately specific educational paths. Both features of our analysis are likely to leave us with a more homogenous ability sample within each category than is usual in estimates of the returns to education.

We are left however with addressing the endogeneity of the main variable of interest,  $D$ . Unobserved heterogeneity between delayers and non-delayers may be driving these estimates. If delayers are more productive they will command higher returns in the labor market than non-delayers. This could occur if the reason for the delay was a negative income shock that increased the cost of schooling among delayers. Note, however, that the direction of the bias is not clear, as an argument can be made for delayers being less productive than non-delayers as well; for instance, if delayers have traits that may adversely affect their productivity like lack of perseverance.

Empirically, the effect of delaying schooling can be estimated with a two-step least square procedure that takes into account the endogeneity of the decision to delay.

$$\begin{aligned} \ln Y_i &= \beta X_i + \gamma S_i + \phi D_i + u_i \\ D_i &= \beta X_i + \alpha Z_i + v_i \end{aligned} \quad (2)$$

where  $Z_i$  is a vector of exogenous variables capturing the decision to delay education. A simple model of the decision to delay where individuals that differ in the cost of schooling and where education is necessary to obtain skilled jobs, will elect to delay only if the benefits outweigh the costs, where the benefits of delaying are associated to the current labour market conditions at the time of delay (Ferrer and Menendez, 2010). The vector  $Z$  will specifically refer to instrumental variables that only affect wages through delay. Our choice of instrument is the national unemployment rate at the time of the decision to interrupt the year before obtaining either high school diploma or the previous postsecondary degree.<sup>7</sup> Differences in unemployment rates by year -given the disparity in length of different programs- give enough

---

<sup>7</sup> We use the national unemployment rate because information about the province in which the previous degree was obtained is not available. A lowess smoother function indicates that the instrument and the delay have a linear relationship.



variation to the instrument.<sup>8</sup> As it is well known variation in the instrument - the labor market conditions at the time schooling decisions are made – will typically only result in a local average treatment effect (LATE), meaning that our results apply only to those affected at the margin by the change in economic conditions at the time of graduation, rather than for all delayers.

The choice of our instrument is based on empirical evidence that suggests that postsecondary enrollment rates are countercyclical. In this regard, Light (1995b) and Betts and McFarland (1995) show that unemployment increases community college enrollment in the US. Similarly, Rees and Mocan (1997) find that high unemployment rates reduce dropout rates. Evan and Kim (2005) analyze the impact of local labor market conditions on the demand for education in Indian reservations and find that favorable shocks increase high school dropout rates and reduce college enrollment rates. Similarly, using panel data from 1987 to 2002, Greenbaum (2004) shows that poor labor market conditions increase the number of law school applications.

## *2.2. Data Description*

We use data from the SOG and its follow-up survey conducted by Statistics Canada in partnership with Human Resources Development Canada in 1997 and 2000 respectively. The SOG examines the labor market experiences of the 1995 graduates from universities, community colleges, and trade/vocational programs since graduation. The survey collects a broad range of information on the links between education and labor market outcomes, including characteristics of the programs of study, activities before and after graduation, and socioeconomic background.<sup>9</sup>

For the purposes of the survey, a graduate is a student that completed the requirements for a degree, diploma, or certificate during the 1995 calendar year in a trade/vocational, college, or university program. The sample includes:

---

<sup>8</sup> We have also considered additional instruments that reflect the idiosyncratic costs of schooling such as indicators of parental postsecondary education. However, the relationship to delay is weak. Indeed, whether or not parental schooling is correlated with the educational choices of the offspring is not clear (Card 1999).

<sup>9</sup> More information about the survey at <http://www.statcan.ca/bsolc/english/bsolc?catno=81M0011X>

- a) graduates from university programs leading to bachelor's, master's, or doctoral degrees or to specialized certificates or diplomas;
- b) graduates of postsecondary programs (one year's duration or longer, requiring secondary school completion or equivalent for admission) in Colleges of Applied Arts and Technology (CAAT), Colleges d'enseignement general et professionnel (CEGEP), community colleges, technical schools or similar institutions;
- c) graduates from skilled trades (pre-employment programs that are normally three months or more of duration) in trade/vocational schools<sup>10</sup>.

Graduates from private postsecondary institutions, from “continuing education” programs not leading to a degree, from part-time trade courses that were working full time, from vocational programs of less than three months or those not in the skilled trades, and those from apprenticeship programs are excluded.

The path to postsecondary education is a complex one. Graduates of the 1995 class may have had high school degrees prior to their postsecondary enrollment or they may have already obtained postsecondary degrees. Indeed, in some provinces in Canada attending college prior to university is the usual way to proceed.<sup>11</sup> In this paper, we consider the following pathways to post-secondary education: transitions from high school (66% of all transitions), either to Trades certificate (23% of all transitions from high school), to college (36% of all transitions from high school) or to a BA program (41% of all transitions from high school). In addition, we consider transitions from BA programs to MA programs which account for 34% of all transitions from BA programs (see Table 1). We make the distinction between different programs because we expect the characteristics of graduates to differ considerably as these programs vary in terms of their financial and time requirements. Each of these groups is potentially different in terms of the reasons that led them to school and in terms of the gains that they obtained from further education. This classification allows us to condition on these

---

<sup>10</sup> A trade/vocational school is a public educational institution offering courses to prepare people for employment in specific occupations. Many community colleges and technical institutes offer these certificates as well.

