

UNIVERSITY OF CALGARY

A Partnership Approach to Public Finance for Higher Education Funding in Canada

by

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## **Abstract**

This empirical study has investigated whether the proposed partnership approach and the three life stages of citizens (the learning stage, the working stage, and the retirement stage) can be used as a guiding rationale to support a plan for the full government funding of higher education. The rationale for the proposed partnership model is that full public funding of higher education might lead to net gain for federal and provincial budgets. The study proposes that during the learning stage of a citizen, the government, as the financing partner of this stage, needs to pay the full cost of all learning levels. After the citizen completes the intended levels of education, the citizen moves to the working stage and starts paying the government partner a share of the partnership profit (income taxes) throughout the working life of the citizen partner. When the citizen partner reaches retirement, the government resumes its financing role through pension payments, old age security payments, or other kind of payment to help the retired citizen through retirement years. The study assumes that the relationship between government and its learning citizens extends beyond citizens' acquisition of knowledge or completion of degrees and includes different periods of funding in which the two sides exchange the funding role throughout the lifetime of a citizen.

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## **Dedication**

I dedicate this dissertation to my father, Yousef Askari, who believed in me and who had the courage to send me alone at age 16 to North America to get my high school diploma. He believed in education as the road to personal success, and he encouraged me to always walk the extra mile to gain and contribute to knowledge. He put me on the first step of education, and left me with his spirit to guide my way through the long academic journey. Rest in peace, and may God bless your soul.

## Table of Contents

Abstract .....	ii
Acknowledgements .....	iii
Dedication .....	iv
Table of Contents .....	v
List of Tables .....	x
List of Figures .....	xii
Chapter 1: Introduction to the Study .....	1
1.1 Background .....	1
1.2 Beyond Primary Education .....	2
1.3 Symptoms of the Funding Problem in Canadian Higher Education .....	4
1.4 Statement of the Problem .....	9
1.5 Purpose of the Study .....	10
1.6 Research Questions .....	11
1.7 Theoretical Perspective, Methodology, and Methods .....	13
1.8 The Rationale for Addressing Higher Education Funding .....	13
1.9 The Significance of the Study .....	14
1.10 The Need for a new Funding Approach .....	14
1.10.1 Limitations of the benefits approach .....	16
1.11 Introducing the Partnership Approach to Public Finance .....	19
1.11.1 The business partnership metaphor .....	19
1.11.2 The apple tree metaphor .....	21
1.11.3 The government-citizen partnership model .....	22

1.12 Limitations of the Study.....	26
1.13 Delimitations of the Study .....	27
1.14 Definitions.....	28
Chapter 2: Review of the Literature.....	30
2.1 Background.....	30
2.2 Funding and the Philosophy of Governments.....	31
2.3 Public versus Private Good Arguments Related to Higher Education Funding .....	35
2.4 Governments' Returns on Higher Education Investments.....	38
2.5 The Effect of Economic Conditions on Higher Education Funding.....	40
2.6 Academic Institutions' Reactions to Public Funding Policies.....	42
2.7 Academic Capitalism and the Transfer of Technology .....	47
2.8 Funding and Privatization.....	49
2.9 Post-Secondary Academic Institutions Funding Systems in 13 Different Countries	
.....	53
2.9.1 Higher education funding in Canada. ....	53
2.9.2 Higher education funding in Australia.....	55
2.9.3 Higher education funding in the United Kingdom. ....	57
2.9.4 Higher education funding in the United States. ....	57
2.9.5 Higher education funding in Finland. ....	58
2.9.6 Higher education funding in Denmark, Norway, Portugal, and Sweden.	
.....	59
2.9.7 Higher education funding in Germany and Ireland. ....	60
2.9.8 Higher education funding in Japan and China.....	60

2.10 Funding Through Student Loans .....	62
2.11 Funding and Tuition Fees .....	66
2.12 The Cost-Sharing Debate in the Higher Education Literature .....	69
2.13 Funding and Students Affordability.....	71
2.14 Affordability across Canada .....	74
2.14.1 Affordability in Alberta. ....	75
2.14.2 Affordability in British Columbia.....	75
2.14.3 Affordability in Manitoba. ....	75
2.14.4 Affordability in New Brunswick. ....	75
2.14.5 Affordability in Newfoundland.....	76
2.14.6 Affordability in Nova Scotia.....	76
2.14.7 Affordability in Ontario. ....	76
2.14.8 Affordability in Prince Edward Island.....	77
2.14.9 Affordability in Quebec. ....	77
2.14.10 Affordability in Saskatchewan.....	77
2.15 Funding and Students' Accessibility .....	78
2.16 Funding and Education Quality .....	80
2.17 Tuition, Income, and Cross-Elasticity of Demand in Higher Education .....	81
2.18 The Fairness of Higher Education Funding Systems.....	83
2.19 Should Higher Education be Free? .....	84
Chapter 3: Methodology and Methods .....	87
3.1 Background.....	87
3.2 Theoretical Perspective.....	87

3.3 Research Methods.....	91
3.4 Research Questions.....	92
3.5 Data and Population.....	92
3.6 Data Collection.....	93
3.7 The Studied Variables in This Study.....	93
3.8 Data Analysis.....	97
3.9 Reliability and Validity.....	98
3.10 Methodological Limitations.....	100
3.11 Ethical Considerations.....	101
Chapter 4: Data Analysis and Findings.....	102
4.1 Presentation of Results.....	102
4.2 Government-Citizen Cash Flow Cycles.....	102
4.3 The Correlation between Education and Income.....	119
4.4 The Correlation between the Level of Education and Unemployment.....	125
Chapter 5: Summary, Discussion, and Implications.....	131
5.1 Background.....	131
5.2 Summary of the Study.....	131
5.3 Discussion of the Findings.....	135
5.4 Implications for Future Research.....	144
5.5 Implications for Theory.....	145
5.6 Implications for Practice.....	148
5.8 Limitations of the Results.....	152
5.9 Conclusion.....	154

References..... 158

Appendices..... 175

## List of Tables

Table 1. <i>Tuition and Compulsory Fees 1990 to 2015–16, Current \$ by Province</i> .....	68
Table 2. <i>Annual Government Transfer Payments per Person (Dollars X 1,000,000 except per person number, which reflects the actual average amount)</i> .....	104
Table 3. <i>Comparing Lifetime Taxes Paid by Two hypothetical Citizens, One with a Degree and One with a High. School Diploma (all Canadian provinces and territories)</i> .....	111
Table 4. <i>Comparing Years to Breakeven for Two Hypothetical Citizens, One with a Degree and One with A H. School Diploma (all Canadian provinces and territories)</i> .....	113
Table 5. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Canada</i> .....	119
Table 6. <i>The Correlation between Median Income Earned in 2005 and Years of Education Summary Output (Canada)</i> .....	121
Table 7. <i>Unemployment rates of population aged 15 and over, by educational attainment, Canada, 1990 to 2011</i> .....	125
Table 8. <i>The Correlation between Unemployment and Years of Education, 1990 to 2011, Summary Output</i> .....	126
Table 9. <i>Summary Table of R-Squared (The Correlation between Median Income Earned in 2005 and Years of Education for all Canadian Provinces and Territories)</i> .....	142
Table 10. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Newfoundland and Labrador</i> .....	205
Table 11. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for P.E.I.</i> .....	206

Table 12. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Nova Scotia</i> .....	208
Table 13. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for New Brunswick</i> .....	210
Table 14. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Quebec</i> .....	211
Table 15. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Ontario</i> .....	213
Table 16. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Manitoba</i> .....	215
Table 17. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Saskatchewan</i> .....	216
Table 18. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Alberta</i> .....	218
Table 19. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for British Columbia</i> .....	219
Table 20. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Yukon</i> .....	221
Table 21. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for N.W.T.</i> .....	223
Table 22. <i>Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Nunavut</i> .....	224

## List of Figures

<i>Figure 1: Standing on the Shoulders of Citizens. Source: Author</i> .....	3
<i>Figure 2: Academic institutions' revenues per student for teaching and research in US, UK, Australia, and Canada-1980 to 2006</i> .....	44
<i>Figure 3: Canadian universities general operating and special purpose funds in 2006 – 2007</i> ..	55
<i>Figure 4: Full-Time Loan Disbursement by Canadian Province or Territory</i> .....	65
<i>Figure 5: Average tuition fees for full-time undergraduate university students in Canada</i> .....	68
<i>Figure 6: Example of Government-citizen funding cycle for a hypothetical citizen who has earned a degree making \$35,000 a year and a two percent annual wage increase</i> .....	106
<i>Figure 7: Government-citizen funding cycle for a hypothetical citizen with a high school education making \$10.25 / hour and receiving a two percent annual wage increase</i> .....	108
<i>Figure 8: Government-citizen funding cycle for two hypothetical citizens one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year</i> .....	109
<i>Figure 9: Taxes paid by two hypothetical citizens, one with a degree and one with a high school (all Canadian provinces and territories)</i> .....	112
<i>Figure 10: Years to Breakeven for hypothetical citizens, one with a degree and one with a high school diploma</i> .....	114
<i>Figure 11: The correlation between median income earned in 2005 and years of education (Canada)</i> .....	120
<i>Figure 12: The correlation between unemployment and years of education (Canada), 1990 to 2011</i> .....	126
<i>Figure 13: Citizens on the budget line</i> .....	139
<i>Figure 14: A Hypothetical Model of Government-Citizen Partnership</i> .....	140

<i>Figure 15: Participants in the Economy.</i> .....	152
<i>Figure 16: Government-citizen funding cycle for two hypothetical citizens in B.C., one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.</i> .....	184
<i>Figure 17: Government-citizen funding cycle for two hypothetical citizens in Alberta, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.</i> .....	184
<i>Figure 18: Government-citizen funding cycle for two hypothetical citizens in Saskatchewan, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.</i> .....	186
<i>Figure 19: Government-citizen funding cycle for two hypothetical citizens in Manitoba, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.</i> .....	187
<i>Figure 20: Government-citizen funding cycle for two hypothetical citizens in Ontario, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.</i> .....	188
<i>Figure 21: Government-citizen funding cycle for two hypothetical citizens in Quebec, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.</i> .....	190
<i>Figure 22: Government-citizen funding cycle for two hypothetical citizens in New Brunswick, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.</i> .....	191

<i>Figure 23: Government-citizen funding cycle for two hypothetical citizens in Nova Scotia, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.....</i>	192
<i>Figure 24: Government-citizen funding cycle for two hypothetical citizens in Prince Edward Island, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.....</i>	193
<i>Figure 25: Government-citizen funding cycle for two hypothetical citizens in Newfoundland, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.....</i>	195
<i>Figure 26: Government-citizen funding cycle for two hypothetical citizens in Northwest Territories, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.....</i>	196
<i>Figure 27: Government-citizen funding cycle for two hypothetical citizens in Yukon, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.....</i>	197
<i>Figure 28: Government-citizen funding cycle for two hypothetical citizens in Nunavut, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.....</i>	199
<i>Figure 29: The correlation between median income earned in 2005 and years of education in Newfoundland.....</i>	206
<i>Figure 30: The correlation between median income earned in 2005 and years of education in P.E.I.....</i>	207

<i>Figure 31: The correlation between median income earned in 2005 and years of education in Nova Scotia</i> .....	209
<i>Figure 32: The correlation between median income earned in 2005 and years of education in New Brunswick</i> .....	210
<i>Figure 33: The correlation between median income earned in 2005 and years of education in Quebec</i> .....	212
<i>Figure 34: The correlation between median income earned in 2005 and years of education in Ontario</i> .....	214
<i>Figure 35: The correlation between median income earned in 2005 and years of education in Manitoba</i> .....	215
<i>Figure 36: The correlation between median income earned in 2005 and years of education in Saskatchewan</i> .....	217
<i>Figure 37: The correlation between median income earned in 2005 and years of education Alberta</i> .....	219
<i>Figure 38: The correlation between median income earned in 2005 and years of education in British Columbia</i> .....	220
<i>Figure 39: The correlation between median income earned in 2005 and years of education in Yukon</i> .....	222
<i>Figure 40: The correlation between median income earned in 2005 and years of education in Northwest Territories</i> .....	223
<i>Figure 41: The correlation between median income earned in 2005 and years of education in Nunavut</i> .....	225

## Chapter 1: Introduction to the Study

### 1.1 Background

The diminishing public funding of higher education has become a topic for debate in many nations around the world (Kelly, 2009). Governments, constrained by their own economic and budgeting challenges, are faced with a rising demand for higher education and a reduced ability to contribute more to the growing cost of post-secondary institutions (Woodhall, 2007). The high demand for higher education and governments' inability to increase their share of the cost created a need to find new methods to fund higher education and resulted in the shifting of costs from governments to students and their families (AUCC, 2008; Kasa, 2008). Canadian universities, driven by declining funding, are trying to manage their way through these changes by redesigning their budgeting strategies and by cutting costs and increasing revenues from other funding sources (Hauptman & Nolan, 2011; Zierdt, 2009). The declining funding has also led other stakeholders of higher education, including economists and education scholars, to weigh in with different views and to propose different funding approaches to address this issue. Among the commonly debated issues is the 'public versus private good' argument and whether higher education should be considered a public good and thus deserving of full public funding (Armbruster, 2008).

This doctoral research has four specific and inter-related goals:

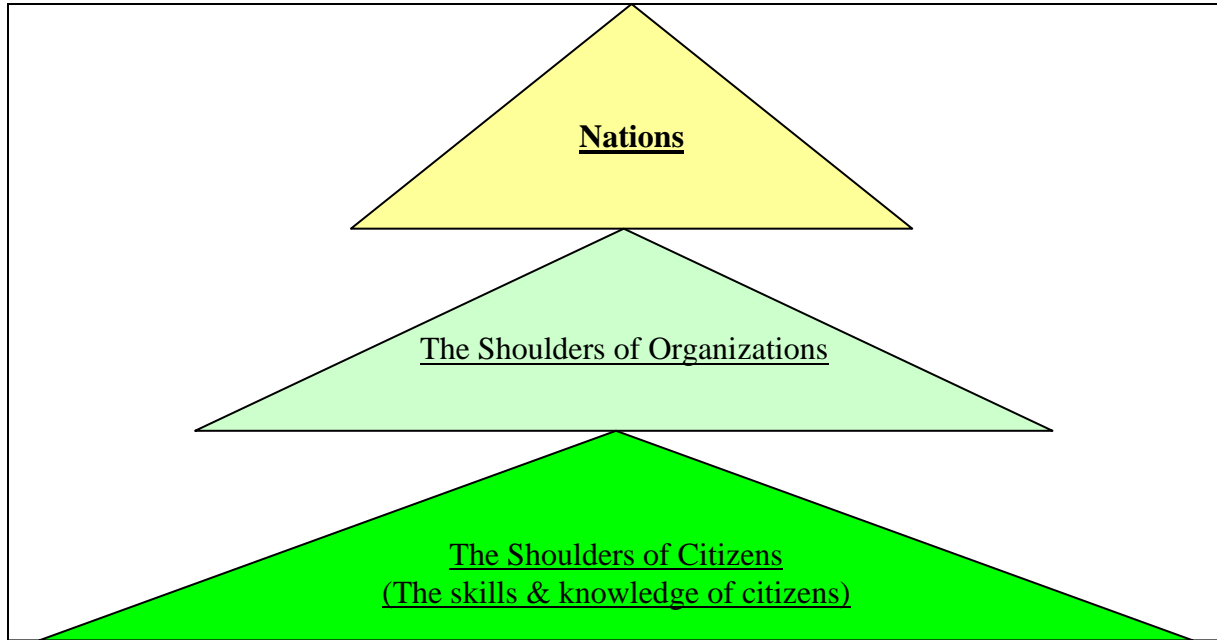
- 1) To analyse the current Canadian higher education funding system;
- 2) To assess whether a full government funding of Canadian higher education can be justified through a government-citizen partnership approach;

- 3) To investigate whether the adoption of a partnership approach to funding has the potential to address the perceived fairness of the current system and can thus provide an economic rationale for full public funding;
- 4) To determine whether a partnership approach to public funding has the potential to facilitate the movement of citizens from being recipients of funds from governments' budgets to contributors of funds through their income taxes.

A full explanation of the proposed partnership approach model is provided later in this chapter.

## **1.2 Beyond Primary Education**

An industrial nation like Canada may not be able to maintain its economic progress without giving attention to the role of research and innovation in higher education (Kirby, 2007). The basic skills obtained at the high school level alone may not be adequate and may not lead to sophisticated technological developments and, therefore, may not be sufficient to support the success of technology-based organizations either now or in the future. In fact, higher education is critical to the success of the Canadian economy and to the success of Canadians at the individual level (Finnie, Frenette, Mueller, & Sweetman, 2010). Nations and their organizations stand on the shoulders of (rely on) their skilled and educated citizens to both compete with each other and also to become successful (Figure 1, below). Nations depend on the success of their public and private organizations to succeed, and organizations, in turn, operating within or outside the borders of a nation, depend on their skilled, trained, and educated employees (Cantrell, Benton, Laudal, & Thomas, 2006; Seleim, Ashour, & Bontis, 2007). Employees, who are the basis of national success, and are the foundation of this skills pyramid, are, in turn, powered by their skills and knowledge.



**Figure 1:** Standing on the Shoulders of Citizens. *Source:* Author

It is the researcher's belief that nations are standing on the shoulders of organizations, organizations are standing on the shoulders of citizens, and citizens are standing on their own skills and knowledge.

Association of Universities and Colleges of Canada (AUCC) (2011) noted that “the skills, knowledge, and expertise of graduates “spill over” to enhance the outputs of other, less-educated workers ... which directly contributes to the competitiveness of their companies, and drives economic growth” (p. 45). Arguably, it is critical for nations to facilitate their citizens' attainment of skills and knowledge, beyond the high school level, to support the national competitive position. At the same time, it is important to note that some developing nations are still struggling with how to finance elementary and secondary levels of education (United Nations Educational, Scientific and Cultural Organization, 2010). It is hard to propose a philosophy of full public funding of higher education in nations that are yet to fully fund the early stages of education in their respective contexts. An analogy of this is that it is unrealistic to

propose the building of the third and fourth floors of a building before building the foundational structures of the first and second floors. Therefore, nations need to worry about the support for the initial stages of learning operations before they consider supporting higher levels of learning.

At the same time, focussing attention on the support of elementary and secondary education *only* may not lead to an increase in national economic success and prosperity, since citizens with training beyond the high school level are needed to sustain their nation's global economic competitiveness through the creation of new innovations (Kirby, 2007). Therefore, "high-quality basic education is needed as a foundation for strong human capital acquisition. However, for growth and, especially, innovative growth, the high level of skills obtained in tertiary education is key" (OECD, 2012a, p. 26). Also, given today's knowledge-based economy, one could argue that it is important for governments to fund learners at the higher education level and not to stop the full support for students at the initial stages of education if their goal is to expand the size of their trained workforce. A workforce lacking the needed skills and knowledge may not lead to the advancement of a nation in this innovations-hungry global economy. Kirby (2007) explained: "With the advent of a 'knowledge-based' economy, education is increasingly viewed as an agency capable of fostering economic prosperity by facilitating innovation and providing sufficient human capital (i.e., educated workers) to meet the changing demands of industry" (p. 5).

### **1.3 Symptoms of the Funding Problem in Canadian Higher Education**

Many scholars have noted that the financial burden for funding higher education is shifting from governments to students and their families (Kramer, 2011). "Colleges and universities are shifting from a public good knowledge/learning regime to an academic capitalist knowledge/learning regime" (Slaughter & Rhoades, 2004, p. 28). Governments do not regard

higher education as a public good, and this view has caused students' portion of the cost of their education to increase and governments' portion to decrease (Zusman, 2005). DoBell (2008) noted that higher education and the responsibility for the creation of knowledge are shifting from being a public good to a private good. This shift is also supported by arguments claiming that higher education is both a *private* and a *public* good, since it usually benefits both the learner and the society (AUCC, 2011; Institute for Higher Education Policy, 1998; Ivanova, 2012; Johnstone, 2004; Universities Australia, 2011).

Increasing the students' share of the cost of higher education in many nations also carries with it financial challenges for many students. 66 percent of American undergraduate students graduated with debt in 2004 (Stokes & Wright, 2010). Statistics Canada (2010) stated that the percentage of Canadian students who graduated with debt in 2005 was 57 percent. In the United Kingdom (UK), the debt load of graduates is almost the same. 82 percent of the graduating students surveyed in 2006 in the UK had government student loans, bank loans, or credit card loans (Marriott, Pogue, & Osgerby, 2010).

