



Jobs, Incomes and Post-Secondary Education

By global standards, Canada is a well-educated nation. As of 2011, almost two-thirds of the population aged 25 to 64 had completed some form of post-secondary education (PSE) – 27% had a university degree (bachelor's to doctorate), while 37% possessed a credential from a college, trades, vocational or other post-secondary education or training program.¹ By this broad measure, Canada's rate of post-secondary attainment is the highest in the world.² This should be good news: a well-established trend across the advanced economies is that higher levels of education are generally linked to improved employment prospects as well as to a greater likelihood of being in the workforce.

But the difficult job market presently facing many freshly minted university and college graduates in North America and Europe has caused some to question whether the traditional arguments in favour of PSE still apply. In recent years, there have been many news reports and academic studies pointing to the swelling ranks of unemployed and underemployed degree holders – helping to fan doubts about the value of post-secondary credentials.

While not entirely without foundation, these concerns seem exaggerated. Most of the historical data we have indicates that individuals with post-secondary credentials, including bachelor's degrees, usually do better in the job market than people lacking such credentials. Until now, additional years of formal education have generally led to higher incomes over the course of a working life. There is also a positive correlation between educational attainment and non-pecuniary measures of individual well-being, such as health status.³

The Economic Case for Post-Secondary Education

In this short paper, we are interested in whether obtaining a PSE qualification benefits graduates in an economic sense. The larger question of the costs and benefits to society as a whole from increased investments in PSE is not examined.

A sizable body of academic research confirms that a university/college education appears to pay off for most students – especially those who complete their programs.⁴ Over the two decades from

¹ Statistics Canada, "Education Indicators in Canada: An International Perspective, 2013," *The Daily*, January 7, 2014; <http://www.statcan.gc.ca/daily-quotidien/140107/dq140107b-eng.htm>.

² Canada's ranking is somewhat lower when looking at the proportion of the population with a completed university degree.

³ Philip Oreopolous and Uros Petronijevic, "Making College Worth It: A Review of Research on the Returns to Higher Education," National Bureau of Economic Research, Working Paper 19053, May 2013, pp. 20-21 and the sources cited therein.

⁴ For an up-to-date discussion of the US experience, see *ibid.* A useful overview from a Canadian perspective is TD Economics, "Post-Secondary

1980 to 2000, the real weekly wages of full-time male workers in Canada with high school diplomas or trades certificates hardly budged, while full-time male workers holding university degrees saw a 16% gain. The picture changed somewhat in the 2000s, however. While men with only high school diplomas continued to experience stagnant/falling real earnings, those with trades qualifications enjoyed an 8% boost – which was larger than the average pay increase for bachelor’s degree holders. This period coincided with an era of rising commodity prices and significant investments in resource and infrastructure development in Canada.

Still, overall the evidence tells us that for most people, a university/college degree is valuable in an economic sense, certainly compared to a high school diploma. In fact, after controlling for the effects of differences in work experience, Statistics Canada researchers estimate that the average weekly wages of a male bachelor’s degree holder in 2011 were 37% higher than for a high school graduate; for women, the pay disparity was even greater – 55%.⁵

Education Is a Smart Route to a Brighter Future for Canadians,” May 17, 2010, www.td.com/economics. An earlier Canadian study that documents the economic payoff from PSE is K. Moussaly-Sergieff and F. Vaillancourt, “Extra Earning Power: The Financial Returns to University Education in Canada,” *C.D. Howe Institute e-brief*, May 14, 2009. A more extended treatment of the topic of education and employment can be found in Claudia Goldin and Lawrence Katz, *The Race Between Education and Technology*, Harvard University Press, 2008.

⁵ Statistics Canada, “Wage Growth Over the Past 30 Years: Changing Wages by Age and Education,” *Economic Insights*, catalogue 11-6236-X, No. 8, 2012.