<sup>11</sup> In Quebec, CEGEPS are a required and normal stage between high school and university. In British Columbia transfer credits from colleges to university are also common. For a view of the provincial structure of postsecondary education in Canada see “Provincial Postsecondary Systems and Arrangements for Credit Transfer”, at (<http://www.cmec.ca/postsec/CreditTransfer.en.pdf>)

characteristics.

In each of these paths we consider the activity of the respondent before enrolment in the program, whether or not she was in school before registering for the degree obtained in 1995. Graduates who were studying full time, or working and studying are considered continuing graduates. Delayed graduates or delayers are those that during the year before enrolling in the 1995 program were not in school but either working full time, unemployed, or out of the labor force.

We restrict the sample to those 45 years of age or younger that report positive earnings in the week of reference - approximately 80% of the surveyed graduates<sup>12</sup>-. This leaves us with a sample of a little over 24,000. Tables 1 and 2 show how the sample is distributed by previous levels of schooling and by previous main activity by type of institution (non-university or university). Looking at the previous level of education (Table 1), around one third of the graduates already hold postsecondary degrees, 16% had a degree from non-university postsecondary institutions and 18% had a previous university degree. Table 2 shows the main activity of graduates before enrollment in the program. Approximately half the graduates were students before enrolment in the 1995 degree, while 7% reported both working and attending school. A significant fraction of graduates – 46% – were not attending school before enrollment in the 1995 program, most of them because they were working. However, around 15% of those who returned to non-university institutions and 5% of those who returned to a university institution were either unemployed or out of the labor force. Approximately one third of our sample returned to school within three years of completing their previous degree.

Table 3 shows the distribution of delayers by the path taken to obtain the 1995 degree. Among graduates from non-university institutions, those from high school constitute the majority of the sample, around 83%. They are roughly equally divided between those who were previously in school and those who were not studying the year before enrollment. However a significant portion, 17% of non-university graduates, transitioned from other postsecondary degrees and they are mostly delayers. University graduates are roughly equally

---

<sup>12</sup> In this paper we are not considering the employment margin which might be an important dimension of the timing of post-secondary education as its full analysis belongs in a separate paper. However, the fraction of graduates that work is substantial and justifies an analysis of earnings differences on its own.

divided between those transitioning from high school or from other post-secondary institutions. Since the opportunity cost of university degrees is likely to rise with the years of school separation, it is not surprising that fewer university graduates are delayers (30%). Among those transitioning from high school, most are non-delayers (83%), whereas delayers make up 44% of those transitioning from other post-secondary institutions.

The SOG provides detailed information about the degree obtained in 1995, education and activities before enrollment, as well as activities during the two years after graduation. For those who worked before enrollment, it records the type of job, occupation and usual hours of work.<sup>13</sup> For those who have previous postsecondary education, it provides graduation year, type of degree and field of study obtained. The SOG also contains information about additional education obtained after graduation in 1995, whether the individuals returned to a job held before enrollment, and characteristics of other jobs held between graduation and the time of the interview (duration, occupation and industry, earnings and usual hours per week). In addition, it provides similar information about the job held in the reference week, plus information about wages. From this information we construct a variable for potential experience before graduating in 1995 ( $\text{age} - 6 - \text{actual years of education in 1995}$ ) and a variable accounting for months of experience acquired after graduation in 1995.<sup>14</sup> Demographic characteristics of the graduates, such as province of residence, parental education, number of children and marital status, are also reported at the time of the interview. We measure the returns to education using the log of positive annual earnings from the job held in the reference week in 1997.<sup>15</sup>

In order to conduct our analysis we further eliminate observations without information on experience or place of residence. The main variables used in the analysis are described in Table A in the appendix.

### **3. Returns to Specific Education Pathways**

---

<sup>13</sup> Unfortunately, it does not provide wages for jobs held before graduation.

<sup>14</sup> To compute an accurate measure of experience we used previous education level, beginning and end dates of the program and whether the student was enrolled full or part time, rather than use the usual number of years that it takes to get a given degree. There is still some room for miscalculation hence we still refer to this as a measure of potential experience.

<sup>15</sup> All results hold if we use hourly wages instead, however, the sample is further reduced and we lose precision in some cases. Results are available from authors

In Table 4 we examine average differences between graduates that delayed their schooling and those who were continuously enrolled. Graduates that delayed their schooling are, on average, older and more likely to be immigrants, to have children earlier, and to have parents with no postsecondary schooling. They are however, more likely to have previous postsecondary education and less likely to complete additional degrees after their graduation date in 1995. Delayed graduates seem to have a smoother transition into labor markets than their continuously enrolled fellow graduates. They earn higher wages two years after graduation and they are more likely to hold the same job at the time of the follow-up interview in 2000. Part of this success could be attributed to stronger labor market connections (a greater fraction of delaying graduates comes back to jobs held before graduation and are more likely to have worked full time before graduation). This is unlikely to be the whole story. If such were the case, we would expect this advantage to vanish fast over time as the continuously enrolled graduates build labor market connections of their own. A cursory examination of the raw data does not suggest that this is case. Delayed graduates still show significantly higher wages five years after graduation.

