Field of study choice by community college students in Canada

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Abstract

Community college education is a key component of Canadian postsecondary education, with 21% of the population aged 25–64 having college credentials. In order to understand educational decisions at this level, we estimate a model of choice of field of study and analyze, among other things, the effect of earnings on this choice. In this way, we exploit two cross-sections (and cohorts) of young workers who completed community college (Cegeps in Quebec) in 1990 and 1995 from the Canadian National Graduate Survey. Structural estimates indicate that the probability of selecting a specific community college field of study depends significantly upon anticipated earnings in this field relative to other fields. Our results also show that women put less weight on earnings compared to men when choosing a field of study, and that students who were employed prior to starting community college are more sensitive to earnings variations across fields of study than students with no prior work experience.
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1. Introduction

Human capital theory provides a rich set of empirical predictions about the relationship between schooling choices and labor market outcomes by viewing schooling (or on-the-job training) as an optimal choice based on comparing costs and benefits. The basic principle is that individuals should keep investing in schooling as long as marginal benefits exceed marginal costs. A large number of studies show compelling evidence that schooling is associated with higher earnings (see Card, 1999, for a recent review). Therefore,

empirical evidence strongly supports the view that investments in schooling yield positive pecuniary returns, which is a key ingredient of the human capital approach. This positive relationship between schooling and earnings is also a key component of the well known theory of signaling/screening, which views education as a "signal" of ability (Weiss, 1995). Interestingly, however, a much smaller number of studies have directly addressed the more central principle of human capital theory, namely that schooling (or other) investments are determined by a comparison of marginal returns and marginal costs.[1]

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[1]Willis and Rosen (1979) estimate a structural probit model that links various costs and benefits to the decision to attend

A major obstacle in studying the determinants of schooling investment is the lack of credible variation in the costs and benefits of schooling. Ideally, one would like to estimate the effect of exogenous differences in both costs (tuitions, opportunity cost, etc.) and benefits (marginal return to schooling) on the schooling decision for a cross-section of individuals. While regional differences in tuitions (Kane, 1994) and other costs are arguably exogenous to the schooling decision,[2] individual-specific rates of returns are plagued by a fundamental selection problem. The problem is that earnings are generally only observed after the schooling investment has been completed. Since earnings before schooling is completed are generally missing, the earnings gain from the extra schooling (marginal return) decision cannot be measured directly. Following Willis and Rosen (1979), the standard solution to this problem is to estimate selection-corrected earnings equations for different schooling levels and use these estimates to construct the predicted return to schooling for each individual. However, the reliability of this econometric approach critically depends on the availability of instruments that can predict differences in rates of returns across individuals without directly affecting the choice of schooling.

In this paper, we use repeated cross-sections on the choice of field of study of Canadian community college students to identify the direct impact of returns to schooling on educational choices. More specifically, we estimate how differences in returns in different fields affect the decision of choosing one field over another. From an empirical point of view, there are some important advantages in looking at the choice of fields of study (intensive margin) instead of the decision to pursue more schooling (extensive margin). First, we argue that both opportunity costs and direct costs (tuition) do not depend on field of study. The cost of studying in different fields is thus implicitly controlled for when estimating the impact of other factors on field of study. In a pure cross-section, however, identifica-

tion of the effect of return to field of study on its choice remains problematic. The problem is that observed wage differences across fields may reflect selection of workers instead of the causal effect of field of study on earnings for given individuals.

One key contribution of the paper is thus to exploit two cross-sections (and cohorts) of young workers who completed community college in 1990 and 1995 from the Canadian National Graduate Survey (NGS). We argue that combining cross-field and cross-time variation provides a credible source of variation in the returns to field of study. The idea is that shocks that hit sectors can change the returns to studying in a particular field and be used to see how the field choices of new cohorts of students respond to these changing conditions. The first half of the 1990s is an interesting period to study since relative wage and employment prospects for different fields of study changed substantially during this period. In particular, budget crises at the federal and provincial levels led to dramatic cuts in healthcare funding starting in 1992 (Vujicic, 2003). By contrast, the labor market for graduates in science-oriented fields (computer programming, etc.) was much stronger during this period. These kinds of sectorial shocks provide useful leverage for evaluating how responsive human capital investments (in different fields of study) are to changes in labor market conditions.

Our focus on community college students in Canada is a consequence of several factors. First, community college education is a key component of Canadian postsecondary education. According to the Canadian Education Statistics Council (2003), between 1987–1988 and 1999–2000 full-time enrollment in community colleges increased by 28%, as compared to 16% in universities. The proportion of the population aged 21, the typical age of graduation, with community college diplomas significantly increased between 1976 and 1998, rising from 12% to 28%. In 2000, Canada ranked second among the OECD countries with about 21% of the population aged 25–64 (the working-age) having college credentials. This proportion was 22% in Ireland, versus only 9% in the United States. On the other hand, only 20% of Canada's population aged 25–64 had a university education in 2000, as compared to 28% in the United States and 26% in Norway, for example. Therefore, understanding education decisions at the community college level is essential to overall educational policies in Canada. Second, in most cases, community college graduates will have

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(*footnote continued*)

college. See also Keane and Wolpin (1997) for a more recent example of structural estimation of the schooling decision.

[2]Yet, given the fact that wide differences exist in the ability compositions across majors (Arcidiacono, 2004), the real cost of graduating in a specific field of study may naturally differ across students. Some students need to put more effort and more money (for tutoring or retaking courses, for example) in order to counterbalance their "weak" abilities in some fields of study.