The increase in the Canadian students' share of the cost of their post-secondary education is attributed to the decreasing provincial government support for higher education and to rising tuition fees (AUCC, 2008). AUCC also stated that Canadian provincial governments' per student funding level fell from \$17,900 in 1980-81 to \$9,900 in 2006-07. Metcalfe (2010) argued that because public funding of higher education has decreased in Canada, academic institutions have to rely on alternative sources of revenues, like increasing tuition fees and/or identifying business partners for academic facilities and/or programs.

In the period of 1980 – 2005 there was a 20 percent reduction in the level of per student funding in the United States (Ionescu & Polgreen, 2009). Longanecker (2006) stated that

billions of dollars have been taken away from higher education budgets in the US. Hauptman and Nolan (2011) suggested that the ongoing funding reduction has led some higher education institutions to raise tuition fees to cover the costs of their operations. Also, Marketization, decentralization, and privatization have led to higher tuition fees and to the rising students' share of the costs of higher education (Sun & Barrientos, 2009). Lyall and Sell (2006) proposed that rising student costs are "the result of a profound change in political philosophy, one that shrinks the sphere of public responsibility and shifts risk to individuals" (p. 9).

The declining per student funding problem and the rising tuition fees, as explained by Woodhall (2007), are due to high enrolment levels in most countries and the inability of governments to keep up with increasing levels of subsidies that are required. She also suggested that high enrolment levels and low government subsidies were behind the introduction of tuition fees in systems that had no tuition fees. High enrolment levels were also behind the change from the use of grants as a way to help students pay their tuition fees, to the use of student loans as an alternative method. She stated further that debates on cost-sharing, tuition fees, and student loans have been taking place in Europe and North America since the 1960s. Armbruster (2008) reached the same conclusion, and noted that fast growing participation rates in higher education and the growing number of foreign students have created problems in publicly funded systems. Kasa (2008) also suggested that high demand for higher education and governments' inability to increase taxes created a need to find new methods to fund higher education, resulting in the shifting of costs from governments to students and their families. She added that "shifts of costs appear to be occurring not only between taxpayers in general and citizens individually, but also between various levels of public administration" (p. 86).

The declining public funding for higher education has forced academic institutions to find alternative ways to fund their operations and has also forced students to arrange and to deal with their own higher education funding complexities. Indeed, somebody has to pay the increased costs of higher education, but who should pay these increased costs remains an unanswered question.

Should governments pay the full costs of higher education?

Should students and their families pay the full costs of higher education?

Should governments and students share the costs?

Many scholars have linked higher education funding problems to Neoliberalism.

Neoliberalism was defined by Duménil and Lévy (2011) as “a new stage of capitalism that emerged in the wake of the structural crisis of the 1970s.” (p. 1). DoBell (2008) suggested that economic catastrophes and Neoliberal policies are the real factors behind the shift from a ‘public good’ higher education system to one that is focused on the individual or ‘private good’. Edwin George West – an influential British economist – has strongly rejected the idea of state financed education system and was against the monopoly of governments in the British education ‘market’. He argued that “If the government school system is so firmly attached to politics, is it not merely academic to imagine Britain without its state education whilst continuing with its democracy?” (West, 1994, p. 1). Woodhall (2007) asserted that economists such as Milton Friedman and Bruce Johnstone have played major roles in the shift from a ‘public good’ viewpoint to a ‘private good’ viewpoint and an increase in cost-sharing in higher education in the US and in Europe. David Stager – a Canadian economist – also played a role in shifting attention towards private benefits by highlighting private returns to investment in higher education. He argued that “Private rates of return, by field of study, for Ontario university

graduates in 1990 ranged from 7% (humanities) to 21% (medicine)” (Stager, 1996, p. 1).

MacGregor (2009) blamed the neoliberal ideology for these cost-sharing changes and suggested that the push of global funding agencies at the end of the twentieth century has stressed that higher education is a private good and that this has caused the shift of responsibility from governments to students and their families, an argument also made by Kramer (2011).

Hyslop-Margison and Leonard (2012) explained that the fall of socialism toward the end of the twentieth century has led to the dominance of neoliberalism and made it the central ideological focus of economic and social policies. They added that “neo-liberalism offered a form of economic rationalism where market principles pervaded all areas of private and public discourse, including within the realm of public education” (p. 3). In Canada, some scholars have suggested that the neoliberal ideology has been the main reason for change in higher education funding policies (Fisher, Rubenson, Jones, & Shanahan, 2009). They explained that the Canadian provinces most affected by the neo-liberal ideology were Ontario and British Columbia, and the province least affected was Quebec. They stated that in Ontario, “marketization and accountability become the dominant themes with the election of the Liberal government in [2003].” (p. 564). They also added that “Ontario was at the forefront of creating quasi-markets by reducing funding and de-regulating tuition fees” (p. 564).

The declining public funding for higher education in many nations has led to a debate about the fairness of the current funding systems. Kelly (2009) proposed that discussion over the level of higher education funding and who should pay for higher education is an old public policy debate. Woodhall (2007) stated that “the debate on HE finance has become a world-wide debate.” (p. 8). The realities of government funding cuts have created a need for a better understanding and an in-depth analysis of the government-learner relationship and a parallel

need for a justified rationale for current higher education funding policies. Some higher education scholars (Fisher et al., 2006) pointed to the need for a new philosophy and a new social contract with a focus on higher education and the learning citizen. They concluded that “in an era when knowledge and learning will come to play an ever more important role in meeting Canadians’ social and economic aspirations, there is room for a new social contract with one of the cornerstones being a pan-Canadian focus on post-secondary education” (p. 129).

Guided by the recommendations of Fisher et al. (2006), this study has explored the development of and the rationale for a new framework for higher education funding. Through a set of research questions, the study has investigated whether full government funding of higher education can be both fair and justified. It has also attempted to contribute to a better understanding of the funding dilemma for higher education overall, and has tried to both understand and to connect more pieces of the higher education funding puzzle.

#### **1.4 Statement of the Problem**

Governments are not paying the full cost of post-secondary education while taxing the higher incomes of graduates throughout the working stage of their life.

The declining government support for the funding of higher education in Canada has created a need to consider the development of a new philosophy to rationalize government funding behaviour, and to move the funding discussion beyond the public versus private benefits or ‘good’ argument. One could argue that the current funding system is unfair to the educated citizens who paid for their higher education and who are also required to contribute to governments’ budgets through taxes taken from their income after graduation. While educated citizens are believed to be paying higher taxes than those with a high school or less education due to their higher incomes, they were also required to finance and to pay for their own higher

education which prepared them for the jobs they have and the salaries that they make, salaries that are the basis for the income taxes they pay. Governments, through the income tax system, are seen as being full partners with educated citizens by sharing their earnings without being full partners in financing the education that enabled them to achieve these earnings.

### **1.5 Purpose of the Study**

The purpose of this study is to contribute to a better understanding of the public funding of higher education in Canada by raising relevant questions regarding the fairness of current funding policies, and to investigate whether a partnership approach could be used as an alternative funding philosophy to govern the relationship between nations and their learning citizens. The study places the issue of economic fairness as a cornerstone of the higher education public funding debate since traditional ‘private versus public good’ arguments in higher education literature have focused on benefits gained *by individuals* versus the economic and social benefits gained *by the public*, without including a discussion of fairness in the process. The aim of this study is to fill this gap in higher education funding literature by initiating a discussion of the fairness of current practice.

The study also will contribute to a better understanding of the social and economic benefits of higher education. Another purpose of this study is to test the correlation between education attainment and citizens’ economic contribution, income status, and employment status, and to shed light on how education may or may not affect these social and economic realities. A better understanding of these correlations may also assist in addressing problems related to these interrelated topics.

## 1.6 Research Questions

This study has explored the following main research question:

***Should there be fully funded higher education in Canada through the partnership funding approach?***

To address this research question, four sub-questions were used to find out if a fully funded higher education can be both justified and fair to learners and tax payers. The main research question is different from the sub-questions which are used to collect data. “The former provides a framework for understanding a phenomenon, whereas the latter are intended to produce the data for the answers to the research questions” (Bloomberg & Volpe, 2008, p. 37). The sub-questions in this study were used to find out if it is ‘fair’ to fully fund higher education and if a fully funded higher education has the potential to help in the achievement of social and economic goals of the nation:

1. How does the shape of the government-citizen cash flow cycle explain the partnership of governments and citizens?

The aim of this question is to produce a visible framework which describes the funding relationship between governments and their citizens and how governments and citizens exchange the role of funding over the citizen’s life cycle. It is important to see whether the flow of cash between governments and citizens with university degrees is different from (or similar to) the flow of cash between governments and citizens with high school diplomas.

2. Are citizens with *some* higher education and/or post-secondary credentials earning higher incomes and paying more taxes than are citizens with a high school education or less?

The aim of this question is to correlate income and the contribution of income taxes paid by citizens with different education levels. This correlation shows whether education levels, income, and income taxes are related. It is important to find out if governments can get returns on their investments in higher education through the income tax system, since tax payments are a major source of public revenue and positively affect the revenue side of governments' budgets.

3. What levels of education do low-income citizens have?

Welfare recipients and low-income citizens are believed to be net recipients of funds from governments due to their need for governments support, due to their low tax payments, or both. The aim of this question is to find out the education levels of low-income citizens. It is important to know whether there is a correlation between education levels and being a welfare recipient or a low-income citizen. Payments to citizens in the net recipient category negatively affect both sides of governments' budgets.

4. Is there a correlation between individuals' education levels and their unemployment status?

The aim of this question is to find out whether unemployment is affected by education levels. It is important to know if education affects unemployment rates which negatively affect both sides of governments' budgets. Beside the negative social and economic consequences of unemployment on individuals, public economic consequences can include the loss of income tax revenues and the payment of employment insurance to unemployed citizens, which affects both sides of governments' budgets.

### **1.7 Theoretical Perspective, Methodology, and Methods**

This study was conducted from a positivist theoretical perspective and has used a quantitative research approach. Findings were objectively achieved by calculating government-citizen cash flow cycles, income at different education levels, education levels of welfare recipients and low-income citizens, and unemployment at different education levels. Because the scope of the study was national, and was thus beyond a local level of one area, one organization, or one individual, utilizing a qualitative approach was not the appropriate method. It is also important to note that the need to present measurable numerical findings [have a quantitative answer] dictated the use of quantitative research tools. Because of the need for specific quantitative comparators, this study was best served by utilizing statistics.

### **1.8 The Rationale for Addressing Higher Education Funding**

The consequences of higher education funding may travel beyond the fiscal boundaries of financing an education operation. Countless benefits of higher education have been highlighted by scholars (Abhayawansa & Abeysekera, 2008; April, Bosma, & Deglon, 2003; Benjamin, Gunderson, & Riddell, 2002; Bontis, 2001; Chatzkel, 2006; Georgiadis, 2007; Judson, 2002; Langelett, 2002; Mayo, 2000; Morissette, Ostrovsky & Picot, 2004; Smith, 1776; Thanki, 1999; The World Bank, 2006; Townsend, 2007; Wiles, 1974). Because funding policies may restrict the attainment of these benefits by students, organizations, and nations, understanding both the basis of and the implications from current funding practices becomes important.

Analysing the current funding approach for higher education is important both for citizens and for policy makers. These two parties (citizens and policy makers) represent key stakeholders in a funding decision. In most cases, citizens are the contributors and the beneficiaries of funds, and policy makers are fund managers, reacting and making decisions on

behalf of citizens. A better understanding of higher education funding may provide more effective ways in which to justify the financial resources allocated to these institutions. It may also help current and future policy makers in designing their higher education funding policies. Therefore, this research has the potential to contribute to a better understanding of higher education funding, and to enable citizens and policy makers to make research-informed decisions.

### **1.9 The Significance of the Study**

Higher education funding has significant short- and long-term effects on governments', institutions', and students' budgets. The money spent on higher education in all of the Canadian provinces makes funding a significant issue. 7.5 billion dollars were spent by the government of Ontario alone on higher education in the 2012 provincial budget (Andrey, 2012). If one adds the amount of money contributed by students and other funding stakeholders, the significance of this topic will increase even further.

The urgency of rethinking funding policies and the need to analyse the government-learner relationship is also highlighted in this study. It is important for learning citizens and their governments to both clarify and to define the existing life-long relationships that govern the funding issue. Because education is a component of most citizens' lives in developed nations, it becomes important for all citizens to have a better understanding of higher education funding.

### **1.10 The Need for a new Funding Approach**

The traditional public versus private benefits approach has been utilized extensively by researchers as a rationale to justify higher education funding policies. The public versus private good arguments are dominating higher education funding literature. Woodhall (2007) stated that

these arguments have focussed on the benefits gained by individuals and/or by the general public and concluded that there are shared benefits: “the benefits are neither all personal nor all societal, but some blend of the two, which supports the viewpoint that a mixed system of individual and governmental financing of higher education is appropriate” (Carnegie Commission 1973, 86, as cited by Woodhall, 2007, p. 14). The idea of sharing the costs with students is based on the belief that the burden of higher education should be paid for by those who benefit from it (Schwarzenberger & Opheim, 2009).

Universities Australia (2011) has argued that a fair funding system is a 50-50 split of the costs between students and governments. They explained that a 50-50 split would help in the “national aspirational target of 2% of GDP for higher education” (p. 2). Okrah and Adabor (2010) argued that higher education gives personal benefits only, and that private individuals should pay the full cost of their own education. The level of benefits enjoyed by the individual and the public could be used to determine the level of subsidy they receive (Bailey, 1994). Four categories of public services were explained by Bailey: (1) need, (2) protective, (3) amenity, and (4) facility. A ‘need’ service should be funded by governments, a ‘facility’ service should be funded by users, and ‘protective’ and ‘amenity’ services should be funded by both governments and users, depending upon the level of benefits they receive. He cited Smith (1986), who divided services and benefits into five categories:

- (1) Services benefiting the general public that should be financed by governments.
- (2) Services benefiting individual users that should be fully financed by individual users.
- (3) Services benefiting the general public more than individuals that should be 75 percent financed by governments.

- (4) Services where equal benefits are enjoyed by the public and the individual that should be equally shared by individuals and governments.
- (5) Services benefiting individuals more than the public that should be 25 percent financed by governments.

**1.10.1 Limitations of the benefits approach.** The benefits approach has its own limitations. One of these limitations is that it can be complicated to measure the public or the private benefits attributed to higher education (Dunn & Sullins, 1982). The difficulty in quantifying some social benefits related to higher education can lead to “guesstimation” rather than an accurate estimation of public benefits. Similarly, it can be hard to measure some individual benefits related to higher education like self-esteem and self-actualization, and authors can end up with a good guess. Dunn and Sullins stated that “nonmonetary, direct returns to higher education ... are harder to measure than direct monetary returns. They are benefits that accrue to individuals but they have no market value that is easily measured” (p. 29).

Similarly, Dunn and Sullins (1982) stated that public benefits of higher education can be easily identified, but one can hardly quantify these benefits. They added that “measuring the benefits of research and public service in any precise manner seems nearly impossible” (p. 29). Armbruster (2008) also noted that private and public rates of returns on higher education can be doubtful. He explained that “depending on the classification and interpretation of data, a case could be made for, or against, tuition fees” (p. 392). Lyall and Sell (2006) argued that “while there is no objectively “correct” split, the pendulum may have swung too far toward individual benefits while we have forgotten the collective advantages of an educated populace” (p. 10).

This lack of objective split of benefits did not prevent some authors (Friedman, 1968; Johnstone, 1998; Okrah & Adabor, 2010; Stager, 1996; West, 1994) from arguing that all or a

certain percentage of higher education costs (e. g., 100%, 50%) should be paid by students and their families. Okrah and Adabor (2010) even denied the existence of any public benefits of higher education and argued that students should pay the full price of higher education. This clear divide in literature and the inability to present a solid base for a funding behaviour can make the benefits framework unreliable as a theoretical base for higher education funding. Painting all public funding areas with the same cost-benefit analysis brush may not work in all cases. The 'weight' of the value of higher education may require the use of a different scale to fairly measure its quantifiable and unquantifiable features.

A second limitation in the private benefits framework is that it may contribute to the affordability and accessibility problem in higher education if alternative sources of funding (e. g., student loans) are not available for students to pay their tuition fees. Many poor students around the world cannot make it through high school due to their families' financial complexities, and the phenomenon of child labour is common in many developing countries (Asplund, Abdelkarim, & Skalli, 2008). For many poor but capable high school graduates, higher education can be a stepping stone to exit the poverty- misery cycle. United Nations Educational, Scientific and Cultural Organization (2010) explained that there is "a lost generation of children in the world's poorest countries whose life chances will have been irreparably damaged by a failure to protect their right to education" (p. 3). If alternative channels of funding are not facilitated by governments, many less fortunate students may not be able to pay their share of the cost of their assumed benefits.

A third limitation in using the benefits framework, particularly when all benefits are considered private, is its perceived lack of fairness (i.e. who should finance higher education and why). It may then be assumed that if governments consider higher education as a private good

and force learners to finance their own education, the benefit of consuming this private good should only stay with its private consumer, and may not be shared with anybody else. This means that governments may not have the right to tax those who paid for their own higher education, and may not share their assumed private benefits. This also means that the higher income taxes paid by educated citizens may not be justified based on fairness. It is logical to think that if an individual buys a luxury car (or any car), it can be fair to state that this individual is the one who is entitled to enjoy riding the car, and is not obligated to share the car with anybody else. The individual's right to enjoy the benefits of the car is even protected by law. Nobody can force the individual to share the benefits of riding in the car and nobody can steal or hijack the car without breaking the law.

Limitations of the benefits approach motivate one to look at public funding of higher education from a different angle and through a different academic lens. With the use of a different rationale, new ideas can be 'dragged' to the academic table for discussion:

1. Could redefining the relationship between governments and their citizens help one understand the assumed benefits of each party?
2. Could a better understanding of a learner's 'social contract' with a government help one understand the contractors' duties and obligations throughout a lifetime period?
3. How would a quantifiable version of a citizen's social contract contribute to the academic dialogue on public funding in general and post-secondary funding in particular?

This discussion can be beneficial in introducing a framework that has the potential to redefine the relationship between governments and their citizens beyond the assumed benefits of each party. The complicated nature of this unique relationship may not be served by defining the

benefits to each, alone. This unique relationship between governments and citizens can be seen as a relationship of equal partners, who hold each other's hands throughout a lifetime journey. This study will also shed light on arguments supporting the fairness and the economic rationale for shifting the national discussion from one that analyzes the private versus public benefits of higher education to one that analyzes *the fairness and the overall economic rationale* for encouraging the pursuit of higher education. It is also an attempt to add to the knowledge about public funding in general and also to open the debate on funding fairness. Relying on the analysis of benefits alone to rationalize public policies may not pass the test of fairness in the case of higher education.

### **1.11 Introducing the Partnership Approach to Public Finance**

This section introduces and explains the government-citizen partnership approach to public finance for higher education. It is important to explain this hypothetical model and its links to the research questions in this chapter. This section is only introducing *a hypothetical* funding model and is not suggesting any results at this stage. Data analysis of the first research question has, in fact, explained the partnership between the government and its citizens and has also provided further analysis of this hypothetical model. Chapter four in this study contains the results of the study and provides detailed analysis of the partnership model.

The following section starts with the *business partnership metaphor* and the *apple tree metaphor* to highlight similar partnership scenarios. The section then introduces the partnership model of public finance for higher education.

**1.11.1 The business partnership metaphor.** Business partnership rules are the basis for legalizing what is known as limited business partnerships. The rules state that partners share the risk and the benefits of a partnership. Ontario's Limited Partnerships Act (1990) stated that a

limited partnership consists of one or more general partners and one or more limited partners. The Act states that “A limited partner may contribute money and other property to the limited partnership.” (R.S.O. 1990, c. L.16, s. 7 (1)). The Act also states that “a limited partner is not liable for the obligations of the limited partnership except in respect of the value of money and other property the limited partner contributes or agrees to contribute to the limited partnership.” (R.S.O. 1990, c. L.16, s. 9). The Act gave the right to the limited partner to claim a share of the profit when the business becomes profitable.