### *3.1 Regression Results*

Table 5 shows estimates of the association between log wages in 1997 and school delay. To facilitate the interpretation, we have divided the analysis by groups reflecting the path taken into post-secondary education. Regressions in Table 5 include standard demographic controls (immigrant status, gender, current marital status, presence of children under 6 and current province of residence at the time of the interview) that show the expected signs, with some variation depending on the path taken. The gender gap is larger for transitions from high school to non-university, and the immigrant gap is significant for transitions to non-university institutions. In addition, we include controls for other forms of human capital: bilingual status, additional education after 1995, field of study (humanities, commerce, agriculture, health, engineering, math and applied sciences, and other fields, social sciences/education is the omitted category), type of degree obtained in 1995, experience before graduation, experience after graduation, and whether the respondent went back to a job held before enrolment. For the sake of brevity, we do not report these coefficients here, but briefly comment on them, as they are remarkably stable through different specifications. Experience before graduation has

a significant effect on the earnings of most groups except those transitioning from high school to university, while experience after graduation has the highest returns for the group who transitions from post-secondary to non-university degrees. This pattern supports the idea that transitions to non-university degrees might be more complementary to previous labour market experiences.<sup>16 17</sup> Returning to work for a previous employer has a positive and strong effect on earnings, particularly for those transitioning from previous post-secondary degrees. Bilinguals have a small positive effect in most transitions, except for those between previous post-secondary degrees and non-university degrees, while additional education after 1995 has a significant negative effect for those transitioning to university degrees. The return to a college degree, relative to a Trades certificate, is 6% for transitions from high school, but it is not significant in transitions from previous post-secondary degrees. Unsurprisingly, returns to a graduate degree relative to a BA degree, are important for those transitioning from previous postsecondary certifications (between 16 and 22%).

The first two columns in Table 5 show results for the sub-sample of graduates that moved from high school to a Trades certificate. These graduates show a premium of 5.1% if they did not enrolled immediately after high school. This return can be decomposed by the type of activity they were engaged in before enrolling (column 2), which shows that the average return is 5% for those who were working, but it is higher – around 12% - for those who were out of the labour force, and insignificant for the unemployed. Other activities include taking care of family, household responsibilities liabilities and other unspecified activities and therefore they include taking a gap year between high school and post-secondary education. The next two columns show the same estimates for graduates who moved from high school to college. The returns to delay in this case are positive but not significant. Columns 5 and 6 consider transitions from high school to a bachelor degree. Returns to delay, although substantial, are not significant at conventional levels. However, decomposing by type of

---

<sup>16</sup> We have considered the possibility that the extent to which formal human capital complements work experience and affects delay varies by field of study. To analyze this possibility we have looked into the returns to delay for graduates in Mathematics and Engineering (STEM) fields of study. For these graduates we find that the returns to delay are 10% if transitioning from high school, but only 3% if transitioning from previous post-secondary degrees.

<sup>17</sup> Experience after graduation was initially entered in the usual second degree polynomial form. However, graphical observation and estimated coefficients strongly suggested that the correct form was linear. Given the short span of time after graduation, it is not surprising that the usual non-linearities in the experience-earnings profile are not observed here.

previous activity reveals that working while delaying enrollment has significant returns (6.4%). It also shows opposite effects of delaying for those transitioning from unemployment (13.5%) or from out of the labour force (-9.1%), but these are not precisely estimated. Finally, in columns 7 and 8, we report results for graduates transitioning from a Bachelor's degree to a Master's degree. Returns to delay in this case are large and significant (19.4%), and detailing the previous activity confirms that these returns mostly accrue to those that were in the labour force before (either working or unemployed).

Overall, the OLS results suggest that delay has positive returns that are quite substantial for some groups, particularly those transitioning from a previous post-secondary degree. These returns are over and above what could be expected even when taking into account the delayers' higher level of labor market experience and their potentially larger network of connections, which we control for in our estimations. Further, positive returns seem mainly confined to delayers that were working before returning to school. This suggests that there may be something additional delayers bring from their previous experience in the labor market that seems to boost the returns to their education. If these students were simply postponing their education we would not expect to see such premium.

#### *4.2. Two-Step Least Square Estimates*

Next, we attempt to correct for the possible endogeneity of the delaying decision by estimating an equation such as that specified in (2). As mentioned above, unobserved heterogeneity between delayers and non-delayers may be driving these estimates. Delayers could have higher ability and therefore will command higher returns in the labor market than non-delayers. This could occur if the reason for the delay was a negative income shock that increased the cost of schooling among delayers. On the other hand, delayers could have lower ability than non-delayers and the delay is just a reflection of this. The decision to delay likely depends on the opportunity cost of schooling and the monetary costs of schooling. Lacking wages before enrollment, we use as a measure of the opportunity cost of schooling the unemployment rate at the time the schooling decisions are made. We use time differences in unemployment to generate exogenous variation in opportunity cost of schooling. The cumulative distribution of graduates by date of previous graduation can be found in Appendix

table. We do not have to consider the effect of macroeconomic conditions at the time of graduation because all individuals graduated at the same time.

