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POST-SECONDARY EDUCATION: AN IMPERATIVE FOR CANADA`S FUTURE

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POST-SECONDARY EDUCATION: AN IMPERATIVE FOR CANADA'S FUTURE

INTRODUCTION

Canada is confronting the challenges of a global economy as it strives to achieve prosperity on the domestic market and competitiveness at the international level. It is well recognized that Canada cannot rely only upon its traditional activities based on exploitation of natural resources. As well, it is widely accepted that, to adjust successfully to growing global competition, Canada must take full advantage of a better educated population and a highly qualified workforce. As a result, post-secondary education appears to be vital to Canada's future growth.

In Canada, post-secondary education is financed for the most part by governments. Such public investment results in a wide range of benefits that accrue to individuals, business and society as a whole. It is on the basis of these benefits that improvements in post-secondary education can be justified. However, our system of higher education has some problems that must be resolved, not only by governments but also by all those who participate in this field.

This paper addresses various theoretical and practical issues that may help explain the growing importance being given to post-secondary education. The first section reviews the arguments for public involvement in the field and the second section enumerates the various benefits deriving from such investment. The third section highlights some facts - both positive and negative - about the Canadian post-secondary system. The final section summarizes the actions that could be taken to improve the system and achieve a high level of education in Canada.

RATIONALE FOR GOVERNMENT INVOLVEMENT IN POST-SECONDARY EDUCATION

Numerous arguments are made to justify government intervention in functions that would otherwise be carried out by the private sector. With respect to post-secondary education, the

rationale for government involvement is generally based on efficiency of allocation and social fairness or economic equity. These arguments are invariably subject to dispute and interpretation.

The allocation argument is that governments may be more efficient than the private sector in allocating resources to the most productive uses. This is primarily due to the failure of the private market, which is said to be defective in two ways: it suffers from time lags, lack of information, etc.; and, it does not take into account the various externalities that often result in social benefits. Thus, it is argued that government intervention can best ensure a level of resources in post-secondary education that is appropriate from the point of view of society.

With respect to social fairness and economic equity, it is argued that in a free market system, low-income people would pay the same for education as high-income people; as a result, the economically disadvantaged would pay a relatively larger share of their income for this purpose. This could create disparities in the availability and accessibility of post-secondary education. Consequently, by favouring a public system, governments help alleviate such discrepancies.

There is, however, no unanimity in Canada over the role of the respective levels of government in the field of post-secondary education. Moreover, there are conflicting views on the relations between the federal government and the provinces over the whole question of post-secondary education financing.

Although the Canadian constitution assigns jurisdiction over post-secondary education to the provinces, many areas that clearly fall within the federal domain or shared federal-provincial responsibility are closely related to the basic activities of colleges and universities; examples are the development of the economy and the encouragement of research and development. While acknowledging the exclusive jurisdiction of the provinces, the federal government affirms "it has a role to play in promoting excellence and supporting provincial efforts to improve the acquisition of knowledge and skills."(1) Indeed, in recent decades the federal government has come to play an important role in education, particularly at the post-secondary level. It contributes to the funding of the education and training sector mainly through transfer payments to the provinces, and grants and contributions to post-secondary institutions. Furthermore, some areas of federal activity are designed to ensure an adequate supply of scientific personnel.

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(1) Government of Canada, "Learning Well...Living Well - Consultation Paper: Issues for Discussion," *Prosperity Initiative*, Ottawa, 1991, p. xi.

There are, however, constraints to the development of coherent policies on post-secondary education in Canada. Some experts contend that the political strength of regionalism and the emphasis upon different priorities and interests in various provinces make agreement on coherent national policies particularly difficult.(2) By contrast, others believe that the very nature of post-secondary education makes it national in scope. From that point of view, it is claimed that the federal government has a role in ensuring that the country has adequate supplies of highly qualified personnel, that there is some equality of opportunities for young Canadians regardless of where they live, and that there is a development of the knowledge required for economic growth, prosperity and international competitiveness.(3)

It is not the purpose of this paper to deal with jurisdictional issues. No matter what level of government is involved, it is clear that various benefits result from public investment in post-secondary education. Capturing all these benefits can undoubtedly contribute to innovation, productivity and prosperity. What are the benefits and who gains from them?