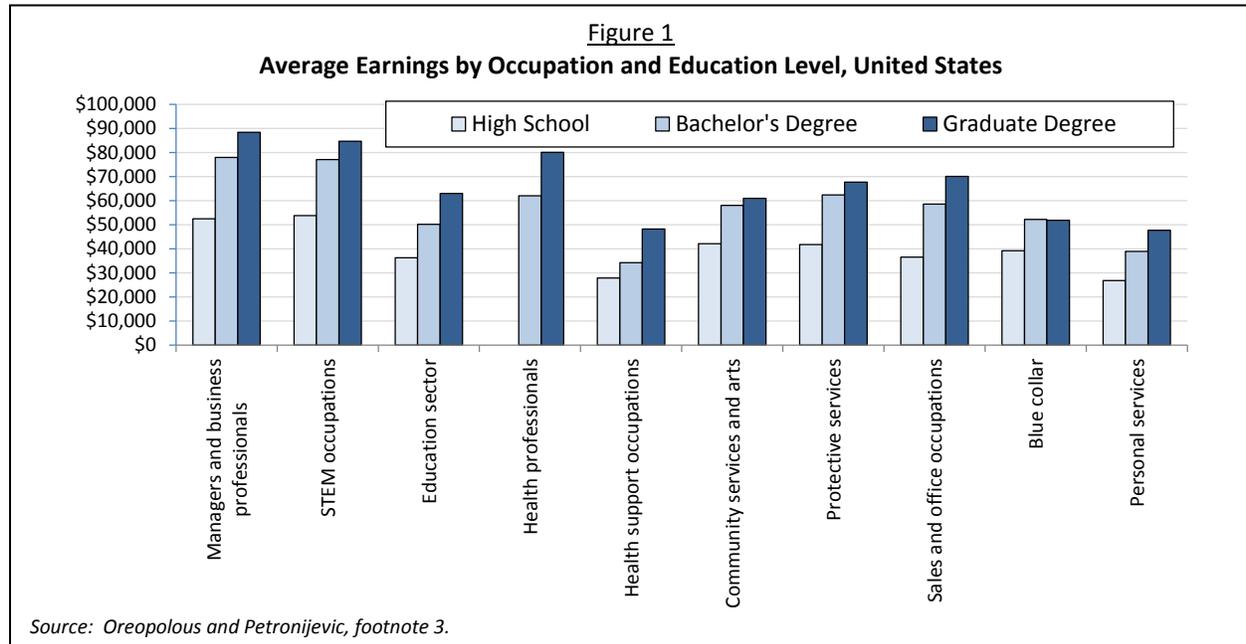
These are striking results. The wage differentials cited above are backward-looking and pertain to the entire pool of Canadian workers. As such, they may not fully capture what’s been happening in the labour market in the past few years in terms of compensation trends for workers with relatively recent university/college degrees, versus young adults with only high school diplomas (or possessing trades or vocational qualifications). One 2013 report noted that the share of Canadian university graduates who earn less than half of the national median income is the largest in the developed world.⁶

As the proportion of Canada’s workforce with post-secondary credentials continues to grow, the “extra income” that young adults garner from such credentials is likely to diminish. On the other hand, in an increasingly knowledge-intensive economy, we would expect to see substantial earnings differentials between people with post-secondary qualifications and those whose formal education ended at high school. And the latter intuition is well founded: completing a PSE program is associated with higher earnings and a greater likelihood of being employed. In fact, sustained participation in the labour force is declining among working-age people with no PSE at all – a sign that some kind of PSE qualification is increasingly necessary to secure full-time employment.⁷

In the United States, recent analysis from the Brookings Institution concludes that over the past 25-30 years, the “economic

⁶ CIBC Economics, “Degrees of Success: The Payoff to Higher Education in Canada,” August 26, 2013.

⁷ This trend is starkly evident in the United States but it is also apparent in Canada.



returns” from obtaining a university/college degree have been higher than the returns available from other investments, e.g., in stocks, bonds and real estate. Whether this pattern will persist is unclear, but several studies published by Brookings do offer strong validation of the value of PSE in the US context. During the 1980s, a young US college graduate earned \$4,000 more per year, adjusted for inflation, than someone of the same age without a similar credential; three decades later, the gap had widened to \$12,000 per year.⁸ Moreover, the US data show a positive relationship between the highest degree completed and an individual’s employment earnings across broad occupational categories – as depicted in Figure 1. The Canadian story is similar.⁹

⁸ Michael Greenstone and Adam Looney, “Brookings on Job Numbers,” www.brookings.edu/blogs/jobs/posts/2012/10/05-jobs-greenstone-looney.

⁹ CIBC Economics, op cit.

Economic Returns Vary by Program Area

However, it is important to recognize that the economic returns to PSE are far from being uniform across areas of study. And in Canada, the income premium of a PSE credential is definitely dwindling for some disciplines.¹⁰ The variations in post-PSE employment incomes are dramatic. A study by Georgetown University’s Center on Education and Workforce sought to calculate the “net present value” (NPV) of completing an undergraduate university/college degree in a wide array of fields. To compute NPV, the authors considered not only the earnings of graduates of different programs once they began to work, but also the “hard costs” of getting a degree (tuition, books, etc.) as well as the “opportunity costs” of spending several years in college instead of in the full-time workforce.

¹⁰ Ibid. This partly reflects the large share of first generation Canadian immigrants in the population with PSE credentials. Often these credentials gain little recognition in Canada. Educated immigrants can also be disadvantaged by inadequate language skills and a lack of Canadian work experience.