Table 6 presents results for the four education trajectories considered here. To economize space we only show the coefficient of school delay and the results from the first stage regression, since there are no significant differences in the estimates of the covariates between OLS and 2SLS methods. First note that the effect of the unemployment rate at the time of graduation from the previous degree is negative: high unemployment rates induce more delay. This conforms to previous evidence indicating that high unemployment rates increase postsecondary enrollment (reducing interruption and hindering delay). Second, the effect of delay on wages is positive –between 10 and 14.5%– for high school transitions. However, it is only precisely estimated for the transitions to college and (weakly) for transitions to BA. Returns to delay are very large, around 25%, for transitions to MA programs. To understand these effects, it is useful to remember that IV estimation typically only recovers the local average effect. In this case, it means that we are capturing the effect of delay on the marginal student that postponed further education because of economic conditions at the time of graduation, conditional on returning to school, relative to the student that did not delay. In general, the returns to delay in Table 6 are larger than those estimated using OLS, suggesting that the marginal student would achieve greater returns than the average student. However, for students transitioning to Trades certificates a test of the endogeneity of the instrument fails to reject the null that delay is exogenous. We suspect that this is due to the fact that the returns to delay for this group are weakly estimated, presumably because there is less variation in the instrument for shorter and less costly degrees. Returns to college and BA degrees are more precisely estimated. Finally, the large returns to delay for the group that makes the transition from BA to MA suggest that the costs –opportunity costs and monetary costs– of these programs make these students very sensitive to the economic conditions.

More interestingly, the results again indicate that there is a positive return to delaying postsecondary education, beyond what we can expect due to higher levels of experience and labor market connections among delayers. Although we cannot estimate this formally, we speculate that, to the extent that students delay their education because of uncertainty about its returns, the value of postsecondary education is enhanced by solving this uncertainty before entering school. Solving this uncertainty could, for instance, translate in a better matching



between skills and jobs.<sup>18</sup> Therefore delaying postsecondary education might have, at least for certain graduates, a productive value because it allows them to learn about returns to postsecondary education, what they are good at, or which skills the market demands. This interpretation is also supported by our results that indicate that most of the returns to delay occur for individuals with previous labor market experience.

In interpreting these results, we do not claim that these estimates apply to the whole population. We compare returns between graduates who delayed and those who did not and hence our results are conditional on successful graduation from a post-secondary institution. In addition, we are aware that variation in the labor market conditions at the time schooling decisions are made will only affect the decision to delay for individuals on the margin, rather than all delayers. Hence, the result should be interpreted as showing that, among successful graduates affected on the margin by labor market conditions at the time of making schooling decisions, delay seems to have a positive effect on earnings.

### *3.3. Robustness*

We consider several robustness checks for the above results. First, since unemployment rates (UR) are likely to be autocorrelated, it could be the case that the UR the year before re-enrollment determines both the decision to re-enroll and the observed wage two years after graduation, particularly for very short degrees).<sup>19</sup> To examine this possibility, we re-run our estimates using a sample of individuals that graduated from programs that take longer than 6, 12 and 24 months to complete. This renders samples for which the UR the year before enrollment is unequivocally removed from observed labor market outcomes to be considered an exogenous instrument (this implies that the time difference between the unemployment rate at the time of previous graduation and the 1997 wages will be longer than 2.5, 3 and 4 years respectively. Doing this drastically reduces the number of observations for some pathways. The average length of a trade certificate is 12.3 months and the average length of a college degree is 24.9 months and therefore those specific trajectories cannot be explored for lack of

---

<sup>18</sup> We have run a logit model on the respondent's perception of the relevance of their studies for the job they hold. Delay shows a positive association with reporting that field of study and required skills are "close" or "somewhat close" for all educational paths, but it is not statistically significant. See Heckman et al. (2006) for additional empirical evidence.

<sup>19</sup> Annual unemployment rate series typically follow an AR(2) (Oreopoulos, von Wachter and Heisz (2006).

observations. However we can analyze results for graduates from college, BA or MA without specifying the previous degree. The results remain significant when dropping programs shorter than a year. When dropping programs shorter than two years, delay is not significant for college or BA graduates but remains significant for MA graduates.

We also check for the possibility that the results are driven by our definition of delay. Recall that we considered those who reported their main activity during the year before enrollment jointly as working and in-school to be mainly in school and therefore not delaying education. These could lead us to underestimate the magnitude of the delay premium, particularly if these graduates were actually maintaining strong ties with the labor market. In that case, the effect of these ties could improve their labor market outcomes upon graduation, increasing the average earnings of individuals who do not delay school. We redefined the delay variable eliminating from the sample the group of individuals who report being working and in school the year before enrollment. The results from this sub-sample of individuals suggest that this is not a major concern, as we found only slight differences in the delay premium between the two samples.<sup>20</sup> Finally, we consider whether differences in the educational systems between Quebec and the rest of Canada could be driving these estimates. We perform the same regressions excluding Quebec from the analysis and obtain similar results.<sup>21</sup>

In addition, we also consider the questions of the persistence of the premium to delaying schooling. We use the 2000 Follow-up Survey of Graduates to estimate the effect of delaying schooling on earnings in 2000, five years after graduation. These results are summarized in Appendix Table 2. For each transition we report the OLS and the 2SLS coefficient of delay. Returns to delay remain significant five years after graduation for the transition from HS to Trades certificate and for the transition between BA and MA. Particularly to those that were working before enrolment. It is worth noticing that the LR test on the endogeneity of delay cannot reject the null that delay is exogenous.