The *Limited Partnerships Act* (1990) gave the right to the limited partner to demand and receive the limited partner’s contribution to the partnership. In this case, the limited partner may not have the right to claim a share of the partnership profit if this leads to the termination of the agreement. The Act stated that “a limited partner is not entitled to receive any part of the limited partner’s contribution out of the limited partnership assets or from a general partner until ... the partnership agreement is terminated or so amended if necessary, to set forth the withdrawal or reduction of the contribution.” (R.S.O. 1990, c. L.16, s. 15 (2)). The Act also stated that “a general partner’s retirement, death or incapacity to manage property dissolves a limited partnership.” (R.S.O. 1990, c. L.16, s. 21).

The limited partner (who is equivalent to the government in this study) is the contributor of funds to start the partnership. The fairness of the above mentioned limited partnership is protected by law. The hard work of the general partner (who is equivalent to the learning citizen in this study), the invested time, efforts, creativity, and skills are the share of the cost and the risk that the general partner (the citizen) is contributing to the partnership. The limited partner’s (the government) entitlement to claim profits is rationalized by the initial investment of the limited

partner. Without the limited partner's initial investment in the limited partnership, the limited partner does not have the right to claim any future share of the profit.

**1.11.2 The apple tree metaphor.** This research study hypothesizes that the government-citizen partnership can also be seen through the partnership of an apple tree and the farmer. One can logically assume that the unwritten partnership agreement between the apple tree and the farmer states that during the first few years of the life of an apple tree (e. g., the first 5 or 10 years), the tree does not yield fruits and needs some maintenance from the farmer. When the apple tree reaches its fruitful stage, the farmer starts collecting apples throughout the fruitful life of the apple tree (e. g., 30 or 40 years). The farmer's right to claim and collect apples from the tree is secured and protected by the unwritten partnership agreement, which gives the farmer the right to claim the yearly apple production when the tree is ready to produce.

According to the apple tree partnership agreement, the farmer must hold the apple tree within the farm and provide protection, water, and any other necessities of a healthy life, to maximize the future production of juicy apples. It can also be assumed that the unwritten agreement states that if the farmer abandons the tree and does not provide the needed care to help the tree move to the production stage, the tree may not be able to yield the potential level of fruits and the farmer may not have the right to ask for any apple production. Moreover, if the tree is neglected and forced to grow on its own in the wild woods, the farmer may not have the right to claim any future fruits from that tree. Also, the farmer cannot claim any production of apples if the tree is held, maintained, and protected by a different farmer.

The apple tree in the above metaphor represents a citizen, and the farmer represents a government. The natural relationship of the apple tree and the farmer is similar to what one can envision between a government and a citizen. The apple tree and the farmer partnership, and the

citizen-government partnership, are both guided by the principles of unwritten partnership agreements. These agreements are protected and enforced by the rules of natural relationships. A healthy existence of an apple tree can be the prerequisite of a “healthy” existence of the apple tree farmer, the existence of the farm, and the base of apple tree farming. The wellbeing of a citizen can be the main requirement for a functioning government, a fair society, and a liveable nation. The separation of the united and inseparable life-long benefits of natural partners may lead to, either, the termination of the agreement or to an unfair relationship.

**1.11.3 The government-citizen partnership model.** Guided by the fair rules of partnerships (Ontario’s Limited Partnerships Act (1990)), and the unwritten rules of apple tree farming, this study assumes that the lifelong partnership of governments and learners can be fair if each party were to pay its fair share of the costs. Governments would pay the dollar cost of the learning stage and learners would pay through their time, efforts, opportunity cost, and income taxes after graduation. The hard work of learners while learning and throughout their working life is the learning citizen’s share of the cost of this partnership. Hypothetically, it could be argued that it is an unfair partnership if the learner citizen has to finance the learning stage, spend the time and put the efforts alone, and at the same time pay a share of the profit (pay taxes) to a non-participating partner (the government).

The relationship of governments and citizens can hypothetically be seen through the lens of a limited partnership agreement. The citizen can be seen as the general partner who has unlimited liability and is responsible for managing the partnership ‘business’. The government can be seen as the limited partner who is responsible for the contribution of capital, has limited liability, and is entitled to collect a share of the profit. In this study, the government-citizen partnership model is proposed, introduced, and analyzed as a theoretical base for public funding

of higher education. This study hypothesizes that a fair relationship between the citizen (learner) and the government is a relationship between two partners who exchange the financing role throughout the life cycle of the citizen.

This study proposes that the government-citizen partnership starts with the birth of the citizen partner and ends when the citizen leaves life (research question # 1 has addressed this hypothesis). Throughout the life journey of the citizen, the citizen goes through three life stages:

1. A learning stage (e. g., the first 22 years of the citizen's life).
2. A working stage (e. g., from age 22 to 67).
3. A retirement stage (e. g., from 67 years old and beyond).

During the learning stage of the citizen, the government needs to maintain its role as the financing partner by paying the full cost of all learning levels (Kindergarten and/or elementary to the College and/or University levels). The length of a government financing period is determined by the will and academic ability of the learning citizen. If the citizen is only willing and/or capable of finishing high school, the government role as a financer ends at the high school level. If the citizen is willing and academically capable of moving beyond the high school level, the financing role of the government needs to continue on with the citizen up to the highest feasible academic level. The financing role of the government ends when the learner reaches the full academic potential. At this point, the government role as the financer will end and the citizen's role as the working partner will begin.

After the citizen completes the intended level of education, the citizen will then move to the working stage of the citizen's life cycle (e. g., get a job, starts own business...), and will start paying the government partner a share of the partnership profit (income taxes) throughout the working life of the citizen partner. The learning citizen's point of entry to the working stage is

decided by the learning citizen, based on the citizen's own rational decisions. Throughout the working stage of the citizen partner (e. g., 45 years), the government collects return on its partnership investment through taxes (e. g., income taxes) paid by the learning citizen. When the citizen partner reaches retirement, the government resumes its financing role through pension payments, old age security payments, or any other kind of payment to help the retired citizen through retirement years (e. g., from 67 years old and beyond). In rare cases, some citizens may choose to attend university during their retirement. In these cases, future returns on governments' investments in educating these citizens may not be possible.

This government-learner partnership model does not promote or support any specific political ideology, and the political nature of this discussion is only utilized for the purposes of explaining this new funding framework. While a partnership society can be built on a mixture of social and market values, the partnership of citizens and nations is not to be seen through a capitalist nor a socialist lens. This study hypothesises that the life-long relationship of citizens and governments is simply a pure partnership of two strategic partners who rely on each other and who exchange the financing role throughout the span of the citizen's life. The study proposes a partnership of equal partners who hold each other's hands throughout a lifetime journey. The study proposes an alternative model of partnership that can be governed by fairness, care, equal opportunity, and cooperation of a lifetime.

To better explain the effect of the government-learner partnership process on governments' finances, and to link this hypothetical model to the research questions, this study assumes that citizens in any nation are divided into three categories based on their position on what the author calls: The Budget Line (research question # 1 has tested this hypothesis). The first category, or the Recipients, is for citizens who need government support and are considered

net recipients of funds from the budget. The second category, or the Breakeven Point, is for citizens who are not receiving funds and not contributing to revenues or those with a zero net contribution to the budget. The third category, or the Contributors, is for citizens who are net contributors to the budget through their tax payments.

This study hypothesizes that a citizen in any nation can only be in one of the above mentioned categories. A citizen is a net recipient of funds when the amounts of money received from a government budget through direct or indirect channels are higher than the amounts of money contributed (e.g., income taxes) to the budget through direct or indirect contribution channels. Logically, in the net recipient case, the effect on the budget would be negative. If the amounts received by the citizen are equal to the amounts contributed by the citizen through taxes, the citizen will be sitting in the middle of the budget line and the citizen's effect on the budget would be zero. If the citizen's contribution exceeds the received amounts, the citizen would be a net contributor to the budget and the effect would be positive for the budget (research question # 1 has tested this hypothesis).

This study also hypothesizes that it is in the best interest of governments to help citizens in the net recipients' category (in the learning stage) move to the other side of the budget line (the working stage). The movement of citizens (learners) from the net recipients' category to the net contributors' category requires public facilitation of the learning stage. If governments stop the full funding at the high school level, the movement to the other side of the budget line may not take place in some cases, or may take a longer time in other cases (research question # 3 has tested this hypothesis). An abandoned learner at the high school level with financial constraints can be stuck in the net recipients' category or at the middle point. Moreover, this study hypothesizes that if a high school level learner manages to move to the working stage and enters

the net contributors' category, the level of contribution may be minimal (research question # 1 & 2 have addressed this hypothesis). This study assumes that it will be hard for citizens in a knowledge-based economy to move to the net-contributor's side of the budget line with only a high school diploma, and they may suffer high rates and/or longer periods of unemployment (research question # 4 has addressed this hypothesis). At the same time, unemployment will remove citizens from the net-contributor's category and will shift them back to the net-recipient category (research question # 1 has addressed this hypothesis).

Citizens in the working stage (net-contributors of funds) are supporting citizens in the learning and retirement stages (net-recipients of funds) through their taxes. Maximizing the number of citizens in the working stage can be in the best interest of governments (research question # 1 & 4). Similarly, minimizing the number of citizens in the net-recipient category is also in the best interest of governments (research question # 1 & 3). Finally, this study hypothesizes that full public funding of the learning stage is only fair and facilitating a fast and smooth transition from the learning stage to the working stage of citizens can, theoretically, make economic sense. To summarize this section, this study has used the four research questions to assess the above highlighted hypotheses to see if it is fair for governments to pay the full cost of higher education.

### **1.12 Limitations of the Study**

Public funding decisions do not exist in vacuum and are affected by many social, economic, and political factors. Addressing all of the social and political factors affecting public finance is beyond the scope of this study. Also, this study is not a discussion of political economy, socialism, capitalism, mixed economies, or any other economic or social systems. It is basically an analysis and discussion of the fairness and suitability of the current higher education

funding system. While the study has addressed higher education funding policies without linking them to a specific country, the study has used Canadian data to explore and to answer research questions. The generalization of the results and conclusions from this study may be limited, therefore, due to the use of data from one country only. For example, some countries (oil-rich countries in the Middle East) do not collect income taxes from their citizens, so arguments related to public funding may not apply to them. It is wise for readers to consider cultural, social, and political differences of different nations when discussing higher education funding. What can be considered a fair deal in one nation may or may not pass the test of fairness in another. Since the construct of 'fairness' can also be informed by one's subjectivity, a universal definition of fairness may or may not exist.

### **1.13 Delimitations of the Study**

This study has focused on an assessment of the fairness and economic rationale of higher education funding in Canada only. This study is delimited to all Canadian provinces and territories and the results of the study can only be generalized to provinces and territories of Canada. The results of the study cannot be generalized to any other country with different tax systems and / or different higher education funding models. The study is also delimited to the examination of government-citizens cash flow cycles variables, income taxes variables, high and low income variables, unemployment variables, and education levels variables. Other variables that may or may not be related to the issues under consideration in this study were not considered. Also, this study was delimited to the use of statistics for data analysis.

### 1.14 Definitions

- ***The Partnership Approach to Public Finance:*** a funding relationship between government and citizens in which the government funds the learning and the retirement life stages of citizens and citizens share their lifelong income with the government by paying income taxes (the author).
- ***Public Good:*** services benefiting the general public (Smith, 1986).
- ***Private Good:*** services benefiting individual users (Smith, 1986).
- ***The Funding Debate:*** discussions on the economics of higher education which includes “social justice, fairness, equity, and equality of opportunity” (Woodhall, 2007, p. 44 – 45).
- ***Funding Fairness:*** for the purpose of this study, funding fairness was linked to the economic portion of the funding debate – who should finance higher education and why (learners and/or tax payers) – using an economic rationale (Woodhall, 2007).
- ***Higher Education:*** education and training beyond high school (e. g., university, college, polytechnic).
- ***Privatization higher education:*** “changing [the] funding base for public higher education [by shifting] the cost of public higher education from the State to the students and their families” (Dennison, 2003, p. 7).
- ***Cost-sharing:*** “shifting part of the burden for financing higher education away from the state and onto students and families” (Kanaan, Al-Salamat, & Hanania, 2011, p. 41).
- ***Affordability:*** “the extent to which students are enabled by public means to cover the costs of higher education” (Vossensteyn, 1999, p. 173).

- ***Tuition Elasticity of Demand:*** demand for higher education can change due to changes in the tuition fees charged by an academic institution (Abraham & Clark, 2006; Bryan & Whipple, 1995; Hamadeh & Khoueiri, 2010; Rives & Cassidy, 1982; Weisbrod & Asch, 2010).
- ***Direct Government Transfer Payments to Individuals:*** are the direct government transfer payments to individuals paid by all government levels throughout the life of citizens. The study used the total direct transfer payments for 2012 and divided that by the population in 2012 to reach the annual transferred amount per individual. Table 2 shows more details on how this number was calculated. Also, the transfer payments used in the calculation are the lifelong transfer payments (from Child Tax Benefit to Old Age Security) to an individual citizen (Appendix D shows all transfer categories).

## Chapter 2: Review of the Literature

### 2.1 Background

It might not be an easy task for researchers to find perfect answers for their emerging problems by simply searching through the existing literature. In fact, a review of literature might leave one with more questions than answers, and the search for the missing piece of the expanding literature puzzle continues with developing issues and evolving problems. What might even add to the complexity of searching for potential answers is the nature of social science related problems and their lack of clear-cut solutions. An answer to one side of a social problem might cause other sides to develop problems of their own. A reasonable solution in the eyes of some social stakeholders might be seen as an attack on the interest of other stakeholders. It is also fair to argue that the search for perfect answers for social science related problems might not be an achievable task and the need to present the conflicting arguments and solutions is the right approach for scholars.

The intent of this chapter is to present different views and arguments addressing issues that have the potential to affect the funding of higher education. The complexity of this topic required a review of many issues affecting funding. And, as Pechar and Andres (2011) noted: “It is simply not possible to achieve all of the following goals at the same time: low taxation, low or no tuition fees, high non-repayable student aid, and a high participation rate in adequately funded higher-education institutions” (p. 26). As such, the chapter is written with a focus on four themes that are central to higher education funding:

1. The political dimension of higher education funding;
2. The economic dimension of higher education funding;
3. The social dimension of higher education funding;

4. The academic dimension of higher education funding.

## **2.2 Funding and the Philosophy of Governments**

Governments' funding philosophies and ideologies are not all the same and different countries have different approaches to public funding policies. Understanding how governments justify or explain their funding behaviour can, therefore, potentially shed light on how governments look at higher education funding. For that reason, and because Canada is a welfare capitalist country, it is important to look at these countries to see how different governments view public funding in general.

Welfare capitalist countries are countries that have free market economies, provide social benefits, and have rules to maintain the welfare of their citizens. Examples of the provided benefits are public support for healthcare and higher education, and examples of the adopted rules are minimum wage and unemployment insurance rules. Esping-Andersen (1990) has divided the countries that demonstrate or use welfare capitalism into three main types, as follows:

1. Social democratic welfare countries: countries that have equal access to high quality universal welfare insurance for all citizens. Governments guarantee a good standard of living to citizens regardless of their market participation while encouraging private economic and social achievements (e. g., Sweden, Norway, Denmark, and Finland) (Esping-Andersen, 1990).
2. Conservative welfare countries: countries that support the traditional family and protect the social structure. The government is the main provider of welfare but rights are linked to class and status (e. g., France, Germany, Italy, Austria, Belgium) (Esping-Andersen, 1990).

3. Liberal welfare countries: countries with a strong market orientation and a limited commitment to marginalized groups. Governments provide welfare insurance only after markets and families (e. g., Canada, USA, Australia, Japan, Switzerland) (Esping-Andersen, 1990).

The nature of governmental policies necessarily impacts the way in which higher education is conceived within the larger national policies. Governments can be driven by ideologies or election and partisan considerations when proposing their policies and their funding decisions might even be motivated by an opportunistic behaviour (Kneebone & McKenzie, 2001; Potrafke, 2011). A partisan approach refers to an approach where governments' revenues and expenditures are governed by political ideologies, whereas an opportunistic approach refers to an approach where fiscal policies are guided by opportunities to win the support of voters, regardless of governments' beliefs and philosophies (Kneebone & McKenzie, 2001). A partisan approach can be used to analyze the level of influence that political affiliations have on fiscal policy decisions (Potrafke, 2011). In Canada, "Visible" government services like education, transportation, and recreation and culture rises in election years when compared to non-election years and, interestingly, partisan differences affect the *revenue* side of Canadian provinces while opportunistic behaviour affects the *spending* sides of provincial budgets (Kneebone & McKenzie, 2001).

Ideologies can also be behind the spending policies of governments on various social programs and might even be blamed for income inequality (Ha, 2012). Because higher education funding can be considered as one way to distribute income, the effect of governments' ideologies on income distribution can also be linked to higher education funding. But the effect of political ideologies on spending might depend on the situation and may not be the same across

all western nations. Liberal-oriented OECD governments did increase spending on education in the period of 1990–2006 (Potrafke, 2011). While conservative-oriented governments prefer private education, liberal-oriented governments prefer public control over education. And because education policies are the concern of most social members (political parties and individuals), “education has become an important expenditure category for leftist [liberal-oriented] parties to signal their political visions to voters belonging to all societal groups” (p. 103). But the belief that conservative-oriented governments spend less on social programs when compared with their liberal counterparts may not be true in all cases. Conservative-oriented governments spend more on social programs, including education, than do liberal-oriented governments in Scandinavian countries (Jensen, 2010). The liberal ideology has dominated these welfare states for a long time and voters are deeply concerned about the maintenance of these liberal policies. Thus, Jensen found that conservative governments spent even more on social programs than did liberal governments to maintain voters’ support. This can be linked to the domination of left ideology that has affected “the ability of right-wing [conservative] governments to pursue their preferred policies” (p. 282). In countries where conservative-oriented governments dominated the political scene and the demand for income redistribution was low, right-wing governments cut spending on social programs without fearing voters’ retaliation (Jensen, 2010).

Election considerations and governments’ ideologies are not the only motives of governments’ funding decisions for higher education. Higher education spending decisions might also have to do with “political favours, supporting specific projects and back-room dealing, as opposed to a general disposition towards education or higher education or an ideological view point” (Tandberg & Ness, 2011, p. 411). Indeed, one can argue that, for

politicians, the actual proportion of voters who are directly impacted by higher education funding decisions in any given election is very small (I.E. there are few individuals, and even fewer families, who have a direct stake in the delivery of higher education at any one time). At the same time, it can be hard for some politicians not to consider political considerations when they make their higher education funding decisions. This topic is a highly sensitive one for politicians and other higher education stakeholders, and may lead to the defeat of some governments and the rise of others (Woodhall, 2007). “Cost-sharing and student loans remain deeply unpopular in many countries, with the result that politicians are often reluctant to tackle such a thorny issue, particularly where student opposition to fees and loans is strong and well organized” (Woodhall, 2007, p. 38).

Other factors that might affect governments’ funding decisions included data driven rational factors, power driven political factors, and value driven cultural factors (Kramer, 2011). Data driven factors related to funding higher education, as proposed by Kramer, are guided by economic and demographic data as justifications for funding decisions. The power driven factors are guided by the political realities of the funding governments. The value driven factors are cultural factors that are developed over time, through religious, ethical, and social beliefs of governments (and people in these governments) which then have the potential to affect funding decisions related to higher education (Kramer, 2011).

The philosophy of some international organizations can potentially affect spending decisions of the borrowing nations (Bottery, 2008; Nooruddin & Simmons, 2006; Woodhall, 2007). The philosophy of the International Monetary Fund (IMF) was blamed for the education funding policies adopted by some countries (Bottery, 2008). The IMF imposes conditions requiring the implementation of policies to renew the loans of some borrowing countries. These

conditions force countries to cut funding to their key social programs, such as healthcare and education and push for the privatization of key services (Bottery, 2008). IMF programs had negative effects on social spending in both democratic and nondemocratic countries (Nooruddin & Simmons, 2006). The World Bank was also blamed for the introduction of both tuition fees and student loans. The 1986, 1988, 1994, and 1995 World Bank reports recommended “the introduction of cost-recovery in HE, including tuition fees and student loans, together with a reallocation of public expenditure to primary education” (Woodhall, 2007, p. 19).