PRIVATE AND SOCIAL BENEFITS FROM POST-SECONDARY EDUCATION

Education leads to numerous benefits for the individual, for business, and for government.(4) The expected returns on an investment in education take the form of higher earnings for the individual, increased productivity for business, higher taxes for government, and an improved standard of living for society as a whole. Although it is difficult to measure the ultimate benefit of higher education to the individual and to society, some interesting points can be made.

A. Benefits to Individuals

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(2) See, for instance, Ronald L. Watts, "Introduction," *Post-Secondary Education: Preparation for the World of Work*, Proceedings of a Canada/UK Colloquium, The Institute for Research on Public Policy, 1990, p. 4.

(3) Thomas H.B. Symons, "Ontario Universities in a Broader Context: The Need for a National Strategy in Canadian Higher Education and Research," *Ontario Universities: Access, Operations and Funding*, Conference Proceedings, Ontario Economic Council, 1985, p. 265; Enid Slack, "The Implications of Federalism for Post-Secondary Education," *Ontario Universities: Access, Operations and Funding*, Conference Proceedings, Ontario Economic Council, 1985, p. 365-366; Government of Canada, "Learning Well...Living Well - Consultation Paper: Issues for Discussion," *Prosperity Initiative*, Ottawa, 1991, p. i.

(4) For a brief summary of Canadian studies of the private and public rates of return to education, see François Vaillancourt, *Private and Public Monetary Returns to Schooling in Canada, 1985*, Working Paper No. 35, Economic Council of Canada, 1992.

Various studies show that the income of workers with more education is generally greater than the income of those with less education. The economic interpretation of this is referred to as "human capital theory," whereby investments are made in human resources so as to improve their productivity and therefore their earnings. Educational costs incurred in the expectation of future benefits take into account both direct costs, such as books and tuition fees, and the opportunity cost, or income forgone while people acquire the human capital. This theory assumes that wages measure labour's marginal product and that persons acquire education at a cost of foregone opportunities that are repaid by future enhanced earnings. In addition, individuals generally continue to make human capital investments in the form of on-the-job training and work experience once they have entered the labour force. As a result, both education and work experience enhance productivity and earnings.(5)

Studies of the monetary returns to investments in education generally conclude that rates of returns are substantial. For example, in terms of earnings, statistics show that in 1987 college graduates earned an average of $1,000 more than the typical worker between the ages of 25 to 35. By comparison, university graduates reported employment incomes about $10,000 above the national average for the same age group.(6)

Research also shows that rates for labour force participation rise significantly with higher levels of schooling. This is clearly shown in Figure 1. For example, in 1991, 85% of adults with university degrees were members of the labour force, compared with 34% of those with less than nine years of schooling. Furthermore, studies on the relationship between the educational level of the labour force and unemployment generally suggest that the more educated are less susceptible to unemployment.(7) As can be seen from Figure 2, the probability of being without a job declines as the level of schooling increases. In 1991, the unemployment rate for workers with less than nine

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(5) It should be noted that the relationship between education and earnings remains controversial. A central aspect of the debate is the hypothesis that higher education may act as a filter, screening out the more able workers rather than enhancing productivity directly. The filter theory implicitly casts doubt over public investment in higher education. Empirical tests of the screening assumption have not been conclusive.

(6) Economic Council of Canada, "Education: More Than Ever a Priority," *Au Courant*, Vol. 12, No. 1, 1991, p. 6-7.

(7) Michael Krashinsky, "The Returns to University Schooling in Canada: A Comment," *Canadian Public Policy*, No. 2, June 1987, p. 218-221.

years' schooling was three times higher than the rate for university graduates. It has been observed that the differential in unemployment rates between more and less educated individuals typically increases during downturns in the business cycle.(8) Moreover, the more highly schooled and the better trained workers have more success in finding a new job when they become unemployed.(9)