#### **4. Conclusion**

---

<sup>20</sup> Results are available upon request

<sup>21</sup> In addition, dummies indicating the province of graduation are not significant and do not change the estimates. This is likely due to the fact that the amount of interprovincial migration is relatively small (14% on average). These results are available upon request.

Political debates on the improvement of educational standards and access to higher education are on-going in western economies (Radio-Canada, 2012; Standing Senate Committee on Social Affairs, Science and Technology, 2011; US Department of Education 2006). While governments are generally committed to facilitate human capital and skill accumulation, the optimal form of this support benefits from what we know about the paths taken to post-secondary education and the returns that this education awards.

We find that the image of the “typical” graduate that proceeds in a linear, uninterrupted fashion from primary school to the highest level of education desired is becoming less and less common. The demands of modern and rapidly changing technologies and the increasing costs of postsecondary education force some students to either return to school after being engaged in the labour force or delay the completion of a degree until they are able to finance their education. The importance of recognizing this flexibility in educational choices has some consequences for understanding the returns to post-secondary education and to guide education related policies, labor market access initiatives and school enrolment incentives.

This paper contributes to the existing literature by offering first, an account of the extent of delay in Canada and second, an estimate of the returns to delaying schooling. Methodologically, the study has the advantage of being based on comparisons within the same class graduating cohort. This allows us to abstract from specific macroeconomic conditions at the time of graduation, something that is rarely done in the literature and has important consequences for labor earnings.

We find positive returns to postsecondary education delay among successful graduates. This suggests that returning to school results in increased productivity rather than just delaying skill formation. If delayers were simply postponing human capital accumulation, such premium should not exist. While both, university and non-university post-secondary graduates that delay schooling enjoy a premium, the benefits are substantially higher in the case of university degrees. In particular, delayers that were working before returning to school seem to enjoy a premium even after controlling for experience and labor market connections gained before enrollment. Our interpretation of this result is that this group of delayers is able to learn something about education, themselves, or the labor market while they are away from school that increases their potential for future earnings. With this evidence, it would appear

that policies aimed to facilitate the return to school, via subsidized leave-of-absence from work, special loans or deductible tuition fees may have an increased return in the form of enhanced productivity. Similarly, we consider that our results support some universities' admission policies that consider labour market experience as a valid criterion for admission.

## References

- Altonji, J.G., E. Blom and C. Meghir, (2012) "Heterogeneity in Human Capital Investments: High School Curriculum, College Major, and Careers," *Annual Review of Economics*, Annual Reviews, vol. 4(1), pages 185-223, 07.
- Beaudry, P. and DiNardo, J. (1991) "The Effect of Implicit Contracts on the Movement of Wages over the Business Cycle: Evidence from Micro Data", *Journal of Political Economy*, Vol. 99(4), pp.: 665-88
- Betts, J. and McFarland, L. (1995), "Safe Port in a Storm: The Impact of Labor Market Conditions on Community College Enrollments." *Journal of Human Resources* 30(4):741-765.
- Blundell, R., L. Dearden and C. Meghir (1996) "Work-Related Training and Earnings." London: Institute for Fiscal Studies.
- Boudarbat, B. T. Lemieux, and C. Riddell. "The evolution of the returns to human capital in Canada, 1980–2005." *Canadian Public Policy* 36.1 (2010): 63-89.
- Boudarbat, B. (2003) "Earnings, Unemployment and College. Field of Study in Canada", Mimeo
- Butlin, G. (2001) "Bachelor's graduates who pursue further postsecondary education," *Education Quarterly Review*, 7(2), 22–41.
- Bushnik, T and Tomkowicz, J. (2003) "Who goes to postsecondary education and when: pathways chosen by 20 year-olds" *Statistics Canada Research Paper Series*. Cat 81-595 MIE No6
- Caponi, V. and M. Plesca (2009) "Post-secondary education in Canada: can ability bias explain the earnings gap between college and university graduates?", *Canadian Journal of Economics* vol. 42(3), pp. 1100-1131
- Card, D. (1999) "The Causal Effect of Education on Earnings" in Ashenfelter, O and D. Card (eds.) *Handbook of Labor Economics* vol 3A. Amsterdam and New York, North Holland
- \_\_\_\_\_ (2001) "Estimating the Return to Schooling: Progress on Some Persistent Econometric Problems". *Econometrica*, 69(5), 1127-60
- Des Jardins S., D. Ahlburg, B. McCal (2006) "The effects of interrupted enrollment on graduation from college: Racial, income, and ability differences," *Economics of Education Review*, Volume 25, Issue 6, 575-590
- Evan, W. and W. Kim (2005) "The Impact of Local Labor Markets Conditions on the Demand for Education: Evidence from Indian Casinos," Mimeo
- Ferrer, A. and A. Menendez (2009) "The Returns to Flexible Postsecondary Education: The Effect of Delaying School", *CLSRN Working Papers* #20
- Finnie, R. (2000) "From school to work: The Evolutions of Early Labour Market Outcomes of Postsecondary Graduates", *Canadian Public Policy*, XXVI no.2, 197-224.