### **2.3 Public versus Private Good Arguments Related to Higher Education Funding**

Debates on public versus private benefits of higher education had dominated the twentieth century and justified the adoption of student tuition fees based on the benefits gained by students, regardless of any benefits gained by the public (Armbruster, 2008). Researchers argued that private individuals should fund their own education because higher education gives personal benefits and claimed that “higher education does not meet the criteria for a purely public good but rather exhibits important aspects of a private good” (Okrah & Adabor, 2010, p. 55). Among the commonly highlighted personal benefits is that higher education allows an individual to make higher income and to become less subject to unemployment if there is demand for that individual’s type of education (Cappelli, 2008). Individuals with university degrees enjoy three main benefits, when compared with those without university degrees: (1) higher income; (2) lower probability of going through low-income periods; (3) lower probability of being unemployed (AUCC, 2011).

At the personal level, “investing in education can bring substantial economic and social benefits, including higher wages and job satisfaction, fewer periods of unemployment, and improved health and quality of life” (OECD, 2012a, p. 26). The personal benefits of higher

education were used as the reason to view higher education as a private good and to justify the payment of tuition fees by students (Johnstone, 1998). The change in governments' beliefs that individuals are benefiting the most from higher education has resulted in a push towards a user fee philosophy, resulting in a cost recovery approach to higher education funding and a global use of student loans to pay for the government-adopted tuition fees (Rasmussen, 2006). The cornerstone of the user fee philosophy was the claim that it is more suitable to charge for a public service when the benefit of the service is limited to the individual user, thus avoiding the unnecessary subsidization of a public service (Bailey, 1994). This user fee philosophy means that "only in the extreme and rare case ... could complete public financing be justified in efficiency terms and even that is subject to some qualification" (Bailey, 1994, p. 367).

On the other side of the debate scale, researchers argued that the benefits that result from completing higher education are far beyond what individuals alone can achieve. "The skills, knowledge and expertise of graduates "spill over" to enhance the outputs of other, less-educated workers ... which directly contributes to the competitiveness of their companies, and drives economic growth" (AUCC, 2011, p. 45). The benefits enjoyed by the public can also include: (1) A healthier population; (2) more socially and politically engaged citizens; (3) a society with fewer crimes; (4) higher tax revenues; and (5) lower welfare expenditure (AUCC, 2011). Other economic benefits can also be gained by the public due to having educated citizens who are responsible for 44 percent of income tax revenues, yet only receive 16 percent of governments' transfers. The difference between their contribution and their consumption is then used to support less educated citizens in a society (AUCC, 2011). Governments' investments in higher education can reduce the cost of health care because educated citizens live healthier lives

(Michalos, 2008). Another indirect benefit of higher education includes a safer society, and in Canada, 46 percent of criminals in federal prisons did not finish high school (Michalos, 2008).

A high standard higher education system is considered the basis for the economic, social, and cultural wellbeing of a nation. Among the attributed economic benefits of higher education were: (1) advanced skills and innovation; (2) sustainability of future public revenues; and (3) investments in higher education that balance the distribution of economic benefits (Universities Australia, 2011). Public benefits also include “higher productivity, innovation and economic growth, and stronger communities with greater civic engagement and social cohesion” (OECD, 2012a, p. 26). Other highlighted public benefits of higher education also included: benefits attributed to research and public service; higher productivity; easier adaptation to economic change; the re-distribution of wealth; a reduced dependency on governments’ sources in the future; and an increased level of social awareness (Dunn & Sullins, 1982). Educated citizens also participate in the democratic process of nations for the benefits of their communities (White, 2007). At the social level, “higher education fosters socially critical capacities and open access to new ideas and knowledge that inform better and healthier democratic debate. This is why authoritarian regimes suppress free intellectual activity” (Universities Australia, 2011, p. 8).

While an attempt to quantify the public share of the social and economic benefits of higher education has suggested that these benefits range between a low of 37 percent to a high of 61 percent (McMahon, 2004), researchers acknowledged the difficulty in measuring the nonmonetary private and public benefits attributed to higher education:

There is no doubt that indirect monetary ... and nonmonetary ... benefits accrue to society as a result of higher education. They are the additional benefits to society beyond those earned directly by recipients of higher education. In a sense,

they reflect an interaction effect that occurs when those with various levels of higher education apply their knowledge and skills collectively with the other factors of production present in society. Though real, they are more easily identified than quantified. (Dunn & Sullins, 1982, p. 29).

## **2.4 Governments' Returns on Higher Education Investments**

Literature on higher education funding went beyond the macro societal benefits, highlighted in the previous section, to the micro-analysis of governments' returns on higher education investments. The British government used the rate of return on government's investment in higher education to change its funding policy (Woodhall, 2007). Many other governments have been investing in universities' research due to its importance to the nations' wellbeing. These governments "have done so because of the importance of research to a country's competitiveness and productivity and in recognition of the real economic and societal benefits that ultimately accrue to a country's population as the result of a successful research effort" (AUCC, 2006, p. 1). This means that "investments in advanced education would therefore generate the highest returns in the form of faster aggregate labour and multi-factor productivity gains" (OECD, 2012a, p. 26). Because of this argument, "funding of higher education should therefore be viewed as a long-term investment, not just as a short-term cost" (Universities Australia, 2011, p. 8).

Some scholars argued that investments in higher education have higher rates of return than do many other investments (Sun & Barrientos, 2009). In general, an "investment in a project is justified whenever the returns on that project exceed the value of resources tied up in that project, and should be given priority relative to other investment opportunities when the rates of return exceed the returns on alternative projects" (Sun & Barrientos, 2009, p. 193). But

quantifying returns on higher education investments was also highlighted as a problem in this micro-analysis by some scholars (AUCC, 2006; Woodhall, 2007). It can be hard to trace and to quantify the effect of public funding on the socio-economic benefits of higher education. Specifically, establishing a direct link between governments' investments in universities' research and nations' competitiveness, the productivity of the workforce, standard of living, and quality of life can be a hard task (AUCC, 2006). This lack of measurement of public benefits may affect governments' funding policies (Woodhall, 2007). Conservative-oriented governments will be in favour of higher expenditures on education if there is evidence to prove that more spending will generate more tax revenues and less social spending in the future (Potrafke, 2011). Using this rationale for public investment in higher education, "highly educated individuals are less likely to place demands on social safety nets; in turn, decreased demand will lessen the pressure on welfare states to provide income assistance and other social welfare programs" (Pechar & Andres, 2011, p. 29). Also, educating the children of welfare recipients will reduce children's reliance on welfare when they become adults (Coelli et al., 2007).

However, paying the full cost of higher education does not mean that governments will definitely harvest the benefits of their investments. Some scholars (Skolnik, 2012) even argue that more expenditure on higher education will not address the innovation and productivity concerns in Canada. Also, it can be hard for some tax-payers to see the benefits of funding higher education, due to the movement of skilled labour outside of the financing jurisdiction (Justman & Thisse, 2000). This phenomenon is due to labour market integration like that seen in the European Union. The same phenomenon can also be seen within the borders of one country like the United States, as one can consider that each state is similar to a separate country, since

each state funds its own higher education. The same point was highlighted by Ionescu and Polgreen (2009) who focused on the brain drain issue inside the United States. They argued that university and college educated students frequently leave the states that subsidized their education and concluded that there is a positive correlation between government spending and students' departure after graduation. This same point had led a Canadian province to adopt policies targeted at retaining their provincially funded graduates. The province of Saskatchewan has financial incentives for graduating students who choose to get a job in the province through its Graduate Retention Program (Macdonald & Shaker, 2012). But the opposite argument for the movement of graduates between states or provinces is that the movement of graduates should be seen with a two-way direction (in and out of the province) and that graduates pay federal taxes regardless of their federal destination. This means that states and provinces can lose or gain due to the movement of graduates but the federal government share of tax revenue will not be affected.

## **2.5 The Effect of Economic Conditions on Higher Education Funding**

Governments may not be able to pay for public services at the long run without the availability of sufficient public funds, coming through the normal doors (e.g., taxes) of public revenues. Borrowing, even if used during tough economic time, is not a long-term solution to sustain government support for public services. The economic realities of governments are key factors in the level of public support for all government services, regardless of the level of importance of that service. One could even argue that there is no sacred public service that has a 'funding immunity' or has protection with 'Veto Power' to overturn any funding cut decision. Indeed, higher education is among these public services and, as I have indicated in a previous

paper, “higher education is not an island in the sea of a nation, and it may not be separated from the mainland of a country” (Askari, 2013, p. 1).

The ability of governments to generate the needed revenues to support higher education can deteriorate in tough economic times. Most Organisation for Economic Cooperation and Development (OECD) countries are facing difficulties in meeting the growing needs for higher education for their populations due to fiscal problems that restrict their ability to increase funding for higher education (Pechar & Andres, 2011). Conner and Rabovsky (2011) stated that governments are facing difficult recessions and that their revenues are badly affected. Woodhall (2007) also discussed how the British White Paper in 1988 explained that the same level of government subsidies cannot be sustained due to pressures on the government’s expenditure. Indeed, tough economic conditions may affect governments, institutions, and students. Rising unemployment and deteriorating family savings are causing financial problems for students and their families (Weisbrod & Asch, 2010). Also, governments are seeing their revenues from sales taxes decline due to less spending during the economic recession and the increased demand for welfare assistance. As a result, governments have cut spending to balance their budgets, and one of their easiest targets is funding for public academic institutions (Weisbrod & Asch, 2010).

The funding of public higher education in Canada is mainly the responsibility of each province. Public higher education is also the direct responsibility of each of the states in the United States. Provinces (or states) may not have the same federally available tools or alternatives to manage such changes in economic conditions. American states cannot run budget deficits in tough economic times to enable them to maintain the same level of funding to all social programs (Longanecker, 2006). Higher education suffers the most in bad economic times when compared to other services like healthcare and public K-12 education, due to their relative

perceived importance and also due to the availability of tuition as a possible funding alternative in higher education (Longanecker, 2006). The cost of health care is affecting Canadian provincial government budgets and the portion of funding that is devoted to higher education has been dropping over the years (Beach, Boadway, & McInnis, 2005). This phenomenon was described by Delaney and Doyle (2011) as the “Hovey's balance wheel” of state budgets. They explained that in good economic times, politicians favour spending on higher education more than on any other budget category. However, in tough economic times, higher education is the first to suffer a budget cut.

## **2.6 Academic Institutions' Reactions to Public Funding Policies**

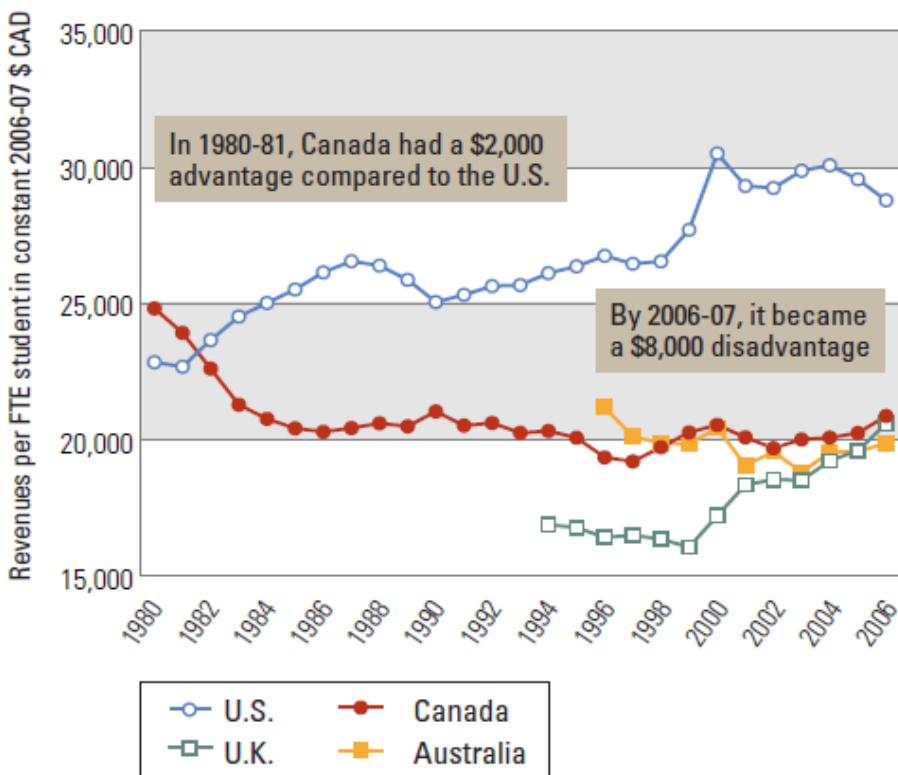
Academic institutions are key stakeholders in the operation of higher education and are therefore directly affected by any changes in funding policies. But governments are expecting universities to do more with less and to “provide teaching in an increasingly efficient way” (AUCC, 2008, p. 54). Indeed, the interconnection of funding with almost every process of post-secondary institutions, and the realities of funding cuts have led some academic institutions to adopt business-like models to fund their operations. Many universities are now led by administrators who have a management approach and who treat students based on a business philosophy. “Students are considered clients or customers of the university rather than members of a scholarly community with rights and responsibilities to help shape that community” (Hyslop-Margison & Leonard, 2012p. 5).

Certainly, the issue of funding has become a matter that must be dealt with by academic institutions. This issue was described as a “crisis” by Nussbaum (2010), who suggested that “We are in the midst of a crisis of massive proportions and grave global significance... The humanities and the arts are being cut away, in both primary/secondary and college/university

education, in virtually every nation of the world” (p. 1-2). She explained that governments are supporting the money-making courses, skills, and disciplines and cutting what is seen by policy makers as “useless” skills and courses. Academic leaders, on the other hand, were forced to deal with this crisis that created fiscal dilemmas in some cases. Funding was highlighted as the most important current issue on the agenda of higher education leaders in a survey conducted by four scholars of education (Patterson, Vanbalkom, Jensen, & Cummings, 2009). Higher education institutions have been forced to deal with, and react to, public funding policies by adopting practices, including business practices, to cut costs and to increase revenues (Hauptman & Nolan, 2011; Mingle and Southern Regional Education Board, 1982; Newell & California Postsecondary Education, 2009; Serban & Burke, 1998; Zierdt, 2009). This led universities to adjust their enrolment capacities as a reaction to funding policies:

Universities have been able to expand to meet demand when governments have increased their investments. Conversely, when governments cut their funding in the mid-1990s, universities had to respond by reducing faculty and support services and constraining enrolment over that period. (AUCC, 2007, p. 39)

Canadian public universities have moved from having \$2,000 more funding per student than American public universities in the 1980s to having \$8,000 less funding per student in 2006-2007 (AUCC, 2008).



**Figure 2:** Academic institutions’ revenues per student for teaching and research in US, UK, Australia, and Canada-1980 to 2006.

**Source:** (AUCC, 2008, p. 11).

The search for extra revenues has also led some institutions to advertise their money making executive MBA programs, others are promoting their “professional” money making degrees, and still other post-secondary institutions are looking to global markets to chase international students who are charged higher tuition fees when compared with domestic students. International students contributed \$2.3 billion AUD to university revenues in Australia in 2006 (AUCC, 2008). International students make 10 percent of students in Canada, 23 percent of graduate students in the US, and 55 percent of graduate students in the UK (AUCC, 2011). Globalization has made colleges and universities “more tuition dependent, less governmentally owned and operated, and therefore, more market oriented” (Sav, 2010, p. 6).

The search for foreign students who pay higher tuition fees is part of a normal practice in many institutions. The availability of tuition fees as a source of revenue in the case of higher education is becoming important in responding to governments' funding reduction and is being used to increase universities revenues by admitting and recruiting more students from all ages, regions, and global locations (Hauptman & Nolan, 2011).

Post-secondary institutions need to balance their budgets, regardless of who pays for higher education. Many processes can be attributed to a budget-balancing mission of some institutions. The phenomenon of hiring sessional or part-time instructors to replace full-time faculty at lower cost, for example, is increasingly a normal practice in some institutions (Newell & California Postsecondary Education, 2009). Universities are now relying more on tuition fees, fundraising to increase endowments, and partnering with corporations to fund their research and teaching activities (Lyall & Sell, 2006). At the same time, they are cutting costs by eliminating staff, reducing services, replacing full-time faculty with part-time instructors, and boosting the use of online courses (Lyall & Sell, 2006).

Proposing budget balancing strategies was the topic of some studies on higher education funding. Hauptman and Nolan (2011) noted that four strategies are being used by academic institutions to balance their budgets:

1. Limit enrolments to cut costs.
2. Recruit more foreign students who pay higher fees.
3. Raise tuition fees.
4. Maintain existing tuition fee levels and increase enrolments.

Funding pressures in Australia have led Australian universities to rely on tuition revenues from foreign students, fees paid by full-fee local students, and increased cash flow from

investment income (Universities Australia, 2011). Some reactions to the public funding reduction were explored in an article by Mingle and the Southern Regional Education Board (1982) who suggested that there have to be long-term solutions to the funding issue, and argued that “short-term solutions create long-term problems” (p. 3). They recommended the following seven budget balancing strategies:

1. Create a fund to build reserve.
2. Reduce the size of the operation to reduce cost.
3. Raise tuition fees.
4. Limit enrolment to protect quality.
5. Eliminate some individual courses or programs to cut cost.
6. Terminate support staff with short-term contracts.
7. Merge some academic units and programs.

Other strategies used by academic institutions in California as a reaction to governments’ funding cuts included enrolment increases of up to 25 percent, tuition increases, eliminating low performance programs, limiting library hours, eliminating some services, and hiring sessional instructors (Newell & California Postsecondary Education, 2009). Other academic institutions have rationalized the use of some business processes to balance their budgets and used responsibility-centred budgeting, similar to business organizations, in which academic units are given the responsibility for maintaining their own financial sustainability (Zierdt, 2009). But regardless of the used budget balancing approach, students frequently pay the price of institutions’ responses to funding cuts due to tuition fees increases (Serban & Burke, 1998).

## 2.7 Academic Capitalism and the Transfer of Technology

Changes to the way academic institutions are funded have also resulted in increased pressures on institutions for the transfer of technology and innovations through the commercialization of research and have created what is known as Academic Capitalism (Slaughter & Leslie, 1997). Commercialization, according to some scholars (Skolink, 2012) is critical to the success of the Canadian economy and efforts to change the ‘anti-commercialization culture’ at Canadian universities are needed. Canada, similar to other English speaking countries (i.e. Australia, United Kingdom, United States), is affected by academic capitalism due to its push towards a market approach to funding (Metcalf, 2010). The decline in public funding has also led academic institutions to depend on tuition fees and on their business partners, a move supported by the Canada Foundation for Innovation (CFI) that promotes the commercialization of research by encouraging academic-industrial partnerships (Metcalf, 2010). This entrepreneurial approach of science and engineering research and the dependence on industrial research funding is one form of academic capitalism. Academic capitalism endorses the contribution of research to economic growth and promotes applied research while academic values are based on social views such as education for all, social responsibility, and knowledge development (Mendoza & Berger, 2008).

Probably the most recent sign of academic capitalism in Canada is what was reported by Wodd (2013), that the Alberta “Tory government wants the province’s universities to get on board with its economic diversification agenda — and make more money — as it eyes a potential restructuring of the \$2.9-billion post-secondary sector” (para. 1). Governments are being led by business forces when crafting education policies and the invisible hands of business are becoming more visible in higher education funding policies (Hyslop-Margison & Leonard,

2012). Satisfying the needs of the business sector has become the main goal of higher education and in 2007, “the proposed dismantling of the University of New Brunswick in Saint John and its transformation into a polytechnic was rationalized by a government-sponsored report on the basis of meeting short-term corporate labour market needs” (Hyslop-Margison & Leonard, 2012, p. 4). AUCC (2008) acknowledged the increasing use of external sources (business partners) of funding for research, but stated that these sources are not covering the full costs of doing research and that universities are depending on increasing their own revenues to cover the balance of the costs. The same conclusion was reached by Powers (2004) with respect to the funding of universities in the United States. He concluded that industry support was not a significant source of revenue for universities in his sample of 104 American universities. Instead, he found that the American federal government was the most significant source of research funding. Despite different historical and ideological perspectives on funding of higher education, some overlapping trends are emerging regarding the way in which higher education funding is prioritized to meet labour market needs.