B. Benefits to Business, Government and Society

Education benefits not only individuals, but also business and governments. From a business perspective, the benefits include increased productivity, a more efficient use of human resources, and bigger corporate profits, in addition to high quality products and low supervisory expenses. Higher education also provides the business sector with new and broader perspectives on technological progress and its social and economic consequences.(10) As for governments, empirical studies show that governments recover more than they invest in education.(11) Furthermore, benefits accruing from public investment in post-secondary education consist of more than the additional taxes paid by post-secondary graduates on their elevated incomes; other external benefits flow from activities carried out in post-secondary establishments. Such establishments engage in research and development, which is of significant benefit to society, and are an independent source of expertise for government as well as for society in a wide variety of disciplines.(12)

Society benefits in many ways from a better educated population and workforce. First, higher productivity translates into higher income and, hence, improved standards of living. Second, a more educated workforce is less subject to unemployment and, as a result, society is less vulnerable to economic downturns and poverty problems. Third, such a workforce can produce a wide range of high-quality products and services from which society can choose. Higher taxes collected by governments help maintain and/or improve various social programs, such as health

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(8) W.J. Howe, "Education and Demographics: How Do They Affect Unemployment Rates?" *Monthly Labour Review*, January 1988, p. 3-9.

(9) Economic Council of Canada, "Education: More Than Ever a Priority" (1991), p. 6-7.

(10) Task Force on Business-Education Relations, *Keeping Canada Competitive: The Importance of Post-Secondary Education*, Part 2, The Canadian Manufacturers' Association, April 1987, p. 1.

(11) Clément Lemelin and Jean Perrot, "Les dépenses publiques pour l'enseignement universitaire et le taux de rendement fiscal: le cas du Québec," *L'Actualité économique*, Vol. 66, No. 2, June 1990, p. 193-217.

(12) Michel Krashinsky (1987), p. 220-221.

care. Finally, a more educated personnel tends to generate more R&D activity, which, in turn, leads to social benefits.

C. Benefits from Innovation

Higher education now, more than ever, is considered as a means of achieving an innovative society. The first advantage of having well educated citizens is their ability to master new technology and to be innovative enough to originate new ideas; that is, to possess the ability to understand, develop or adapt new technologies. It is well recognized that innovation is increasingly important to economic performance, productivity and competitiveness. The second advantage of having educated and skilled workers is their ability to attract high technology firms. For example, a survey indicates that the deciding factor for technology firms choosing where to locate is the availability of skilled labour (university graduates and skilled production workers) in established industries.(13)

Indeed, people increasingly recognize that knowledge is becoming the primary asset in the global economy and believe that the post-secondary education system can be the basis of a powerful competitive advantage. Can we say that Canada has a comparative advantage with respect to post-secondary education and is ready to meet the challenge of globalization?

SOME FACTS ABOUT THE POST-SECONDARY EDUCATION SYSTEM

At first glance, one can say that the situation is not too bad. Canada devotes a larger share of its gross national product (GDP) to education than other countries do.(14) For example, in 1988, the latest year for which comparable data are available, expenditures on education relative to GDP amounted to 7.2% in Canada, 6.2% in Germany, 5.7% in France and the United States, and 4.9% in Japan.(15) In the same year, Canada also allocated the greatest share of total educational expenditures to post-secondary education: 37.0%. This is compared to 17.6% in Japan and 13.9%

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(13) Harald Bathelt and Alfred Hecht, "Key Technology Industries in the Waterloo Region: Canada's Technology Triangle," *The Canadian Geographer*, Vol. 34, No. 3, Fall 1990, p. 225-234.

(14) Karin Treff, "Education Financing in Canada," *Canadian Tax Journal*, Vol. 40, No. 2, 1992, p. 502.

(15) Centre for Educational Research and Innovation, *Education at a Glance - OECD Indicators*, OECD, Paris, 1992, p. 40.

in France.(16) In addition, Canada ranks second internationally with respect to post-secondary enrolment as a percentage of the population aged 20 to 24.(17)

However, higher expenditures do not necessarily equal higher output. Indeed, the Canadian educational system shows some serious drawbacks. First, the potential resources for a more educated population and a highly skilled labour force are being jeopardized by the large secondary-school dropout rate - approximately 33%. By comparison, the dropout rate is 2% in Japan and 10% in Germany.(18) Second, some 38% of students who graduate from high school have difficulty with common reading tasks while a similar percentage lack basic arithmetic skills.(19) The large number of dropouts and people who have problems with reading and maths could ultimately result in a group of workers who are functionally illiterate and difficult to train. Third, although access to post-secondary studies is significantly higher in Canada than elsewhere, scientific fields of study, so important for the future of the country, attract a smaller proportion of students in Canada than in many other countries.(20) As can be seen from Table 1, the enrolment in science and technology disciplines at both university and technical-college levels is declining in this country. Youth are turning away from careers in science and engineering partly because of the public misconceptions of those careers and their perceived inaccessibility.(21) Fourth, the number scientists and engineers engaged in research in Canada lags far behind that in other countries.(22) Together, these factors are expected to have a great effect on the supply of qualified labour in the near future.