- Finnie, R., Sweetman, A. and Usher, A. (2008) "Introduction: A Framework for Thinking about Participation in Post-Secondary Education" in Who Goes, Who Stays, What Matters: Access to and Remaining in Post-Secondary Education in Canada, Finnie, Ross, Richard Mueller, Arthur Sweetman, and Alex Usher (Eds.), Montreal-Queen's, McGill-Queen's University Press, 2008, 3-32
- Goldberg, J. and J. Smith (2007) "The Effects of Education on Labor Market Outcomes" in E. Fiske and H. Ladd (eds.), Handbook of Research in Education Finance and Policy. New York: Routledge, 688-708
- Greenbaum, J. (2004) "How do Labor Market Conditions Affect the Demand for Law School?" MIT, mimeo.
- Griliches, Z. (1980) "Schooling Interruptions, Work while in School and the Returns to Schooling", *Scandinavian Journal of Economics* 82(2), pp. 291-303
- Heckman, J., L. Lochner and P. Todd (2006) "Earnings functions, rates of return and treatment effects: The Mincer equation and beyond" in E. Hanuschk and F. Welch (Eds.) in Handbook of the Economics of Education, vol. 1 (pp.307-405)
- Heckman, J. and E. Vytlacil (2005) "Structural Equations, Treatment Effects, and Econometric Policy Evaluation," *Econometrica*, 73(3), 669-738
- Horn, L., E. Forrest Cataldi, and A. Sikora (2005) "Waiting to Attend College: Undergraduates Who Delay Their Postsecondary Enrollment" US department of Education, Institute for Education Sciences NCS 2005-152
- Jacobson, L. R. LaLonde and Sullivan D. (1992). "Earnings Losses of Displaced Workers," *American Economic Review*, vol. 83(4), pages 685-709.
- Jacobson, L., R. LaLonde and D. Sullivan, (2005) "Estimating the returns to community college schooling for displaced workers" *Journal of Econometrics* vol. 25, No. 1-2, 271-304.
- Jenkins, A., A. Vignoles, A. Wolf and F. Galindo-Rueda (2003) "The determinants and labor market effects of lifelong learning", *Applied Economics* vol. 35(16), pp:1711-22
- Kane, T. and C. Rouse (1993) "Labor Market Returns to Two and Four Year Colleges" *NBER Working Paper* 4268.
- Keane, M. and K. Wolpin (1997) "The Career Decisions of young Men" *The Journal of Political Economy* 105(3) pp. 473-522.
- King, I. and A. Sweetman (2002) "Procyclical Skill Retooling and Equilibrium Search". *Review of Economic Dynamics*. Volume 5, Issue 3. Pages 704-717.
- Leigh, D. and A. Gill (1997) "Labor Market Returns to Community colleges: Evidence from Returning Adults", *The Journal of Human Resources*, Vol. 32, No. 2, 334-53.
- Light, A. (1995a) "The Effects of Interrupted Schooling on Wages," *The Journal of Human Resources*, Vol. 30, No. 3, 472-502.
- \_\_\_\_\_ (1995b) "Hazard model estimates of the decision to reenroll in school," *Labour Economics*, Volume 2, Issue 4. Pages 381-406.
- Lleras-Muney A. (2005), "The Relationship Between Education and Adult Mortality in the United States" *Review of Economic Studies*, 2005, vol. 72, issue 1, pages 189-221

- Lochner, L and E. Moretti (2004) “The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports”, *American Economic Review*, Vol. 94(1) pp. 155-189.
- Marcus, R. (1984) “Measuring the Rate of return to Interrupted Schooling” *Journal of Educational Statistics*, 9(4), pp. 295-310
- McBride, S. and A. Sweetman (2003) “Immigrant and Non Immigrant Earnings by Postsecondary Field of Study” in Canadian Immigration Policy for the 21<sup>st</sup> Century, eds. Charles M. Beach, Alan G. Green and Jeffrey G. Reitz (Kingston and Montreal: McGill-Queen’s University Press) pp.413-62
- Oreopoulos, P. (2003) "Do Dropouts Drop Out Too Soon? Wealth, Health, and Happiness from Compulsory Schooling" *forthcoming Journal of Public Economics*
- Oreopoulos, P., T. von Wachter and A. Heisz (2006)"The Short and Long Term Career Effects of Graduating in a Recession: Hysteresis and Heterogeneity in the Market for College Graduates," NBER Working Paper 12159.
- Parent, D. (2001) “Return to a High School Diploma and the Decision to drop Out: New Evidence from Canada” CIRANO Working Paper # 2001s-09
- Radio-Canada (2012) “Droits de scolarité au Québec : un débat de société” dossier retrieved at <http://www.radio-canada.ca/sujet/droits-scolarite>
- Rees, D. and N. Mocan (1997) “Labor market conditions and the high school dropout rate: Evidence from New York State”, *Economics of Education Review*, Vol. 16(2), pp 103-9.
- Standing Senate Committee on Social Affairs, Science and Technology (2011) “Opening the Doors: Reducing Barriers to Post-Secondary Education in Canada” Chair: The Honorable Kelvin K. Ogilvie
- Zhang, X. and B. Palameta (2006) “Participation in Adult Schooling and its Earnings Impacts in Canada” *Statistics Canada Research Paper Catalogue* 11F0019MIE-No 276