The rising dependence on tuition fees is a well-known example of academic capitalism (Schuetze, 2007). The decreasing public funding caused universities to search for the extra sources of revenues and has justified the academic capitalism phenomenon (Ylijoki, 2003). Some scholars (DoBell, 2008) claimed that academic capitalism was created by neoliberal policies. Neoliberalism was defined as “a new stage of capitalism that emerged in the wake of the structural crisis of the 1970s. It expresses the strategy of the capitalist classes in alliance with upper management, specifically financial managers, intending to strengthen their hegemony and to expand it globally” (Duménil & Lévy, 2011, p. 1). These neoliberal policies made education a private saleable good in the form of a product (DoBell, 2008).

## 2.8 Funding and Privatization

The term ‘privatization’ is generally understood as the transfer of ownership through selling or leasing of a public entity from government to private owners. In the case of publicly funded higher education institutions, privatization does not necessarily mean the act of selling these academic institutions to private service providers. In this usage, the term ‘privatization’ refers to the act of shifting the responsibility of funding from government to service users (students) by reducing the contribution of government and by increasing tuition fees. This approach to privatization can certainly lead one to ask the obvious question: ‘How public are our publicly funded academic institutions?’

Privatization was defined by Dennison (2003) as “changing [the] funding base for public higher education [by shifting] the cost of public higher education from the State to the students and their families” (p. 7). He noted that students’ share of the cost of their participation in higher education has increased from 35.3 percent in 1970 to 48 percent in 1998, and the government’s share of the cost has dropped from 55 percent to 43 percent in the same period in the US. Governments’ share of the costs of higher education in the US, overall, is less than 30 percent in 2006 (Lyall & Sell, 2006). Viewing the benefits of higher education as private benefits contributed to the decrease in governments’ share and increased the private share of the cost (Dennison, 2003). Indeed, this change in how governments view the benefits of higher education has made it easy to increase or start charging tuition fees, and to replace grants with student loans to pay for the added fees.

Privatization of higher education can be linked to the drop in governments’ funding levels. Funding cuts in the US have led to the privatization of some colleges and universities (Reed & Szymanski, 2004). The need for better academic performance was behind the belief

that privatization, decentralization, more competition, and the freedom to choose can improve education quality (Merzyn & Ursprung, 2005). Supporters of free market ideology argue that governments' services that can be paid for by people should be privatized and that "services which people are unwilling or unable to pay for should be run down [closed]" (Bailey, 1994, p. 366). This means that the free market approach to government services is that there should not be any government-funded services through either privatizing or closing the existing services. In other words, it is the 'market' supply and demand mechanism and the will of the private providers and demanders that should dictate the available services and not the will of a government.

Defining privatization in higher education as "the changing funding base" makes this change of funding sources for higher education a global phenomenon. Funding changes are taking place in many countries around the world (some changes in different countries were previously highlighted in this literature review and will not be repeated in this section). The rising costs of operating academic institutions combined with the declining government funding has made privatization a universal global phenomenon (Susanti, 2010). State governments in the US are becoming smaller "shareholders" in higher education and the shift toward privatizing academic institutions' revenues was accepted by legislatures due to the use of increased tuition fees as an alternative to governments' support (Lyall & Sell, 2006).

One can argue that competition among higher education institutions is a sign of privatization. "As the share of public investment in their operations declines, institutions are increasingly required to function in the competitive marketplace and so become increasingly privatized" (Lyall & Sell, 2006, p. 8). Privatization will also affect the types and formats of the academic programs offered and will lead to the disappearance of unviable programs and the

survival of programs that can break even financially (Lyall & Sell, 2006). But most governments are not, however, noticing the change in the voices and preferences of the new providers of funds (such as students, parents, donors, or businesses) which may not align with the original goals of public academic institutions and yet have the potential to create a conflict of interest. In other words, public academic institutions will likely be increasingly accountable to the providers of funds and less accountable to the general public (Lyall & Sell, 2006). But “it is not simply the push to privatisation that is worrisome ... One can no longer question this total account of what universities are, and should be, without being considered “out of touch with the new reality” (Howard, 2005, p. 126). This point was highlighted by West (1994) who was against public funding of higher education. He argued that:

One of the serious weaknesses of non-profit organisations is their sluggish response to dynamic change. Suppose, for instance, new cost-saving (or output- increasing) methods become available that have not been widely adopted so far. In a for-profit free-market system, entrepreneurs would incorporate the new methods and would seize the corresponding opportunities for entry stimulated by direct and clear income-gaining incentives. In a world of non-profit organisations, in contrast, such incentives do not exist. (p. 7).

The unfavourable effects of for-profit academic institutions on academic values and making the generation of profit the ultimate goal of higher education could turn academic institutions into business organizations (Susanti, 2010). He explained that. “Commercialization could weaken standards for academic excellence, damage academic collegiality, and harm the reputation of universities” (Susanti, 2010, p. 210). The same point was highlighted by Apple (2006) who analyzed the conservative philosophy in the US and its implications for education.

He claimed that funding cuts for education can be directly linked to neoliberalism, the true face of capitalism. While the focus of Apple was on education at the K-12 level, his ideas could also be applied to higher education. He raised the issue of education ‘commercialization’ and explained how conservatives set as one of their goals to “transform large portions of publicly controlled non-profit educational institutions into professionally managed, money-making set of businesses” (p. 6).

Askari (2012) argued that:

Colleges and universities should not be left alone in the commercialized rough ocean of higher education. They should not be auctioned for sale to the highest bidder. They should not leave their natural government home and become an industrial homeless. They should not be left in financial darkness while asked to light up the way of future generations. They should not be abandoned and left to be raised by an adopting business parent. Education, at all levels, should be a dear child who will always need care from his blood parents. This child should not be fed with a commercial baby formula. He should always be breast fed by a loving and caring provincial and federal mother, and should never grow enough to leave home. (p. 20).

On the other hand, privatizing higher education may, in fact, have some benefits. While there are many negative effects due to this shift in public funding, including the declining affordability of less fortunate students, there are some potential benefits of privatization. Lyall and Sell (2006) acknowledged some favourable effects, such as more efficient operations and better services for students due to competition among academic institutions. They explained that public academic institutions will be forced to use their resources efficiently to provide services

demanded by their customers who will be paying the majority of the costs for these services. They added that some academic institutions may benefit from having different sources of revenues so that they could become less affected by governments' political, ideological, and financial changes. For-profit, academic institutions and a market-oriented higher education system are more efficient and accountable and, arguably, have the potential to contribute to governments' revenues and also provide high quality education and customer service (Susanti, 2010).

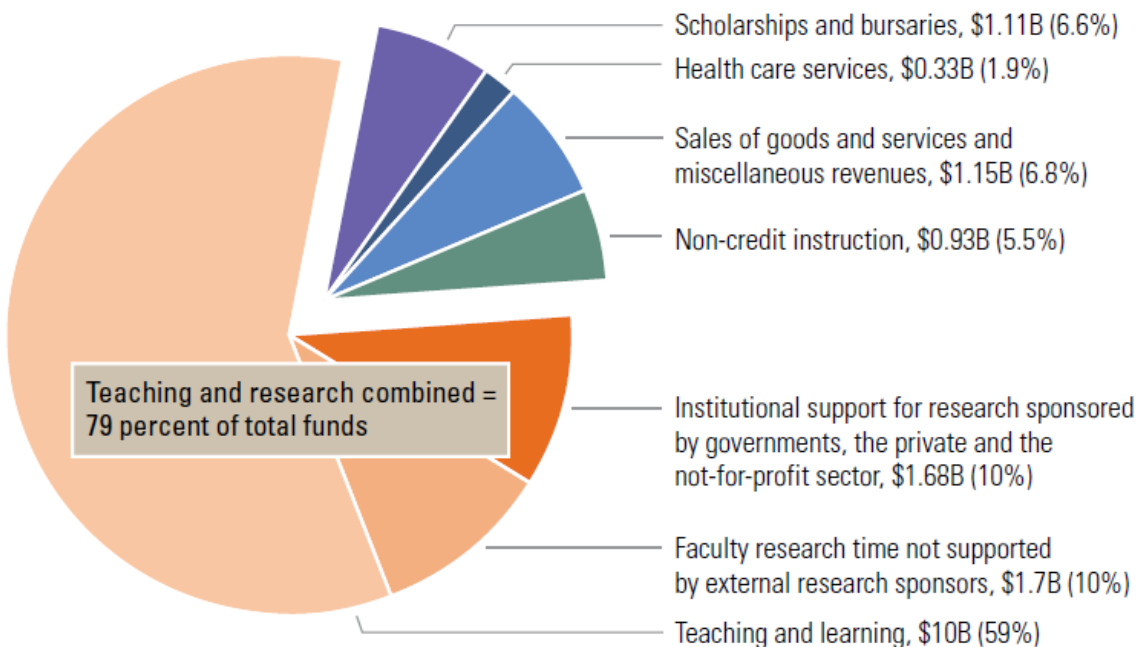
## **2.9 Post-Secondary Academic Institutions Funding Systems in 13 Different Countries**

Different countries use different methods to fund higher education. This section is a review of the methods used to fund post-secondary academic institutions in Canada and in 12 other countries. The purpose of this section is to highlight similarities and differences among these public higher education institutions' funding systems in the 13 countries.

**2.9.1 Higher education funding in Canada.** The topic of funding higher education has become an important topic in recent years in Canada (Auld & Kitchen, 2006). The size of the higher education 'industry' made understanding its finance an important topic. There are about 1.5 million students attending Canadian universities, served by 150,000 employees, funded mainly (90 percent) by provincial governments and by tuition fees (AUCC, 2008). In dollars, "universities are a \$26 billion enterprise – larger than the pulp and paper industry, the oil and gas extraction industry, the utilities sector ... and such prominent manufacturing industries as aerospace, motor vehicle, metal fabricating, furniture and plastic products." (p. 4).

Universities in Canada use the fund accounting system to separate funds used for general purposes as well as funds allocated to specific projects through the use of six types of accounts (AUCC, 2008):

- (1) Endowment funds: includes revenues from interest income and donations. These revenues are constrained by either the university or the donor due to their intended purpose.
- (2) Ancillary funds: includes revenues from the sale of books and other bookstore items, revenues from residences, parking, rentals, and food facilities.
- (3) Capital funds: these funds are used for infrastructure maintenance and renovation. Capital funds come from government grants, fundraising, and debt. Some projects require a mixture of the three sources in addition to money from other university funds. The Canada Foundation for Innovation (CFI) grants are also included in the capital funds.
- (4) Sponsored research funds: in these funds, some research activities are sponsored by external sponsors and other activities are paid for by universities to cover any additional costs related to doing research. These funds are supported by government and non-government sources, including the private sector. The main sponsors are the Natural Sciences and Engineering Research Council, the Social Sciences and Humanities Research Council, and the Canadian Institutes of Health Research.
- (5) General operating funds: these funds are responsible for financing the activities of teaching, community service, student support, and any unfunded research projects, using money coming from tuition fees and provincial governments operating grants. Universities pay their salaries through these operating funds.
- (6) Special purpose and trust funds: these funds are restricted funds with money coming from public and private sources. Money in these funds is constrained by its approved purpose.



**Figure 3:** Canadian universities general operating and special purpose funds in 2006 – 2007.

*Source:* AUCC (2008).

**2.9.2 Higher education funding in Australia.** The post-secondary system in Australia is controlled by the federal government (Rasmussen, 2006). The government plays a major role in funding academic institutions, setting up unified tuition fees rates for all universities, and controlling enrolment levels. Government sources of funding for higher education dropped from 90 percent in 1981 to 43 percent in 2011 and these dramatic changes to the funding model in Australia created a shift toward a commercialization of higher education as a way of maintaining institutional viability (Universities Australia, 2011). For this reason, “international education has become Australia’s number one service export industry, postgraduate coursework programs and enrolments have expanded enormously, and commercial and investment activities have increased” (Universities Australia, 2011, p. 21). Tuition fees collected from international students make about 15 percent of universities’ revenues. But the largest funder of Australian universities’ research activities is the Australian Commonwealth government through

performance-based and competitive-based research grants (AUCC, 2008). The performance-based grant, through the Research Training Scheme, allocates funds to institutions based on a weighted average of research degrees completed, the publication of research, and income generated from research. Also, the research graduate degree students in Australia (Masters and Doctorates) do not pay tuition fees (AUCC, 2008).

The undergraduate and graduate teaching and learning side of Australia's Higher education is funded by the Australian Commonwealth government operating grants through an enrolment-based funding model (AUCC, 2008). Universities receive an agreed-upon amount of funding for each discipline to cover the costs of an agreed-upon number of students for each academic institution. That does not mean that Australian students do not pay tuition fees however. Student fees are the second largest revenue source for the teaching role of Australian universities (AUCC, 2008). Australian students have two choices of how to pay their tuition fees. They either can choose to pay a reduced tuition fee (15% discount in 1989 and was increased to 25% in 1993) when they *start* their academic program or they can choose to pay the full amount *after* graduation through a loan-geared-to-income program (Rasmussen, 2006). In either way, Australian students are still paying their share of tuition fees and the Australian government is only 'facilitating' the process of payment like any other private service provider. Rasmussen also stated that the Australian federal government is using the Higher Education Contribution Scheme to recover part of instructional costs from students who were not able to pay their tuition costs when they started taking courses. He explained that "the scheme allows students to defer all tuition until after graduation, at which point fees are repaid through an income-contingent tax" (p. 2).

**2.9.3 Higher education funding in the United Kingdom.** In the United Kingdom, research activities have different sources of funding, with the government being the largest single contributor of funds (AUCC, 2008). Other sources of funding include business organizations, charitable donations, and foreign governments. Teaching activities are funded by government grants, tuition fees from UK students (some are paid by the government), and from foreign students' tuition. The 2006 data, according AUCC, showed that one third of UK students did not pay any tuition fees, and the other two thirds either paid in their full fees or shared the cost of their fees with the government. The government paid universities for the tuition fees of students who were not required to pay (needs-based subsidization of tuition fees based on family income). AUCC stated that 34 percent of tuition income received by UK universities came from foreign students in 2006.

**2.9.4 Higher education funding in the United States.** American public higher education institutions' research funding comes mainly from the federal government (90 percent of research funding). Three public agencies provide funding for research: the Department of Defence, the National Science Foundation, and the National Institutes of Health (AUCC, 2008). In public institutions, teaching and learning activities are usually funded by state governments and tuition fees. The United States has the highest tuition fees among all OECD member countries (OECD, 2012b). Similar to the case in Australia, UK, and Canada, there has been a decline in per student funding in the US due to hard economic conditions and high enrolment over the last 30 years (from 1989 to 2008) (AUCC, 2008). At the same time, the higher education sector in the US is different from the higher education sector in Canada and in some other countries as well due to the existence of many private, not-for-profit academic institutions: 38 percent of undergraduate and 50 percent of graduate students enrol in private, not-for-profit

academic institutions. These private institutions have 30 percent more revenues to aid with their teaching and research activities and to provide services and resources for students than do public institutions (AUCC, 2008).

State governments provide direct support to academic institutions, manage the overall higher education system, and have the final say in tuition fee levels (Cheslock & Hughes, 2011). Overall funding for post-secondary academic institutions has been declining due to tough economic times. This decline in government funding support has caused tuition fees to increase by 139 percent over the past 20 years to compensate for the drop in government funding. Further, the level of funding support and involvement is not the same across all states and tuition fees vary significantly. In 2010, “average in-state tuition and fees vary from \$3,726 in Wyoming to \$14,416 in Pennsylvania for flagship institutions and from \$3,588 in New Mexico to \$11,133 in New Jersey for comprehensive colleges and universities” (p. 370). They explained that a student’s place of residence may also be a factor in whether they participate in higher education due to differences in tuition fees by state and by institution.

**2.9.5 Higher education funding in Finland.** Universities in Finland are fully funded by the Finnish government through “core funding, project funding and performance-based funding.” (Centre for Higher Education Policy Studies, 2008, p. 60). Core funding covers universities’ operating costs and all costs related to research, teaching and learning, and community service, using a unit-cost formula. Funds are allocated based on a target number of degrees in each field and its calculated costs of offering these degrees. Project funding pays universities’ capital expenditures, which includes the needed equipment and furniture for both teaching and research. Performance-based funding is also used as a tool to reward excellence in the academic system by supplying an additional amount of funding to those universities that demonstrate high quality in

research and in teaching. Universities also receive funding from non-government sources, such as donations, research funding for specific research projects, and fees charged for professional education. Polytechnic institutions in Finland are funded by the government (57 percent) and by the municipalities (43 percent) and academic institutions charge no tuition fees. Moreover, the Finnish government provides grants, housing support, and student loans to cover other costs associated with higher education such as living expenses. To qualify for government support, students need to attend full-time, be in need of financial aid, and have acceptable academic performance (Centre for Higher Education Policy Studies, 2008).

**2.9.6 Higher education funding in Denmark, Norway, Portugal, and Sweden.** The higher education funding systems in Denmark, Norway, and Portugal have both input and output-based funding systems (Frølich, Evanthia, & Rosa, 2010). An input-based system is based on the number of students admitted to and registered in an institution and can lead to both desirable and undesirable consequences for both students and for institutions. Some higher education institutions may be motivated to improve their educational quality and publicity to attract more students, while others may follow un-ethical practices by accepting students who do not have sufficient academic preparation. The output-based system allocates funds based on the number of graduates and on an institution's number of research publications. Output-based funding, which is used in Norway and Denmark to improve quality, has made it difficult for higher education institutions to plan for the long term due to its fluctuation. Frølich et al. (2010) concluded that using different funding systems (input or output-based) may, in fact, yield similar results in higher education. Sweden is also using an input based funding system. Universities and university colleges' operating and capital costs are paid for by annual government funds (Parliamentary Library, 2006). "Universities and university colleges receive provisional funds at

the beginning of each budget year and the finalised amount is determined at the end of the year taking into account student numbers” (p. 12).

**2.9.7 Higher education funding in Germany and Ireland.** In Germany, teaching and research funding is negotiated between state governments and the universities based on historical data of student enrolments or their performance (Parliamentary Library, 2006). Some states use a budget model based on the number of staff, the number of students, the amount of external funding received, and the number of doctoral degrees awarded. Higher education institutions in Ireland are funded through ‘bulk grants’ from The Higher Education Authority in Ireland.

**2.9.8 Higher education funding in Japan and China.** Universities in Japan “have now been given independent corporate status as state agencies, and are independently managed”. (Parliamentary Library, 2006, p. 13). Half of universities’ expenses are funded by government grants and the rest of the costs are funded through tuition fees, donations, and other sources. This funding model has led to a massive increase in tuition fees and has also made Japan’s tuition fees the third highest among OECD countries (OECD, 2012b). Higher education in China is supervised by both provincial and local governments and is funded through provincial governments per-capita grants, tuition fees (25 percent of actual costs), and other income from their research and teaching activities (Parliamentary Library, 2006). Sun and Barrientos (2009) explained that higher education used to be free in China and stated that “before 1985, access to higher education was free to qualified students, subject to government budget quotas” (p. 197). However, government funding has declined in China from 64.6 percent in 1990 to 53.1 percent in 1998 and, as a result, student tuition fees have risen quickly since 1990.

To summarize the funding models in the above 13 countries, it is noticeable that there is a decline in the public share of the cost of higher education and an increase in tuition fees in some

countries (e. g., Australia, Canada, UK, USA). Given the fact that enrolment is rising, it would be easy to notice that the drop in funding and the increase in tuition fees go hand in hand due to the ongoing demand for higher education. In fact, the high demand for higher education can make it easy for governments to reduce funding without suffering any political consequences. The high enrolment levels could also mean that there will always be demanders of higher education regardless of students' portion of the cost and regardless of the decline in governments' share.

Perhaps the English speaking countries are also capitalizing on the fact that foreign students are choosing them as their favourite academic destination. English is, arguably, the language of the world and the language of academia, and it is rational for international students to choose an English speaking country for their higher education. Also, some foreign students might choose an English speaking country because they want to become permanent residents in the chosen country. But regardless of the reasons behind the decisions of international students, their demand is making them an alternative source of funding, and a major player in domestic higher education funding systems. Their 'hard currency' made it hard for universities to ignore their weight in their budgets, and made it easy for governments to welcome more international students, especially during hard economic times. Indeed, domestic students in these countries might be vulnerable due to the ongoing changes in the funding models. They are challenged in an unfair competition with foreign students and they are pressured to pay more tuition fees.