Table 1 Economic Returns from the 30 Most Popular US Bachelor Degree Majors (net present value estimates based on computing the hard cost and the opportunity cost of obtaining a degree as well as post-degree employment compensation)	
Major	Net Present Value
Electrical Engineering	\$1,308,000
Mechanical Engineering	\$1,167,000
Computer Science	\$1,026,000
Economics	\$885,000
General Engineering	\$885,000
Mathematics	\$800,000
Finance	\$744,000
Accounting	\$687,000
Computer & Information Systems	\$659,000
General Business	\$603,000
Nursing	\$603,000
Political Science and Government	\$574,000
Business Management and Admin.	\$546,000
Marketing and Marketing Research	\$546,000
Multi-Disciplinary or General Science	\$461,000
Journalism	\$349,000
Biology	\$320,000
Communications	\$320,000
Criminal Justice and Fire Protection	\$320,000
History	\$320,000
English Language and Literature	\$264,000
Liberal Arts	\$264,000
Commercial Art and Graphic Design	\$179,000
Fine Arts	\$179,000
Psychology	\$179,000
Sociology	\$179,000
Phys. Fitness, Parks, Rec. & Leisure	\$123,000
General Education	\$94,000
Elementary Education	\$38,000
Family and Consumer Services	\$38,000

Source: Georgetown University Center for Education and Workforce.

Table 1 presents the results – which apply to the United States – of the Georgetown study. It turns out that a degree in disciplines like engineering, computer science, accounting, finance, nursing and mathematics has a substantially higher positive NPV than an undergraduate degree

in elementary education, fine arts, the liberal arts, and some of the social sciences. The differences in calculated NPV across fields of study are sizable.

Conclusion

Two core messages follow from the discussion above. First, on the whole a post-secondary education remains valuable for young adults. Unemployment rates are lower, labour force participation is higher, and jobs are more plentiful for those with university and college credentials. PSE graduates also tend to enjoy higher realized life-time earnings.

Second, employment and income prospects differ markedly depending on the type of education or training undertaken. Some young adults with qualifications in the skilled trades and certain technical occupations may fare better than many of their counterparts with undergraduate degrees. For bachelor's degree holders, it is clear that average lifetime earnings are highest in the managerial and business, health professional, and STEM occupation sectors.¹¹

The relationship between education/training and employment is becoming more complicated, as overall education levels continue to rise, workforce skills become more specialized, and immigrants make up a bigger slice of the nation's workforce. As one Canadian analyst recently observed:

¹¹ STEM: science, technology, engineering and mathematics. See Anthony Carnevale, Stephen Rose and Ban Cheah, The College Payoff: Education, Occupations, and Lifetime Earnings, report prepared for the Center on Education and Workforce, Georgetown University, 2011.

“The problem of underemployment among many PSE graduates might relate not so much to the amount of education young Canadians get as to what they actually study. In general, the data show the expected payoff hierarchy: on average, college pays better than secondary [school], and university better than college – although the returns seem to be falling for the newest cohorts of young [university graduates]. But averages hide enormous heterogeneity, among and even within myriad fields of study.”¹²

Of course, there are reasons unrelated to jobs and incomes why a young person might wish to pursue PSE and explore subjects that hold particular interest. But those pondering post-secondary education are well advised to think about and to research how different university and college degree programs – as well as vocational/technical training – are likely to prepare them for the job market and for longer-term career development. In the current Canadian setting, an argument can be made that more young people should be considering non-university education and training options that may lead to better defined career pathways and higher earnings than a basic undergraduate degree. Within the university/college sector, it would make sense to allocate resources in a way that is more closely aligned with labour market demands for different types of skills and credentials.

Government has an important role to play in this domain, by developing and disseminating credible, usable and timely labour market information that can help to inform the education and training choices made by young people. The BC government’s main work-related web-based portal site (<http://www.workbc.ca/Job-Seekers/Industry-Profiles.aspx>) does a reasonable job, with information on future employment vacancies by industry sector, wage levels, and the education and training requirements for hundreds of different occupations.

But government alone cannot address the information gaps around education and the labour market. Educational institutions should be reporting in greater detail on the employment outcomes of their graduates. Education and training providers also need to closely track program completion rates and times; stagnant or falling completion rates and rising time to finish programs can be a red flag for the governments that still fund a large proportion of PSE in Canada. For its part, industry and the employer community must step up engagement with policy-makers and education and training providers by sharing more and better information on anticipated job openings and the skills and competencies required to fill vacant positions.

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¹² Cliff Halliwell, “No Shortage of Opportunity: Policy Ideas to Strengthen Canada’s Labour Market in the Coming Decades,” Institute for Research on Public Policy, *IRPP Study No. 42*, November, 2013, p. 23.