**Table 1. Previous education level by type of degree in 1995 (weighted)**

	Non-university		University		% all graduates
	Trade	College	BA	MA	
<i>Previous Education</i>					
<b>HS</b>	23%	36%	41%	-	66.5%
<b>Trade</b>	63%	21%	16%	--	1.7%
<b>College</b>	12%	17%	71%	--	14.1%
<b>BA</b>	5%	11%	50%	34%	16.3%
<b>Graduate</b>	4%	6%	32%	58%	1.5%
<b>% of all graduates</b>	19%	28%	46%	7%	24,433

**Note:** Cells indicate row percentages

**Table 2. Main activity before enrollment by type of degree in 1995 (weighted)**

	Non-university		University		% all graduates
	Trade	College	BA	MA	
<i>Previous Main Activity</i>					
<b>School</b>	28%	47%	65%	40%	48%
<b>Working and School</b>	5%	7%	8%	6%	7%
<b>Working</b>	46%	37%	23%	48%	36%
<b>Unemployed</b>	14%	4%	1%	2%	5%
<b>Other</b>	6%	5%	3%	3%	5%
<b>Observations</b>	19%	28%	46%	7%	24,433

**Note:** Cells indicate column percentages



**Table 3. The Paths to Postsecondary Education (weighted)**

---

	<b>Non-University degree 1995</b>			<b>University degree 1995</b>		
	<b>From High School</b>	<b>From post-secondary</b>	<b>Total</b>	<b>From High School</b>	<b>From post-secondary</b>	<b>Total</b>
<b>No Delay</b>	41%	5%	46%	43%	27%	70%
<b>Delayed</b>	42%	12%	54%	9%	21%	30%
<b>Total</b>	83%	17%	100%	52%	48%	100%

---

<b>Observations</b>	12,868	11,565
---------------------	--------	--------

---

**Note:** “Non University” includes Trade/Vocational and College students. “University” includes MA and BA students

---

**Table 4. Sample Characteristics – Mean Values**

	Non-University Graduates			University Graduates		
	Continuous Schooling	Delayed Schooling	<i>p</i> -value of difference	Continuous Schooling	Delayed Schooling	<i>p</i> -value of difference
Age	24.3	30.3	(0.000)	26.9	33.5	(0.000)
Female	48.2	47.9	(0.795)	53.2	52.8	(0.730)
Immigrant	6.6	8.5	(0.000)	11.9	14.5	(0.000)
Bilingual	14.7	11.7	(0.000)	19.7	23.3	(0.000)
Children 0-6 in 1997	9.0	21.6	(0.000)	10.2	25.3	(0.000)
Children 0-6 in 2000	21.8	26.9	(0.000)	23.9	31.5	(0.000)
Children 0-6 at previous graduation	0.7	1.8	(0.000)	2.0	5.1	(0.000)
UR year before enrolment	11.5	11.2	(0.000)	9.19	9.27	(0.302)
UR year at previous graduation	9.9	8.4	(0.000)	8.71	8.33	(0.000)
Back to job held before graduation	2.7	9.4	(0.000)	4.2	26.3	(0.000)
Held full time job before graduation	46.3	73.0	(0.000)	56.0	79.6	(0.000)
1997 Experience since graduation	1.7	1.72	(0.843)	1.75	1.87	(0.000)
Permanent job 1997	69.1	68.3	(0.367)	56.6	68.0	(0.000)
Full Time Job 1997	86.5	86.9	(0.553)	85.7	88.0	(0.000)
Positive earnings 1997	19,441	22,369	(0.000)	25,490	36,982	(0.000)
Work same job since 1997	37.9	43.2	(0.000)	37.5	54.1	(0.000)
2000 Experience since graduation	4.6	4.1	(0.570)	4.66	4.81	(0.000)
Permanent job 2000	76.2	73.3	(0.000)	71.4	75.7	(0.000)
Full Time Job 2000	92.0	91.0	(0.091)	91.2	90.8	(0.722)
Positive earnings 2000	32,907	34,035	(0.004)	46,582	53,400	(0.000)
Previous Level of Schooling						
Some PS	17.6	16.7	(0.233)	6.8	5.8	(0.065)
College	7.4	14.7	(0.000)	8.5	10.2	(0.000)
University	3.6	6.6	(0.012)	34.6	66.1	(0.000)
Other Degree after 1995	11.1	9.6	(0.000)	11.5	6.5	(0.000)
Other Degree after 1997	15.9	11.6	(0.000)	21.7	12.2	(0.000)