The public share of the cost in the above mentioned Scandinavian countries (e. g., Finland, Norway, Sweden) represents 100 percent of the cost and students do not pay tuition fees. The social democratic nature of these nations is guiding their approach to public finance, and higher education funding is, indeed, affected by this nature. As highlighted in the first

section of this literature review chapter, social democratic welfare countries have equal access to high quality universal welfare insurance for all citizens, and governments guarantee a good standard of living to citizens regardless of their market participation. Their philosophy (social democracy) that guides public finance is different from other countries like Canada or the US and an equal comparison of their higher education funding systems will not be apples with apples comparison. Their ideological base of public policies is different from the North American base and the crafted funding policies will end up being different.

Also, while states or provincial governments are controlling and managing the public higher education system in some countries (e. g., USA, Canada, Germany, China), federal governments are still heavily involved in the post-secondary operations, especially, in the funding of research in these countries. They are also involved in the facilitation of student loans in countries like Canada and the US. Maybe more involvement of federal governments in the teaching activities could remove some fiscal pressures from the shoulders of states or provinces. Some fiscal constraints like having a balanced budget in some American states can limit the ability of state governments to provide the needed support for higher education. Also, federal governments have many monetary and fiscal tools that are not available to state or provincial governments.

## **2.10 Funding Through Student Loans**

Shifting the burden of higher education funding from governments to the direct beneficiaries of higher education is taking place in many countries and is the subject of much controversy. This shift of funding responsibility has led to the creation of student loans systems to enable less financially fortunate students to pay for their higher education. Some scholars (Longanecker, 2006) have considered the shift from federally supported grants for funding

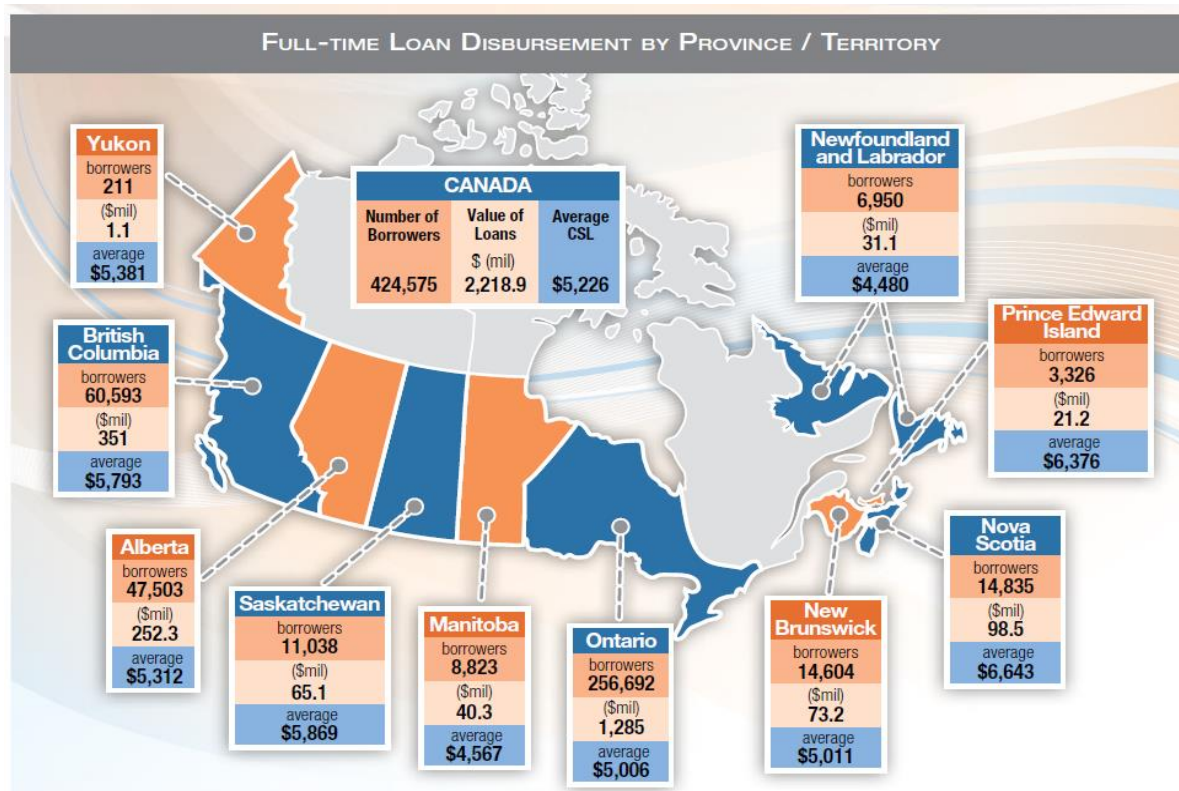
education in the U.S. to federally supported loans as “a significant shift in the philosophy and benevolence of federal policymakers” (p. 19). Student loans in India have become a method to shift financial loads from governments to students and parents as users of higher education (Puttaswamaiah, 2011). Also, most federally allocated money to higher education in the US used to be in the form of grants, whereas now, most of it goes towards loans instead (Longanecker, 2006). The movement from grants to student loans can only further the financial misery of less fortunate students (Reed & Szymanski, 2004).

More than 14 years ago, Johnstone (1998) explained how governments try to hide the true face of student loans, and he argued that “a debt is still a debt, even if it is dressed up as a "graduate tax" or an "advance on future income"; and a big debt, even in fancy dress, is still daunting, particularly to those who are ambivalent about higher education to begin with” (p. 248-249). Some students reject the idea of having a student loan and there are some sociological reasons behind some low-income students’ unwillingness to assume a high level of debt (Rasmussen, 2006). Certainly, “it is not sufficient to completely level the playing field as far as financing [through student loans] is concerned. Individuals from disadvantaged backgrounds may be more debt-averse and sensitive to changes in the cost of education” (OECD, 2012a, p. 28).

Only 12 percent of UK students depend on their parents’ support to finance their higher education and 82 percent of the students surveyed in 2006 had student loans (Marriott, Pogue, & Osgerby, 2010). Closer to home, 66 percent of American undergraduate students and 57 percent of Canadian undergraduates graduated with debt in 2004 and 2005 respectively (Statistics Canada, 2010; Stokes & Wright, 2010). Increases of tuition fees in Canada have led to large increases in the debt levels of students after graduation (Beach, Boadway, & McInnis, 2005). On

the other hand, student loans can help in solving the affordability of participating in higher education by providing the needed funds. “For some students, affordability is primarily a cash flow issue. While they may be willing to make an investment in their education, some students may lack enough disposable income or access to sufficient loans to cover their immediate costs” (AUCC, 2007, p. 38). According to Cheung, Guillemette, and Mobasher-Fard (2012), “liquidity constraints facing lower-income households .... can largely be addressed by an effective student-loan system” (p. 13).

At the same time, the problem of debt accumulation is seen differently by other scholars who argued that “leaving school with debt will retard the accumulation of wealth and, the deeper the debt, the longer the delay in wealth accumulation” (Macdonald & Shaker, 2012, p. 8). Also, “with roughly half of all Bachelor’s degree students graduating with debt, a significant share of the population is starting their career one step behind in terms of financial health” (Tal & Enejajor, 2013, p. 1). Students in the province of Quebec have the least amount of debt in Canada when they graduate due to the low tuition fees charged by Quebec universities and the average student debt in Quebec is \$15,000 while the average in other Canadian provinces is \$27,000 for an undergraduate student (Macdonald & Shaker, 2012). **Figure 4** highlights the differences in the Full-Time Loan Disbursement by Canadian Province or Territory.



**Figure 4:** Full-Time Loan Disbursement by Canadian Province or Territory.

**Source:** Canada Student Loans Annual Report 2010 – 2011.

Beside the regular student loans that must be paid in a limited number of years, income-contingent repayment schemes are used in many OECD countries, and in some provinces in Canada, as an alternative method to fund higher education (Stokes & Wright, 2010). In this model, students begin paying back their loans after graduating and after they reach a certain income level. The imposition of a ‘tertiary education levy’ was also proposed by Stokes and Wright (2010) as an alternative to student loans. This education levy would be based on the cost of the student’s program and the future income of that student. The topic of income-contingent repayment of student loans was also highlighted as being a better option when compared to what is called “mortgage type loans” (Woodhall, 2007, p. 29). She explained that an income contingent student loan can be more easily managed by students and can potentially reduce

public resistance to the issue of student loans. These income-contingent loans were first introduced in Australia in 1989 and other countries have also followed the same path (Woodhall, 2007).

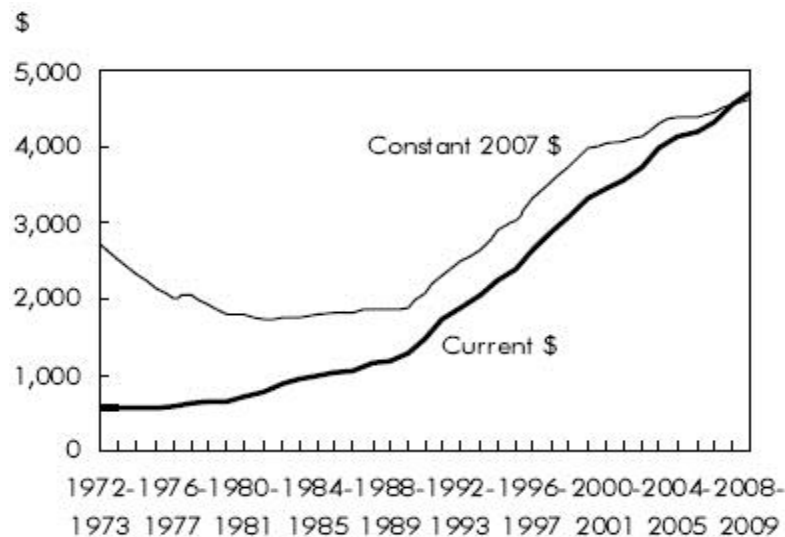
Some proposed student loans programs did not work properly and were cancelled within a few years of their initiation. Among the failed student loan proposals was the one adopted by Yale University in 1972. Their ‘tuition postponement’ option plan, which offered students a loan to pay for their higher education in return to a fixed share of their future income, did not work as planned. The Yale plan “provided students with a loan to help finance tuition fees in return for which they promised to pay the university a fixed proportion of their income. For a number of reasons, this proved to be a disastrous experiment and was abandoned after a few years” (Woodhall, 2007, p. 30).

## **2.11 Funding and Tuition Fees**

Milton Friedman was the first economist to argue for tuition fees and student loans in 1955 (Woodhall, 2007). He suggested that, “It is eminently desirable that every young man and woman, regardless of his or her parents’ income, social position, residence or race, have the opportunity to get higher education – provided that he or she is willing to pay for it.” (Friedman & Friedman, 1980, p. 183). On the other side of the Canadian border, Stager (1996) argued that “the private share of the cost [tuition fees] could be increased substantially before the declining rate of return would result in lower enrolment” (p. 11). In Canada, “tuition accounts for the largest share of student expenses at 34%, followed by accommodation and food at 30%, with other costs such as books, computers and transportation forming the remainder” (Cheung, Guillemette, & Mobasher-Fard, 2012, p. 14). Tuition fees also represent a significant portion of universities’ revenues. In the years of 2010 – 2011, the percentage of universities’ operating

income derived from tuition fees ranged from as low as 11 percent in Newfoundland and Labrador, to as high as 44 percent in Ontario (Macdonald & Shaker, 2012). Figures 5 Table 1 provide a summary of the average tuition fees for full-time undergraduate university students in Canada and the changes in tuition and compulsory fees from 1990 to 2015–16, in Current \$, by Province.

OECD countries vary in the relative levels of the tuition fees they charge from high tuition fees in the United States, Japan, and Korea to no tuition fees in Sweden, Denmark, Norway, Finland, Iceland, and Mexico (OECD, 2012b). In Canada, tuition fees “have increased substantially, rising by an average annual rate of 4% in the past 5 years – roughly two and a half times the rate of inflation” (Tal & Eneajor, 2013, p. 1). While some of the differences in tuition fees among different countries may be partially explained by the relative percentages of public or private postsecondary institutions and/or the level of government responsible for funding post-secondary education, the differences remain. Funding changes in some countries or provinces have also forced or encouraged universities and colleges to turn to tuition fees as an easy solution to their cash flow problems (AUCC, 2008). In the 2006-2007 academic year, per student funding was \$6,000 less per student than it was in the 1980s (AUCC, 2008). Also, the ongoing decline in governments’ funding for higher education has led to increases in tuition fees and has shifted funding responsibilities from governments to students and their families (Longanecker, 2006). The availability of tuition fees as an alternative way of funding higher education has also made higher education a relatively easy target for funding cuts in comparison with other services such as welfare or health care (Longanecker, 2006). The same conclusion was highlighted by Delaney and Doyle (2011) who noted that the first budget category to be cut is higher education due to the ability of academic institutions to compensate through tuition fees.



**Figure 5:** Average tuition fees for full-time undergraduate university students in Canada.

**Source:** Statistics Canada, Tuition and living accommodation costs for full-time students at Canadian degree-granting institutions, 1972/1973 to 2008/2009.

**Table 1.** Tuition and Compulsory Fees 1990 to 2015–16, Current \$ by Province

	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec
1990–91	\$1,422	\$2,120	\$2,147	\$2,016	\$1,115
2011–12	\$2,861	\$5,764	\$6,443	\$6,283	\$3,278
2015–16e	\$2,893	\$6,743	\$7,252	\$7,107	\$4,472/\$3,664
	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1990–91	\$2,105	\$1,676	\$1,591	\$1,551	\$1,982
2011–12	\$7,513	\$4,065	\$6,192	\$7,061	\$5,511
2015–16e	\$9,231	\$4,400	\$6,990	\$8,827	\$6,133

**Note.** Source: Canadian Centre for Policy Alternatives, Macdonald and Shaker (2012).

Figures five and table one clearly illustrate the upward trend of tuition fees in Canada. They also indicate that the burden of students is increasing and the movement toward a cost-sharing approach to higher education funding has been taking place over the last two decades. In the next section, I examine the phenomenon of cost-sharing in more detail.

## 2.12 The Cost-Sharing Debate in the Higher Education Literature

The phenomenon of governments sharing the cost of higher education with students is spreading around the globe. Harris (1960) was the first individual to promote the concept of cost sharing in the US. But the term “cost-sharing” was used for the first time by “Bruce Johnstone’s 1986 study, *Sharing the Costs of Higher Education*” (Woodhall, 2007, p. 22). Johnstone’s 1986 study was very influential because it came at a time when the demand for higher education was very high. The basis of Johnstone’s arguments was that the cost of higher education should be shared by tax payers, students, parents, and institutional or individual donors (Woodhall, 2007). But despite Johnstone’s justification for cost-sharing on the basis of shared benefits, he clearly noted that there was a “need for additional higher educational revenue in the face of dramatic increases in public and private demand for [higher education], combined with financial austerity, particularly in developing and transition economies” (p. 27).

Cost-sharing was defined as “a shift of the higher educational cost burden from exclusive or near exclusive reliance on government or tax payers, to some financial reliance upon parents and/or students, either in the form of tuition fees or of user charges” (Johnstone, 2004, p. 403 – 404). Among the justification arguments for cost-sharing were that higher education is costly, that enrolments are rising, that governments need to spend money on other public needs, and that public revenues are limited (Johnstone, 2004). Johnstone suggested that there are seven forms of cost-sharing for higher education that are also demonstrated in other countries:

1. Start charging tuition fees in countries, provinces, or states where higher education was free. An example is China which started charging tuition fees in 1997.

2. Maintain government support for regular students and introduce a new higher education path with tuition fees. Examples are Russia and other former communist countries in East Europe.
3. Impose a substantial rise in tuition fees in places where tuition fees have existed before. Examples are some states in the US where tuition had to rise to compensate for states' funding cuts.
4. Charge user fees for previously subsidized food and residence services. Examples are Sweden, Norway, Finland, and Denmark which have free higher education but students have to pay for food and residence.
5. Freeze the level of grants and loans given to students. An example is Britain.
6. Increase the amount of funding recovered from student loans (no examples were stated by the author).
7. Limit enrolment in publicly funded institutions and encourage the establishment of private providers. Examples are Japan, Korea, and Brazil.

The rationale for adopting a cost sharing approach is the assumed personal benefits of learners and that they have to pay for these benefits. Because benefits are shared, costs should also be shared (Kanaan, Al-Salamat, & Hanania, 2011). This benefit approach to higher education and “the practice of cost-sharing—shifting part of the burden for financing higher education away from the state and onto students and families—has now become a global phenomenon” (Kanaan, Al-Salamat, & Hanania, 2011, p. 41). Fiscal pressures on public budgets, higher enrolment levels, and the recommendations of the international funding agencies such as the World Bank have led to the adoption of cost-sharing in higher education (Kanaan, Al-Salamat, & Hanania, 2011). However, in his justification for cost-sharing in higher

education, Armbruster (2008) suggested that “a welfare state may endeavour to sponsor widened access and recurrent participation without charging tuition fees, possibly even subsidising living expenses by a grant and credit scheme with income-contingent repayment” (p. 392). He added that in such states, governments can also potentially limit demand and monitoring quality and this has led some countries to turn to cost-sharing as a way to both widen accessibility and maintain quality.

Arguably, there has been a ‘cost’ for the practice of cost-sharing. The inability of some students to bear the burden of the extra fees may, indeed, reduce the equality of opportunities in societies and may contribute to the affordability problem in higher education. The affordability of students is highlighted in more details in the next section.

### **2.13 Funding and Students Affordability**

Affordability was defined as being “the extent to which students are enabled by public means to cover the costs of higher education” (Vossensteyn, 1999, p. 173). Finney and Kelly (2004) also provided two definitions of affordability, one for students and one for governments. From a student perspective, they defined affordability as the money needed to pay for higher education after deducting governments’ aid. From the perspective of a government, they define affordability as the ability to financially support higher education. Finney and Kelly suggested that the ability of governments to deal with students’ affordability problems should be considered when addressing the issue of affordability. They pointed to the role of economic conditions in this discussion of affordability and stated that “little can be said about affordability without at least acknowledging the impact of the economy” (p. 57). They explained that governments, institutions, and students are all affected by the provincial, and to a lesser extent, the federal economy.

Some scholars argued that governments' financial support for higher education directly affects students' affordability. Financial barriers can stop students from enrolling and continuing who are willing and able to access higher education even after they start (Asplund, Abdelkarim, & Skalli, 2008). Financial barriers can restrict the accessibility of higher education for less financially-fortunate students (Zusman, 2005). The affordability problem of less fortunate students was the motive for creating the student loan system (the Higher Education Contribution Scheme) that is used in Australia (Rasmussen, 2006). Because higher education is funded federally in Australia, students from all states can potentially benefit from this increased availability. This loan system in Australia "has enabled the Australian government to significantly expand the number of available student places in public universities without decreasing access for individuals with fewer resources" (Rasmussen, 2006, p. 2).

Affordability is also a challenge for American students. Financial difficulties will exclude two million low and middle-income American high school graduates from attending higher education institutions (Webber & Boehmer, 2008). The reasons behind US states' investments in higher education and the effect of this investment on students' access and affordability were studied by Kramer (2011) who attempted to predict the future affordability of higher education for students by identifying various characteristics of states and how funding levels have changed from 2000 to 2010. He highlighted the declining funding of higher education and the shift of cost of higher education to students and to their families. Kramer also tried to determine what characteristics of the states have the potential to predict the level of state funding for higher education, what characteristics might help to predict the affordability for students and their families, and what has happened to the affordability of higher education for students between 2000 and 2010. He found that:

- states with limited-term legislators fund higher education less than do other states.
- states with tax and expenditure limitations or with a requirement of supermajority voting fund higher education \$420.63 more per student than do states without limitations or supermajority.
- there is a positive relationship between funding and tax rate and between funding and the existence of funding formulas.

Kramer (2011) concluded that the decline of funding, regardless of the way one measures that decline, affects the affordability of higher education for students.