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(16) *Ibid*.

(17) Keith Newton, "Highly Qualified Personnel: A Key to Success in Global Competition," *Canada's Future Requirements for Highly Qualified Scientists and Engineers*, Natural Sciences and Engineering Research Council of Canada, May 1989, p. 7.

(18) Economic Council of Canada, *Pulling Together Productivity, Innovation and Trade*, 1992, p. 41.

(19) Treff (1992), p. 503.

(20) Economic Council of Canada, *A Lot to Learn - Education and Training in Canada*, 1992, p. 41.

(21) Task Force on Challenges in Science, Technology and Related Skills, "Prosperity Through Innovation - Summary Report," *Prosperity Initiative*, 1992, p. 6.

(22) Task Force on Business-Education Relations, *Keeping Canada Competitive: The Importance of Post-Secondary Education*, The Canadian Manufacturers' Association, April 1987.

It is forecast that about two-thirds of the jobs to be created within the 10 next years will require at least 12 years of education, and that half will require 17 years or more.(23) As a result, Canada may experience a shortage in the supply of scientific and technically qualified personnel.(24) Such a shortage may well come about as experts anticipate a growing demand for highly educated and skilled workers in the near future. Specifically, one research paper reports that, although large numbers of low-skill jobs are still being created in the Canadian economy, there has been an upgrade in the skill composition of employment over the last two decades.(25) Statistics show that, over the 1971-1986 period, the share of jobs requiring some post-secondary education or the equivalent grew by 3%, while jobs requiring less than high school education fell by over 4%.(26)

Overall, one might be better to speak in terms of imperatives rather than advantages when contemplating the challenges Canada confronts today with respect to post-secondary education. Already, there is a trend towards an increase in the level of education required as industrial products and services become more technologically sophisticated. What should be done?

RESPONSIBILITIES

Given the wide recognition of the benefits accruing from post-secondary education, it is clearly imperative for Canada to improve its educational system. Although governments assume most of the financing of post-secondary education, other actors also participate in enhancing higher education in this country. There are the colleges and universities, which educate future workers; there is the private sector, which is expected to require an increasingly better-educated and skilled labour force; but first of all, there are the individuals and the family.

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(23) National Advisory Board on Science and Technology, *Science and Technology, Innovation and National Prosperity: The Need for Canada to Change Course*, Report presented to the Prime Minister, April 1991, p. 24.

(24) Robert J. Kavanach, "The Future Supply of Highly Qualified Engineers and Scientists and the Role of NSERC," *Canada's Future Requirements for Highly Qualified Scientists and Engineers*, Natural Sciences and Engineering Research Council of Canada, May 1989, p. 163-192.

(25) Economic Council of Canada, "Skill Composition of Employment," *Au Courant*, Vol. 12, No. 1, 1991, p. 5.

(26) *Ibid*.

TABLE 1

FULL-TIME UNDERGRADUATE ENROLMENT IN SCIENCE AND TECHNOLOGY AT CANADIAN COMMUNITY COLLEGES AND UNIVERSITIES, 1984-1990

	Number	Proportion of Total Enrolment (Percentage)
1984-1985		
Community Colleges	75,038	33.2
Universities	99,204	24.4
1985-1986		
Community Colleges	70,724	31.5
Universities	97,545	23.7
1986-1987		
Community Colleges	64,479	29.2
Universities	96,088	23.0
1987-1988		
Community Colleges	59,828	27.4
Universities	93,592	21.9
1988-1989		
Community Colleges	57,784	26.7
Universities	93,293	21.2
1989-1990		
Community Colleges	57,290	26.7
Universities	93,085	20.6

Source: Economic Council of Canada, *Pulling Together Productivity, Innovation and Trade*, 1992, p. 41.