**Table 5. OLS – 1997 Wage Regression (Robust Standard errors)**

	High school to Trades		High School to College		High School to BA		BA to MA	
	Basic	Detailed	Basic	Detailed	Basic	Detailed	Basic	Detailed
<i>Previous Activity :</i>								
Not in school (NS)	0.051** (0.023)	--	0.009 (0.023)	--	0.048 (0.034)	--	0.194*** (0.032)	--
NS – Working	--	0.051** (0.024)	--	0.015 (0.024)	--	0.064* (0.036)	--	0.203*** (0.034)
NS – Unemployed	--	0.024 (0.033)	--	- 0.104 (0.055)	--	0.135 (0.163)	--	0.204** (0.086)
NS – Other	--	0.120*** (0.043)	--	0.052 (0.050)	--	- 0.091 (0.079)	--	0.095 (0.083)
<b>Observations</b>	3,525	3,525	4,480	4,480	3,860	3,860	2,045	2,045
<b>R-squared</b>	0.284	0.285	0.196	0.197	0.214	0.214	0.381	0.382

**Table 6. 2SLS Model – 1997 Wage Regression (Robust Standard Errors)**

	<b>High school to Trades</b>	<b>High School to College</b>	<b>High School to BA</b>	<b>BA to MA</b>
Previous Activity: Not in school	0.145 (0.236)	0.143** (0.068)	0.098* (0.049)	0.255*** (0.058)
<i>First Stage</i>				
National UR at the time previous graduation	-0.228*** (0.012)	-0.249*** (0.010)	-0.085*** (0.020)	-0.337*** (0.017)
Lambda (SE)	-0.078 (0.147)	-0.089 (0.041)	-0.043 (0.025)	-0.066 (0.034)
Test of significant restrictions (Chi2 (2)) <sup>(1)</sup>	338.3	629.7	17.3	383.0
Test of endogeneity of delay, p-value <sup>(2)</sup>	0.60	0.03	0.08	0.06
Observations	3,055	4,195	3,740	2,020

**Note:** Test of the null hypothesis that the identifying restrictions in the first stage are jointly 0. We report the p-value from a LR test on the endogeneity of delay. The null hypothesis is that delay is exogenous.

The main equation includes all controls specified for the OLS regressions in table 5. Robust standard errors in parenthesis

## Appendix

---

### *Description of main variables*

---

#### ***Dependent variable***

Annual earnings Estimated annual gross earnings for 1997 and 2000, calculated from all jobs held during the reference week in 1997 and 2000. Excludes self-employment

#### ***Demographic Characteristics***

Immigrant Status Whether the Graduate was born in Canada or not

Children 0 to 6 Age and number of children are reported in 1997 and 2000.

Age in June 95 Age is reported in the 1997 interview

#### ***Activities before Enrollment***

The main activity during the 12 months previous to enrolment in the 1995 program is reported. This variable is used to infer labor force status before enrollment in the program and whether or not the graduate was in school before enrollment in the 1995 program

#### ***Previous Highest Degree***

Degrees obtained before 1995 graduation are reported

#### ***Previous Field of study***

Field of study for postsecondary degrees held before 1995 graduation

#### ***Date of completion previous degree***

Graduate reports the date of completion of previous degrees.

#### ***Ever worked full time before Degree 95***

Graduate reports whether or not he worked full time before graduation  
Type of degree obtained upon graduation in 1995

#### ***95 Field of study***

Main field of study corresponding to the 1995 degree

#### ***Length of the program***

Graduate reports the length of the program completed in 1995. This variable is used together with date of completion of previous degree to calculate length of interruption

#### ***Activities after Graduation***

Back to previous employer Graduate reports whether she returned to work with a previous employer

#### ***Jobs held after graduation***

Permanent job Graduate reports whether the job held after graduation was a permanent job

Paid job Graduate reports if the job held after graduation was paid, unpaid, self-employed

Start and end dates Graduate reports the start and end dates of the job(s) held in 1997 and 2000.

---

**Appendix Table 1. Distribution of graduates by date of previous graduation**

	<b>Non University</b>	<b>University</b>
before 1976	0.09	0.025
1976 - 1985	0.21	0.138
1986 - 1990	0.29	0.510
1991 - 1995	0.41	0.327
<b>Total</b>	12,868	11,565

**Note:** “Non University” includes Trade/Vocational and College students. “University” includes MA and BA students.

**Appendix Table 2. OLS and 2SLS Model – 2000 Wage Regression (Robust Standard Errors)**

	High School to Trades		High School to College		HS to BA		BA to MA	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Previous Activity: Not in school		0.07**		0.27		0.00		0.07**
Working	0.04**		-0.01		-		0.09*	
Unemployed	-0.04		-0.09**		0.01		-0.02	
Other	0.01		-0.06*		-		-0.03	
<i>First Stage</i>								
National UR at previous graduation		-0.24***		-0.24***		-		-0.33***
(SE)		(0.012)		(0.031)		(0.020)		(0.017)
Lambda		-0.030		-0.18		-0.02		-0.003
(SE)		(0.035)		(0.18)		(0.013)		(0.024)
Test of endogeneity of delay <sup>(1)</sup>		0.40		0.32		0.09		0.90
Observations	3,454	3,017	4,563	4,283	3,901	3,782	2,217	2,183

**Note:** We report the p-value from a LR test on the endogeneity of delay. The null hypothesis is that delay is exogenous  
 OLS regression includes the same controls as in table 5 plus a variable for additional schooling after 1997.  
 The main equation includes the same controls.