Higher education affordability is not only a North American problem. Students in some western European countries are suffering from similar problems. Students' affordability and financial accessibility in nine western European countries (Austria, Belgium, Denmark, Finland, France, Germany, the Netherlands, Sweden and the United Kingdom) were examined by Vossensteyn (1999). He analyzed the relationship between tuition fees, living expenses, and governments' financial support to students in the selected countries. From his research, he found that students receive direct assistance from the governments in Denmark, Finland, the Netherlands and Sweden, as they are deemed to be independent from their parents. He also noted that in these four countries, 90 percent of students are receiving or are eligible to receive grants, regardless of their own financial abilities. When "public financial support for students increases, the relative costs for students and their families decreases, and thus the relative affordability of higher education improves" (p. 165). He concluded that the highest affordability was in Finland and Denmark and the lowest was in Austria, Belgium and the UK.

Indeed, one can argue that students in poor or developing countries are the most to suffer from the problem of higher education affordability. Students' affordability in developing

countries can be the worst if higher education is not publicly funded (Sun & Barrientos, 2009). “Low-income households, the majority in developing countries, may not be able to afford the direct costs of sending children to school.” (p. 193). Also, students’ financing of their higher education determines the choice of institution, is greatly felt by students from lower socio-economic backgrounds, and any unexpected costs may lead to premature departure of poor students (Breier, 2010).

The following section highlights the affordability problem across Canada. Similar to some of the above mentioned countries, affordability is a reason for concern and highlighting this issue can shed light on the underlying funding problem. The following section provides a brief description of affordability in all provinces in Canada.

#### **2.14 Affordability across Canada**

Affordability is becoming a greater problem for many Canadian students and their families due to the rising tuition fees (AUCC, 2007). “Higher education is now a private good to be bought by those “customers” who can afford to buy it” (Howard, 2005, p. 125). In Canada, “skyrocketing tuition fees do play a significant role in deciding whether or not to pursue a degree, particularly among students from low-income families” (Macdonald & Shaker, 2012, p. 5). In 2011-2012, the cost of higher education in Newfoundland and Labrador was the most affordable for low-income families and Ontario was the least affordable. If Ontario tuition rebates are included, however, Alberta becomes the least affordable province in Canada (Macdonald & Shaker, 2012). Low-income Canadian students are half as likely to get a post-secondary degree when compared with students from higher income families because there is a strong relationship between students’ family income and their pursuit of higher education (AUCC, 2007).

**2.14.1 Affordability in Alberta.** In Alberta, tuition fees were allowed to increase by a percentage based on the Consumer Price Index beginning in 2006. Based on this rate of increase, the average annual student fees will be \$8,827 in 2016 (Macdonald & Shaker, 2012). Alberta will be the fourth most expensive province for students from median-income families in 2016. For students from low-income families, Alberta is the second least affordable province in Canada after Ontario. “If Ontario’s 30% Tuition Rebate is taken into consideration, in 2011–12 Alberta becomes the most unaffordable province for low-income families by a significant margin” (Macdonald & Shaker, 2012, p. 32).

**2.14.2 Affordability in British Columbia.** British Columbia was the second most affordable Canadian province from 1993 to 2004 for students from median-income families. As the freeze on fees was lifted in 2001, the province became the fourth most affordable in Canada and is expected to remain the same in 2016 (Macdonald & Shaker, 2012).

**2.14.3 Affordability in Manitoba.** Manitoba has the third lowest tuition fees in Canada (after Quebec and Newfoundland) with annual fees expected to be \$4,400 by 2016. They added that the cost of university education will increase for students from low-income families in 2016 if the current level of income growth is maintained (Macdonald & Shaker, 2012).

**2.14.4 Affordability in New Brunswick.** New Brunswick has the fourth highest level of tuition fees in Canada in 2012 (Macdonald & Shaker, 2012). New Brunswick reached the second highest tuition in Canada in 2007 on their Cost of Learning Index, but that the cost declined due to growth in family income and also due to the short-term freeze on tuition. Because the growth of income is expected to be higher than the increase in tuition fees, the province will potentially have better affordability for students from low and median-income

families. Because the tuition freeze was removed in 2011, the cost of university education is expected to increase for students from low-income families (Macdonald & Shaker, 2012).

**2.14.5 Affordability in Newfoundland.** Newfoundland became the most affordable province in Canada in 2005 after the provincial government reduced and then froze the tuition fees at the 1997 levels (Macdonald & Shaker, 2012). The affordability will double by 2016 in Newfoundland, especially for students from median-income families if the current trend in family income is maintained. But “with the reductions in tuition fees and economic growth since 2009–10, the province has been the most affordable in Canada for low-income families” (Macdonald & Shaker, 2012, p. 14).

**2.14.6 Affordability in Nova Scotia.** Nova Scotia has the second highest tuition fees in Canada. It had the highest tuition until 2010, when Ontario became the province with the highest tuition fees. Nova Scotia used to be the least affordable Canadian province in the 1990s, and is expected to have the third highest tuition fees in 2016 (Macdonald & Shaker (2012).

**2.14.7 Affordability in Ontario.** University education became the least affordable in Ontario in 2010. Fees were allowed to increase in Ontario by five percent per year, which will lift tuition fees above \$9,000 in 2016 (Macdonald & Shaker, 2012). The 30 percent tuition refund which is scheduled to take place in 2013 will potentially lead to improvement in higher education affordability in Ontario; however, this tuition refund is only available for students who qualify for it. “Without the rebate, Ontario.... fares the worst on the Cost of Learning Index, rising sharply from its already comparatively high cost in 1990 to more than twice that cost in 2011–12, and is the least affordable province for low-income families” (Macdonald & Shaker, 2012, p. 26). But university education will be 2.5 times more unaffordable for poor families in Ontario in 2016 when compared with 1990 – 1991 costs (Macdonald & Shaker, 2012).

**2.14.8 Affordability in Prince Edward Island.** Prince Edward Island (P.E.I) has the fifth highest tuition in Canada. A combination of high fees and poor family income growth has caused the costs of higher education to rise in P.E.I (Macdonald & Shaker, 2012). According to their Cost of Learning Index used by Macdonald and Shaker, P.E.I used to have the highest cost of learning in Canada in 1992 and it stayed the highest until 2003. However, in 2012, P.E.I. had the third highest cost of learning in Canada for median and low-income families and the cost is expected to rise to the second highest in Canada in 2016.

**2.14.9 Affordability in Quebec.** The unpopular increase in tuition fees in 2012, which was proposed by Quebec Liberal government led by Jean Charest, caused the defeat of the Liberal minority government, and Jean Charest lost his seat in the provincial parliament. The newly elected Parti Québécois government reversed the proposal of the previous government to increase tuition fees and instead tied future increases to inflation rates, a policy similar to Alberta's. The previously proposed tuition fees in Quebec would have increased tuition fees from \$3,278 in 2012 to 4,472 in 2016 (Macdonald & Shaker, 2012). However, with the election of a Parti Québécois government, tuition fees will now only reach \$3,664 in 2016, and make Quebec's tuition fees "the second lowest in the country" (Macdonald & Shaker, 2012, p. 22). Based on Macdonald and Shaker's index, Quebec was the most affordable province in Canada in 1991.

**2.14.10 Affordability in Saskatchewan.** Saskatchewan has the fifth highest tuition fees in Canada in 2012. Tuition fees in Saskatchewan are expected to be \$7,000 in 2016. Macdonald and Shaker (2012) explained that due to the high growth rate in Saskatchewan, the cost of learning is expected to decrease for students from median-income families. They suggest that

the cost of learning will increase for students from low-income families (those below the poverty line) because income is not growing at the same rate as the level of fees increase.

Affordability is a problem in some Canadian provinces and efforts to address this problem are needed. Even though the relative levels of funding for higher education in the three Canadian territories were not assessed by MacDonald and Shaker (2012), the ten provinces represent the largest portion of the Canadian population and it is easy to notice the lack of affordability in some parts of the country. Also, one might usually think that a higher education affordability problem is a phenomenon that could only exist in poor nations of Asia, Africa, or South America. But rich nations like Canada, US, Japan, and South Korea are, in fact, among the OECD countries with the highest tuition fees (OECD, 2012b). Arguably, in a rich nation like Canada, affordability should not have been a problem for the less-fortunate Canadian students and should not have been a topic for academic discussion. But because low-income students in Canada are half as likely to get a post-secondary degree when compared with students from higher income families, tackling this issue become a troubling necessity (AUCC, 2007).

### **2.15 Funding and Students' Accessibility**

Financial barriers are affecting higher education accessibility in Canada (Cheung, Guillemette, & Mobasher-Fard, 2012). "Results from Statistics Canada's 1999 Youth in Transition Survey found that 18-20 year-olds perceived financial barriers as the most important factor affecting their decision to pursue tertiary education" (p. 12). The accessibility of higher education for low-income Canadian students is being affected by the funding problems. The ongoing underfunding has led to high tuition fees and has affected accessibility of Canadian students (Beach, Boadway, & McInnis, 2005). While hard economic times can affect the cash flow of most students and their families, need-based financial aid should be available to maintain

the accessibility for less fortunate students who have fewer funding options (Weisbrod & Asch, 2010).

Access to higher education in Canada is “the foundation of equality of opportunity” (Conlon, 2006, p. 2). The ongoing public funding cuts will challenge provincial governments’ goal of promoting accessibility for less fortunate Canadian students, since the use of student loans as a tool to improve accessibility will be useless when coupled with large increases in tuition fees (Conlon, 2006). Also, the growing gap between high and low income Canadians will contribute to the accessibility problem in higher education (Conlon, 2006). The continuous increase in tuition fees will definitely endanger access of all economic groups to higher education because funding cuts have forced many academic institutions to raise tuition fees to a level that can also affect their accessibility (Pratt, 2003).

Several different tools are used in Canada to improve accessibility to higher education. Among these tools are: student loans, grants, and the use of income tax credits. The Canadian federal government consider the availability of the Registered Education Savings Plan (RESP) as being an alternative to direct financial support for students (Conlon, 2006). But regardless of any increased government spending on tax credits (the use of RESP), the rising tuition fees are leaving students with more financial difficulties now than they had in the 1980’s and 1990’s (Conlon, 2006). Also, these tax credits will only have the potential to benefit students coming from high income families and will do nothing in the battle for higher education accessibility (Conlon, 2006).

Accessibility and affordability should not be used interchangeably. Access to higher education is highly affected by the ability of academic institutions to accommodate more students due to their limited human, financial, and physical resources (AUCC, 2007).

“Constrained capacity forces universities to find ways to ration the limited number of seats available among a wider array of qualified applicants.” (p. 39). This means that governments should invest in universities to expand their capacities and should not leave this mission to be accomplished by student fees alone (AUCC, 2007). The rationale behind this is that access to higher education should be facilitated by a funding system that allows all willing and capable individuals to benefit from this level of education (Universities Australia, 2011).

### **2.16 Funding and Education Quality**

One of the general principles of higher education funding is that the funding provided should be adequate to maintain the provision of high quality education. Declining funding has the potential to lead to high student – professor ratios and also to a higher dependence on part-time instructors, which can also affect the quality of the educational experience received (Universities Australia, 2011). The declining funding in Canada is affecting both the quality of education and research (Beach, Boadway, & McInnis, 2005). If governments do not maintain a "public-purpose institution," some public academic institutions will have deteriorating quality levels and some smaller institutions will likely shut their doors (Lyll & Sell, 2006). “There is growing recognition that if the funding policies are not sustainable they would eventually lead to major financial crises on university campuses, and also a decline in the quality of research, teaching and learning” (AUCC, 2008, p. 51).

The performance of academic institutions can also be affected by the method used to fund higher education. Performance-based funding (output-based) of higher education can lead to a decrease in degree requirements if academic institutions try to increase their funding by increasing their output of students who completed their degrees (Gherghina, Nicolae, & Mocanu, 2010). Performance-based funding in Finland is linked to quality of education and research and

not to the quantity of graduates (Hämäläinen & Moitus, 1999). The Finnish government created what is known as “quality units”, and universities receive a certain amount of money for each quality unit (Hämäläinen & Moitus, 1999). “The criteria for performance-based funding will include, for example, the following: high-quality education ('quality units'), high-quality research and artistic activities ('centres of excellence'), as well as internationalisation and high rates of graduate employment” (Hämäläinen & Moitus, 1999, p. 52). The quality of research can also be affected by funding due to a correlation between high quality research and the level of research funding (Reed et al., 2007). Securing \$20,000 of funding (or more) is linked to high quality medical research and higher levels of medical research funding were associated with higher levels of research quality (Reed et al., 2007).

### **2.17 Tuition, Income, and Cross-Elasticity of Demand in Higher Education**

Some economists believe that tuition fees and students' income may affect the demand for higher education, because higher education demand can be elastic (Abraham & Clark, 2006; Bryan & Whipple, 1995; Hamadeh & Khoueiri, 2010; Rives & Cassidy, 1982; Weisbrod & Asch, 2010). This means that the demand for higher education can change due to changes in the tuition fees charged by an institution, tuition fees charged by other institutions, and students' income. Rives and Cassidy (1982) pointed to cross-elasticity of demand in higher education. Cross-elasticity of demand refers to changes in demand at one institution due to changes in prices of similar goods or services at another institution. In the case of higher education, changes in the tuition fees of one higher education institution might affect enrolment in another higher academic institution. This means that “increases in tuition and fees at one institution may result in a re-allocation of students from that institution to another of comparable quality and size, but lower prices” (p. 17).

First year students are more sensitive to higher tuition fees than are senior students (Rives & Cassidy, 1982). Public academic institutions with lower tuition fees are receiving more applications than are private institutions due to “lower sticker prices” (Weisbrod & Asch, 2010, p. 28). Students are sensitive to the overall price of higher education when making application and enrolment decisions and the probability of students applying and enrolling in academic institutions will increase by reducing tuition fees (Abraham & Clark, 2006). Students’ retention can also be negatively affected due to an increase in tuition, and the institution may lose students and revenues at the same time. Institutions with low retention rates may face a further drop in revenues if tuition fees are increased due to tuition elasticity of demand and institutions will end up with three potential scenarios when tuition fees are raised for existing students (Bryan & Whipple, 1995):

1. Institutions with high retention rates will witness an increase in revenues from tuition. In these institutions, students’ demand is not price elastic and institutions may manage to increase tuition fees.
2. Institutions with moderate retention rates will witness a gain in revenues from tuition because students’ demand is moderately elastic.
3. Institutions with low retention rates will witness dramatic decrease in revenues from tuition. In these institutions, students’ demand is elastic and an increase of tuition may lead to drop in enrolment and revenues.

A Statistics Canada study clearly pointed to the effect of income on students’ decisions to enrol in a post-secondary institution as an indication of the income elasticity of demand (Frenette, 2007). The study found that “slightly more than one-half (50.2%) of youth from families in the top quartile of the income distribution attend university by age 19, compared to

less than a third of youth from families in the bottom quartile (31.0%)” (p. 5). “Income elasticity is also an indicator to the sensitivity of enrolment that is affected by variations in incomes resulting from fluctuations in business cycles” (Hamadeh & Khoueiri, 2010, p. 60). This means that the demand for higher education can be affected by changes in students’ income and as a large proportion of family income is consumed by the rising cost of higher education, other necessities of a household life are left with fewer dollars (Macdonald & Shaker, 2012).

Public higher education institutions are more tuition and income elastic than are private institutions (Hamadeh & Khoueiri, 2010). The obvious explanation to this phenomenon is that the enrolment decisions of students who choose to attend public higher education institutions due to lower tuition fees and/or their lower income are price and income driven students when compared with those who choose to attend an expensive private academic institution. This means that the sensitivity of low-income students to changes in income and tuition fees is higher than that of economically capable students. Also, financial aid to less fortunate students can encourage enrolment and reduce the elasticity of their demand (Hamadeh & Khoueiri, 2010).

### **2.18 The Fairness of Higher Education Funding Systems**

The economics of higher education funding is only a portion of the funding debate and justifying the ‘fairness’ of a higher education funding system through an economic rationale is only one approach. Other portions of the debate have focussed on “social justice, fairness, equity, and equality of opportunity” (Woodhall, 2007, p. 44 – 45). “Public financing of education can ... be justified on pure equity grounds, as a response to the need to ensure equal opportunities for all in a fair society” (Sun & Barrientos, 2009, p. 194). At the same time, researchers look at the fairness issue with different lenses. Universities Australia (2011) suggested that a fair funding system means a 50-50 private and public share of the costs.

Jongbloed (2004) stated that there is no one perfect higher education funding system and that the level of funding required depends on the objectives of policy makers and what they want to accomplish on behalf of the general public.

It may not be fair, however, for less fortunate families to pay a large portion of their income to send their children to universities. The burden and the sacrifice of paying tuition fees of \$10,000.00 for a family with \$40,000.00 income per year are higher than for a family with an annual income of \$80,000.00. Those who make over \$100,000.00 per year pay only a small proportion of their income for tuition and painting students and their families with the same tuition fee brush will widen the economic gap between citizens (Reed & Szymanski, 2004). In fact, some colleges and universities are using merit-based financial aid, which “is awarded for academic achievement rather than need” (Reed & Szymanski, 2004, p. 3) to attract wealthy students. Merit-based financial aid reduces the availability of needs-based aid and this then forces needy students to turn to interest-based loans to fund their education (Longanecker, 2006; Reed & Szymanski, 2004). Loans represent 75 percent of federal student aid in the United States and these subsidised federal loans are sometimes not enough for many students. Reed and Szymanski suggested that students and their families are turning to financial institutions for loans due to the disappearing needs-based aid. They added that 64 percent of students in the US graduate with a student loan of almost \$17,000.00, and that made private loans in the US reach 7.5 billion in 2003.

### **2.19 Should Higher Education be Free?**

One of the counter arguments to tuition-free higher education is that if the assumption is that there are certain benefits that are gained by individuals attending universities, justification may be warranted to have fully funded higher education. This is not an unrealistic ideal, and has

occurred historically in countries like Ireland and UK. According to Stager (1996), rates of return to higher education are high and “doubling the fees – which would increase the private share to about 40% of the total direct cost – would leave the private rate of return in the range of 10% to 20% for most programs” (p. 12).

On the other hand, Reed and Szymanski (2004) suggested that a tuition-free higher education can reduce the gap between those who can afford higher education and those who cannot. They argued that the accessibility problem can be solved by making public higher education a right for all qualified applicants, regardless of their economic ability, and by having the federal government pay the entire bill for full and part time students. They suggested that tuition-based higher education systems can only help high income families, that a tuition free higher education system is doable in the US and that the cost of higher education can be easily covered by adjusting corporate taxes, reversing tax cuts to wealthy citizens, and slightly reducing the defence budget.

A tuition free higher education may not be trouble free, however. For instance, even though higher education is free in Greece, students have to worry about other costs associated with higher education, including the opportunity cost (the loss of potential income during the study period), living expenses, and expenses associated with preparing for the entrance examination required for admission (Psacharopoulos & Papakonstantinou, 2005). Tuition-free higher education in Greece has also led to the adoption of tough admission standards, since universities have had to deal with the excess demand by requiring high grade point averages from high school students (e, g., 90%). This has forced 50 percent of students to seek private tutors to prepare for the entrance examination, which means that many qualified students may be excluded from being admitted because of the costs involved for tutoring. According to their

1999 sample, only one fifth of able, qualified, and willing students were offered places in Greek universities. Of those students who were offered admission, only one third actually entered into their favourite program or university. This low level of admission caused many Greek students to attend foreign universities in other countries and to pay the high foreign students' fees.

Psacharopoulos and Papakonstantinou concluded by stating that free higher education in Greece is only a "political slogan", and is not a reality.

## **Chapter 3: Methodology and Methods**

### **3.1 Background**

This chapter explains the theoretical framework/perspective and methodology chosen for the study, data collection methods, data sources, the ways that the findings were analyzed, trustworthiness measures, limitations of the research methods used, and ethical considerations.

### **3.2 Theoretical Perspective**

This study was conducted from a positivist theoretical perspective. The theory of knowledge (epistemology) embodied in this philosophical stance is known as objectivism: “things exist as meaningful entities independently of consciousness and experience, [and] that they have truth and meaning residing in them as objects” (Crotty, 1998, p. 6). Positivism is “a perspective that defines knowledge as something that exists independently in the world and that can be discovered through careful observation; since it exists independently, knowledge is verifiable and stable” (Hinchey, 2008, p. 20). Easterby-Smith, Thorpe, and Lowe (2004) suggested that “the key idea of positivism is that the social world exists externally and that its properties should be measured through objective methods rather than being inferred subjectively through sensation, reflection, or intuition” (p. 28).

