

# Public expenditures on education, human capital and growth in Canada: An OLG model analysis

Nabil Annabi\*, Simon Harvey, Yu Lan

*Human Resources and Social Development Canada (HRSDC), Canada*

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## Abstract

Much of the current debate in ageing countries focuses on whether governments should increase investments in human capital. We address this issue by simulating the effects of additional education spending using an overlapping-generations model applied to Canada. In the context of population ageing, the results indicate that how the policy is funded has powerful impacts on the targeted outcomes. Higher education incentives may increase the rate of human capital accumulation and mitigate the negative effects of slowing labour force growth. However, the impact depends on the distortions implied by alternative tax instruments and the efficiency of public expenditures on education.

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## 1. Introduction

Canada and many developed economies are facing the challenges of population ageing and slowing labour force growth which are likely to adversely impact the standard of living in the long run. Current debates on education focus on the formation of human capital and knowledge accumulation as an alternative to mitigate the expected negative effects of those demographic challenges. According to the OECD ([Education at a Glance, 2006](#)), for the year 2004, 84% of

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\* Corresponding author at: 140 Promenade du Portage Phase IV – 3D522, Gatineau, Québec K1A 0J9, Canada.  
Tel.: +1 819 953 5384; fax: +1 819 953 8868.

*E-mail address:* [nabil.annabi@hrsdc-rhdcc.gc.ca](mailto:nabil.annabi@hrsdc-rhdcc.gc.ca) (N. Annabi).

Table 1  
Contributions of the public and private sectors to education – Canada and the U.S (percent of GDP).

	1995	1998	1999	2000	2001	2002
Canada						
Public*	6.2	5.5	5.3	5.1	4.9	4.6
Private**	0.8	0.7	1.3	1.2	1.3	1.3
Total	7.0	6.2	6.6	6.4	6.1	5.9
United States						
Public	5.0	4.8	4.9	4.8	5.1	5.3
Private	2.2	1.6	1.6	2.2	2.3	1.9
Total	7.2	6.4	6.5	7.0	7.3	7.2

Source: Education at a Glance 1998–2005, OECD.

\* Including public subsidies to households attributable for educational institutions, as well as direct expenditure on educational institutions from international sources.

\*\* Net of public subsidies attributable for educational institutions.

Canadian adults aged 25–64 have attained at least upper secondary education. This proportion is greater than the OECD countries' average (67%) but less than in the U.S. where this proportion is about 88%. When it comes to the percentage of population that has attained a tertiary education, Canada has the highest level among OECD countries, where 45% of adults aged 25–64 hold a tertiary degree. This high level is mainly due to a higher participation in vocational education (22%) with respect to OECD countries.

Canada's federal and provincial governments both play a key role in fostering education through transfer payments, research funding and student financial assistance. However, we note from Table 1 that Canada's share of GDP devoted to education has been decreasing and has been below that of the U.S. in 2001 and 2002. In addition, there has been a shift away from reliance on public funding of education in Canada. Since 1995, the contribution of the private sector has doubled, to reach 22% in 2002. The larger contribution from the private sector is partly explained by higher tuition fees. Between 1994 and 2005, the average tuition fee increased from \$2535 to \$3863 across Canada<sup>1</sup>. On the contrary, total expenditures on education, as a percentage of GDP, in the U.S. have remained fairly steady over time, and from 1995 to 2002 the contribution from the public sector has increased by 0.3 percentage points.

Furthermore, although Canada has the highest post-secondary attainment rate among OECD countries, it has lower proportions of Masters' and PhD graduates relative to its main trade partner, the U.S.<sup>2</sup> Recent empirical studies suggest that countries not too far away from the technological frontier should invest primarily in higher education in order to enhance innovation, productivity and economic growth (Vandenbussche, Aghion, & Meghir, 2006)<sup>3</sup>.

On the other hand, Bowlus and Robinson (2005) estimate the relative contributions of PSE to human capital stocks in Canada and the U.S. for the period 1975–2000. Their results suggest that due to the larger fraction of university educated in the U.S., the post-secondary schooling may add substantially more efficiency units of human capital to those making the investment than it occurs in Canada. The authors claim that growing differences in the university sector may have played

<sup>1</sup> The figures are for undergraduate tuition fees according to the Report of the Pan-Canadian Education Indicators Program, Statistics Canada, 2006.

<sup>2</sup> See Canadian Council on Learning (2006).

<sup>3</sup> The proximity to the technological frontier is measured by the ratio of a country's total factor productivity (TFP) to the technological frontier, in this case, the TFP in the U.S.

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