An emerging consensus in recent studies is on the need for changing the attitudes of individuals and society toward education, science and technology. Although post-secondary education is of primary concern for Canada's future, it is widely acknowledged that any change must start at an earlier stage; that is, at the elementary and secondary levels whose students constitute our pool of future enrollees in post-secondary institutions. Recent reports strongly suggest an increase in the participation of parents and communities in the formal education system.

The argument is that an informed population is more aware of the value of education and may make better choices from the options available.(27)

With respect to elementary and secondary education, there is also the feeling that we need a fundamental renovation of the school system. Accordingly, national standards are suggested,(28) as are improvements in the quality of teaching, especially of science and mathematics,(29) and in the quality of facilities and equipment in schools.

There is also a need to change perceptions of post-secondary education. For example, some contend that Canadian society places too high a value on university degrees at the expense of technical post-secondary programs, which are perceived as second best. For this reason, it is suggested that the mission of universities, community colleges and technical institutes(30) should be re-examined and the value of technical careers reinforced.(31) In addition, it is said that Canadian post-secondary institutions fail to offer highly specialized programs. For example, Porter describes two major barriers to specialization of human resources.(32) First, he believes that regulation of tuition fees at post-secondary institutions limits the capability of the institution to recover the extra costs of highly specialized programs. Second, he maintains that the funding patterns established for post-secondary institutions inhibit the possibility of coordinating educational programs among provinces as well as among establishments. As a result, he says, faculty specializations and capabilities are scattered throughout the country.

Furthermore, the business sector considers that post-secondary institutions should improve their curricula and provide their services more efficiently.(33) It suggests that stronger links between the business and the educational sectors would make education more responsive to the needs of the private sector and thus ensure a better preparation for the workplace.

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(27) Task Force on Challenges in Science, Technology and Related Skills (1992), p. 16; Steering Group on Prosperity, *Inventing Our Future: An Action Plan for Canada's Prosperity*, October 1992, p. 50-51.

(28) Task Force on Challenges in Science, Technology and Related Skills (1992), p. 9; Michael E. Porter, *Canada at the Crossroads - The Reality of a New Competitive Environment*, 1991, p. 208-209.

(29) Steering Group on Prosperity (1992), p. 35.

(30) Task Force on Challenges in Science, Technology and Related Skills (1992), p. 14.

(31) *Ibid*., p. 9-10.

(32) Porter (1991), p. 180-181.

(33) Task Force on Business-Education Relations (1987), Part 3, p. 1.

Recent reports strongly recommend the creation of a national body with the mission of monitoring all these changes.(34) Such a new organization should not create another layer of bureaucracy but should rather coordinate all the actors participating in the improvement of the educational system.

Finally, governments also have a role to play in the "renovation" of the Canadian educational system. A recent Task Force recommends a review of post-secondary funding,(35) which should accompany any reform of the system. Those who believe that post-secondary education institutions require additional government support also believe that such support should not be provided as a right, but rather on the basis of accountability.(36) Others contend that, despite the evidence of financial need, solving the problems facing Canadian post-secondary establishments will require "more imagination and wise management" of all resources than simply more money.(37) In any case, in view of the amount already spent on education and the fiscal restraint now facing all levels of governments, it is doubtful that more funds could be provided. Although some favour alternative financing arrangements for post-secondary education, there has not yet been any detailed proposal for reform.

CONCLUSION

Overall, Canadians must clearly realize the importance of post-secondary education in securing our future prosperity. Higher education must be a priority and action must be taken now. Failure to renovate the whole educational system will threaten Canada's ability to compete in the globalizing marketplace. Efforts must be concerted: the task will not be possible without the support and cooperation of all - individuals, the educational system, industry and governments. This is the challenge of today.

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(36) Task Force on Business-Education Relations (1987), Part 1, p. 3.

(37) Geraldine A. Kenny-Wallace, "The Challenge of Change for 2001: The Canadian University in a Knowledge-Intensive Society," *Post-Secondary Education: Preparation for the World of Work*, Proceedings of a Canada/UK Colloquium, The Institute for Research on Public Policy, 1990, p. 13.

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