Arguably, while different research studies need to be approached differently, and different research problems need different ways of knowing, researchers’ own experience may determine their epistemological approaches. One can argue that we are all the products of our own histories, and who we are today is determined by accumulations of events we have been through. Part of our own history is our education, values, cultures, belief, and many other inputs that, over the years, produced who we are today (Siegel, 2006). Noddings (2007) also suggested

that “scientists, like all of us, are influenced by ethical and political beliefs” (p. 135). This can show that the act of deciding how to know is not restricted to the times that one is engaged in research. As individuals, we decide on a daily basis how to absorb new information, what to believe, and what not to believe. Claims of knowledge continuously come to us from different sources and, on a daily basis, we are told things by our children, colleagues, bosses, politicians, and TV stations, and we have to decide what to believe and how to confirm its credibility. We are using our ontological and epistemological approaches every day, and not only when we are engaged in research studies.

On the other hand, questions regarding the appropriate choice of a theoretical perspective should be guided by the nature of research questions and/or hypotheses, and not by one’s own epistemology. The path which one may follow to know what needs to be known in one research study may not be the same path for other studies. In other words, the ‘how do we know what we know’ question depends on the nature of the phenomenon under study and the kind of understanding and/or realities that the researcher is proposing to reach or uncover. The issue is not a choice between two or more different competing perspectives, but the issue is to choose the appropriate philosophical stance that could serve the purpose of the research. In fact, Crotty (1998) suggested that a theoretical perspective is “the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria” (p. 3). In some cases, the narratives of one, two, or a few information-rich individuals would be the right approach to understand a phenomenon. In other cases, where the truth has its own separate identity, the experiences of individuals can be irrelevant and may not contribute to knowledge and understanding.

In Canada and in many other nations around the world, there are different beliefs and ideologies regarding some social and economic issues such as fairness, taxes, or social spending. An objective approach to the research of these sensitive issues could facilitate the process of communication, discussion, and debate of these matters and could make recommendations and arguments more acceptable (at least by some stakeholders). A constructed truth of these sensitive issues may be easily rejected by those who do not share the same beliefs and ideologies. As Hinchey (2008) phrased it, “any subjective influence would muddy the waters” (p. 21). It would be easy to downgrade the results and recommendations of such research studies by individuals with different views and opinions. “Scientific knowledge contrasts sharply with opinions, beliefs, feelings and assumptions that we gain in non-scientific ways. The principle point of difference is the alleged objectivity of scientific knowledge.” (Crotty, 1998, p. 27). Therefore, arguments of ‘belief and ideology free’ (biased-free) studies could be easily accepted due to the ‘hands-off’ approach of researchers.

In this study, the hands-off approach was utilized by analyzing publicly available data (e.g., Statistics Canada data) that can be retrieved and retested by other researchers. Knowledge was obtained by calculating the income taxes for individuals who are at different income levels. Real tax rates were used to calculate tax contributions of citizens with different education levels. This numerical accounting process may not be served by an interpretive approach. Likewise, economists do not use subjective approaches of knowledge to calculate economic variables such as gross domestic product or unemployment. Constructing financial or economic realities would mean ‘cooking the books’ in accounting terminology. In fact, it is legally unacceptable for accountants to construct their own understanding of financial realities, but to report the existing reality of an organization in a given period of time. Crotty (1998) suggested that:

Knowledge ... is not arrived at speculatively ... but is grounded firmly and exclusively in something that is posited. The basis of this kind of science is direct experience, not speculation. Rather than proceeding via some kind of abstract reasoning process, positive science proceeds by a study of the given” (p. 20).

In this study, any trained researcher would have the potential to be able to reach the same research results, since the anticipated arguments and conclusions are based on objective data. These results (realities) will not change with different perceptions of different individuals due to their numerical nature. The same reality will be discovered even if the research study is repeated 100 times, by 100 different researchers. This study “stresses that the researcher must be entirely objective and must use methods that can be replicated no matter who or where a specific researcher may be” (Hinchey, 2008, p. 21). This epistemological standpoint is not only due to the nature of numerical calculations *per se*, but is also to the researcher’s belief that things can be fairly measured, even in some cases of social science and education.

The intention of this study is to influence policy making related to higher education by using retrievable federal data and by analyzing and interpreting them, resulting in concrete assessments and interpretations. Because the scope of the study is national, and is thus beyond the purview of one area, one organization, or one individual, constructing one specific reality would not be the appropriate choice of method. One cannot simulate existing realities of an entire nation by constructing customized personal alternative realities. The intention of this study is not to develop a personal perception of realities but to discover the existing ones.

“Because every human’s perceptions are shaped by personal history, cultures, interests, beliefs, and so on, perceptions of the same event or object will also vary” (Hinchey, 2008, p. 23).

Realities at the national level may not be known by constructing the views of one, two, or few

individuals, and nationwide hypotheses and questions require the collection of nationwide data. Nationwide existing realities need only research efforts to uncover them by analyzing readily retrievable and reliable data.

To conclude this theoretical perspective section, one needs to remember Crotty's (1998) comments regarding the use of quantitative and qualitative research methods:

We may consider ourselves utterly devoted to qualitative research methods. Yet, when we think about investigations carried out in the normal course of our daily lives, how often measuring and counting turn out to be essential to our purposes. The ability to measure and count is a precious human achievement and it behoves us not to be dismissive of it (p. 15).

### **3.3 Research Methods**

This study has used a quantitative research approach. “Quantitative research is a type of educational research in which the researcher ... asks specific narrow questions, collects quantifiable data..., analyzes these numbers using statistics, and conducts the enquiry in an unbiased, objective manner” (Creswell, 2008, p. 46). It is important to note that the need to have a quantitative answer dictates the use of quantitative research tools. The quantitative nature of research questions in this study was best served by utilizing statistics. Also, this study has used a correlational design. Creswell explained that correlational designs are used in quantitative research to measure the level of association between dependent and independent variables. Bloomberg and Volpe (2008) also suggested that quantitative “research is concerned with causal relationships, and the aim is to advance the relationships between variables” (p. 8). The use of this procedure in this study has enabled the researcher to assign a percentage to the degree of

correlation to see the strength of the association of variables, and to see if one variable can predict the other.

### **3.4 Research Questions**

As noted earlier, this study has addressed the following main question:

- Should there be fully funded higher education in Canada through a partnership funding approach?

To address this research question, four sub-questions were used to find out if a fully funded higher education can be both fair and justified:

1. How does the shape of government-citizen cash flow cycle explain the partnership of governments and citizens?
2. Are citizens with some higher education and/or post-secondary credentials earning higher income and paying more taxes than are citizens with a high school education or less?
3. What level of education do low-income citizens have?
4. Is there a correlation between individuals' education levels and their employment status?

### **3.5 Data and Population**

The data included in this study was information collected from all thirteen Canadian provinces and territories by Statistics Canada. Applying the four research questions to data collected from each province and territory made it possible to develop a better understanding of each sub-question in each of the areas studied. At the same time, the study has also combined

data from all provinces and territories in an effort to generate an understanding of the research questions at the national level.

### **3.6 Data Collection**

This study used federally collected (Statistics Canada - [www.statcan.gc.ca](http://www.statcan.gc.ca)), cross-sectional and time-series secondary data to answer the research questions. Cross-sectional data show a snapshot of numerous variables at a certain point in time. Also, because the study has analysed the changes of the relationships among the studied variables over a period of time, time-series data was used in the study. This means that cross-sectional and time-series secondary data were the right fit for answering the questions that were the focus of this study. “Secondary data, or historical data, are data previously collected and assembled for some project other than the one at hand.... The researcher who assembles data from the Census of Population...is using secondary data” (Zikmund, 2003, p. 63). Statistics Canada was the source of data for this study. The study has used previously collected Statistics Canada national data to answer the research questions. This source of data (Statistics Canada) is widely available for the general public and data can be downloaded from their website.

### **3.7 The Studied Variables in This Study**

This section highlights the studied variables for each of the four research questions:

1. How does the shape of government-citizen cash flow cycle explain the partnership of governments and citizens?

In the first research question, the goal was to produce data summary tables and also diagrams that show the shape of the funding relationship between governments and citizens for every province and territory. To produce these diagrams, the average life-long cash flow

between a government and citizens with a high school diploma in Canada was compared with the average life-long cash flow of the same government and citizens holding a university degree. For the purposes of this question, the government-citizen cash flow is defined as the average annual amounts of money paid by all levels of government (all subsidies paid by all government levels) and the amounts of money paid by a citizen (income taxes paid by the citizen) throughout the life cycle of the citizen.

The analysis for the first research question has resulted in visible charts (diagrams) of the funding relationship between governments and their citizens and has shown *how governments and citizens exchange the role of funding over the citizen's life cycle*. The generated diagrams show the direction of the flow of funds over a citizen's life cycle. The diagrams also show if and/or when citizens move from being in the net-recipients category to the middle point and/or to the net-contributors category and the reverse. In other words, these diagrams show the existence of the proposed three categories of citizens on the budget line. Indeed, it is important to see whether differences (or similarities) exist between the shape of the flow of cash between governments and citizens with a high school diploma and the shape of the flow of cash between governments and citizens with a university degree. This information has the potential to explain whether there are differences between the cash flow cycles for citizens with different levels of education.

2. Are citizens with some higher education and/or post-secondary credentials earning higher income and paying more taxes than are citizens with a high school education or less?

In order to address the second research question, the *degree of association* between incomes of Canadian citizens relative to their levels of education was calculated. Income per

education level was used as the dependent variable and total years of education was used as the independent variable. Seeing the effect of an independent variable has the potential to assist in understanding the role of education levels on the earned income and the paid taxes. Linear regression analysis was used to test the correlation of the dependent (median annual income of a citizen) and independent (years of education) variables related to this question. The regression model was used to determine the strength of the independent variable selected in predicting median income of citizens. This analysis has shown whether education levels affect and/or are correlated with income levels and the amount of taxes paid by Canadian citizens. The aim of this question was to shed light on the amount of the lifelong contribution of income taxes paid by citizens with different education levels and has also indicated whether education levels and income are correlated. It is important to find out whether the Canadian government has the potential to get returns on their investments in higher education through the income tax system.

### 3. What level of education do low-income citizens have?

For the third research question, the degree of association between education levels and being welfare recipients or low-income citizens was calculated, again using existing StatsCan data. Income per education level was the dependent variable and the total years of education was the independent variable. Linear regression analysis was used to test the correlation between the dependent and independent variables studied in this question. The regression model was able to indicate the strength of the selected independent variable in predicting the possibility of a Canadian citizen being a welfare recipient or a low-income citizen.

This study has classified or grouped the income of citizens based on their education levels. While the study has calculated percentages and correlations for each Canadian province or territory, a national classification that combines information from all of the provinces and

territories to generate percentages and correlation levels at the national level was also calculated. Analysis of the third research question was helpful in clarifying whether or not there is a dominant education level for citizens in the net recipients of funds category. The aim of this question was to find out whether education level of Canadian citizens are related to their income levels and if less education would mean low income. It is important to know whether there is a correlation between education levels and being in a net recipient category, since payments to citizens in the net recipient category negatively affect the expenditures' side of the government budget.

4. Is there a correlation between individuals' education levels and their employment status?

In the fourth research question, employment status was the dependent variable and education level was the independent variable. Linear regression analysis was used to test the correlation of dependent and independent variables included in this question. The regression model was used to tell the strength of the independent variable in predicting unemployment status. Analysis has also shown if education level affects employment status at the national, provincial, and territorial levels. The aim of this question was to find out if unemployment is affected by or correlated with education levels. It is important to know whether or not education affects unemployment rates since unemployment negatively affects both sides of governments' budgets. Besides the negative social and economic consequences of unemployment on individuals, public economic consequences can also include the loss of income tax revenues and the payment of employment insurance to unemployed citizens, both of which affect governments' budgets.

### 3.8 Data Analysis

This study has used descriptive and inferential statistics to analyze the data. Descriptive statistics (e. g., mean, median, variance, and standard deviation) were calculated for each category of data. Inferential statistics were also used to understand the correlation between variables by using regression analysis. Regression analysis is a statistical technique that “allows for the simultaneous investigation of the effect of two or more independent variables on a single interval-scaled dependent variable” (Zikmund, 2003, p. 576). The regression function in the data analysis tool of Microsoft Excel 2010 was used to conduct multivariate analyses to answer the second, third, and fourth research questions. The following regression equation is the predicting equation that was generated by the analysis:

$$Y = \alpha + bX + u$$

- $Y$  is the dependent variable that the study is trying to predict.
- $\alpha$  is the  $Y$  intercept (the value of  $Y$  when  $X$  equals zero).
- $b$  is the coefficient of  $X$  or the slope of the regression line.
- $X$  is the independent variable in the regression equation.
- $u$  is the error term (standard error or the error in predicting the value of the dependent variable  $Y$ ).

For each test of correlation, a prediction equation of the line, a regression output summary, and a scatter plot with a regression line was produced. Prediction equations can be used by users of the study to predict changes in the dependent variable, using changes in the values of the independent variable. Scatter plots are produced “to provide a visual picture of the form of the scores. This allows researchers to identify the type of association among variables and locate extreme scores” (Creswell, 2008, p. 360). Correlation matrixes and scatter diagrams

are followed by a discussion of the meaning, the direction, the strength, and the degree of association. The direction of the association was used to tell if the correlation of the variables was positive or negative, linear or nonlinear.

The strength of association was shown for each correlation by showing (in the regression summaries) the values of Coefficient of Correlation (R), Coefficient of Determination (R-squared), the adjusted R-squared, and the standard error. R-squared was used to show how much variation in the dependent variable is attributed to the independent variables. This study followed Creswell (2008) recommended standard to interpret the strength of the correlation. He explained that a correlation of:

- 20 – 35 percent means that there is a slight relationship.
- 36 – 65 percent means that the equation has limited prediction usefulness.
- 66 – 85 percent means that the equation has good prediction ability.
- 86 – 100 percent means that the equation has high prediction ability.

### **3.9 Reliability and Validity**

The assurance of reliability of the used measurement instrument is one cornerstone of quantitative research. Drost (2011) suggested that quantitative researchers need to consider three main issues when addressing reliability: (1) what can affect the reliability of an instrument? (2) how can researchers increase the reliability of a test?, and (3) what is an acceptable level of reliability? She explained that “reliability is the extent to which measurements are repeatable – when different persons perform the measurements, on different occasions, under different conditions, with supposedly alternative instruments which measure the same thing” (p. 106). Creswell (2008) also explained that “reliability means that scores from an instrument are stable and consistent. Scores should be nearly the same when researchers administer the instrument

multiple times at different times” (p. 169). In this study, measuring the correlation of variables using regression has gone through the test-retest reliability process to ensure that the results from each round of testing were identical. The process has tested the data over different sessions to ensure the stability of the results. Creswell explained that “rest-retest reliability procedure examines the extent to which scores from one sample are stable over time from one test administration to another” (p. 169). Moreover, the study has used cross-sectional and time-series government data which can be retrieved, analyzed, and tested by any other researcher. This means that any researcher will be able to reach the same results if the same data and analysis instrument were used.

The assurance of validity is the other cornerstone of quantitative research. Creswell (2008) noted that “if scores are not reliable, they are not valid” (p. 169). Validity “means that the individual scores from an instrument make sense, are meaningful, and enable you, as the researcher, to draw good conclusions” (p. 169). Quantitative researchers need to address four types of validity: “(1) statistical conclusion validity, (2) internal validity, (3) construct validity and (4) external validity” (Drost, 2011, p. 106). She explained that statistical conclusion validity is to assure that there is a correlation between variables. As noted above in the data analysis section, the study has used the guidelines of Creswell (2008) to infer the strength of a relationship. Drost explained that external validity means generalising the results to other populations, locations, and times. This study has used Canadian Data to answer research questions. Results of this study may be useful in shedding light on the funding of higher education in Canada. Generalization of results to different countries should be done with caution. Results of this study could be generalized only to countries with social, economic, and academic policies similar to those existing in Canada.

After the results of the study were assembled, they were then analyzed and interpreted using the positivist theoretical framework. This process has helped in explaining and interpreting the research results, and has also led to further questions and interpretations, as well as to recommendations for future research, and suggestions and recommendations for policy-makers.

### **3.10 Methodological Limitations**

This study, similar to other research studies, has its own limitations. One of these limitations is the use of historical data. It can be argued that while historical data can be used to understand a phenomenon, its ability to predict the future can be limited. History may not repeat itself, and the future may not be influenced by the same factors. Also, the complex nature of some phenomena may not be fully understood through numbers and equations, regardless of the robustness measures of statistics. A correlation of some variables may exclude some unaccounted for (uncontrolled) important variables. The lack of quantifiable data for some uncontrolled variables will also have the potential to prevent the use of those variables in a regression equation. An individual can be making higher income due to that individual's own ability or motivation, regardless of the level of education. Quantifying ability and motivation, in this case, may not be possible. Also, an individual can be on welfare due to that individual's laziness. Measuring laziness may not also be possible.

It is important to note that a quantitative research approach may not lead to an in-depth understanding of a phenomenon. An in-depth understanding and exploring of a research problem may need the use of a qualitative approach. Because the aim of the study is to provide an understanding of the phenomenon of the funding of higher education in Canada, the use of the qualitative methods was not adequate in this study due to the quantitative nature of variables.

Further research may or may not be required to adequately understand the issues and to inform future policy development.

### **3.11 Ethical Considerations**

This study was guided by the guidelines of the University of Calgary Conjoint Faculties Research Ethics Board (CFREB). Even though there was no direct personal involvement in the research study, an application was submitted to CFREB to obtain their approval before the beginning of data collection and analysis. The general details of the study was submitted to the ethics board for their approval and they commented that an ethics application was not needed in the case of this study because of the use of publicly available Statistics Canada data.

## **Chapter 4: Data Analysis and Findings**

### **4.1 Presentation of Results**

This chapter presents the results of the data analysis that addressed the four research questions in this study. For each question, the findings from each province and territory are shown separately and are then followed by, when appropriate, a summary table of the findings related to Canada as a whole country. This chapter includes only the output of the findings of the study (e.g., Charts, Diagrams, Tables, Regression Equations, R-Squared). The aim of this chapter is to provide the end results of data analysis that was performed using separate Microsoft excel sheets. Brief discussions of the results are included in this chapter but further analysis of the results is provided in chapter five.

This chapter is the basis for the proposed funding approach in this study. The results guide the concluding arguments regarding whether a tuition-free higher education can be a justified alternative in Canada based on a partnership funding model. And while the partnership between government and its learning citizens might be seen as a subjective philosophical argument, similar to the apple tree and the farmer metaphor described in chapter one, this chapter quantifies this philosophical argument and presents a visible view of this partnership. In fact, the produced diagrams for the first research question have the potential to be the first attempt to quantify the economic side of a Canadian '*social contract*'.

### **4.2 Government-Citizen Cash Flow Cycles**

The first research question is the key question in this study. Answers to this question are used to more fully understand the financial relationship between governments and citizens and if this relationship can be described as a partnership. The aim of this question is to show the

funding relationship between governments and their citizens, and to demonstrate how governments and citizens *exchange* the role of funding over the citizen's life cycle. It also describes whether the flow of cash between governments and citizens with university degrees is different from (or similar to) the flow of cash between governments and citizens with high school diplomas. An estimated annual government transfer payment of \$6,122 (table 2 below has the details) was used throughout the life of the two hypothetical compared citizens and for all Canadian provinces and territories. The intention of the analysis was to compare the direct income tax payments by individuals with the direct government transfer payments to individuals paid by all government levels throughout the life of citizens. The total transfer payments for 2012 was divided by the population in 2012 to reach the amount of \$6122 per individual ( $\$214,625,000,000 / 35,056,064 = \$6,122$ ). Table 2 (below) shows more details on how this number was calculated. Also, the transfer payments used in the calculation are the lifelong transfer payments (from Child Tax Benefit to Old Age Security) to an individual citizen. These payments were compared with the lifetime taxes paid by that individual citizen as shown in all illustrations provided for all provinces and territories. The direct government (all levels) transfer payment categories are shown in Appendix D.

This constant number was used for illustration purposes, and any potential increases or decreases of this number were not the target of analysis. The goal of this analysis was to describe the possible differences between the income tax payments of the two compared hypothetical citizens. Moreover, any overall increase or decrease in the annual government transfer payment per person would be the same for all citizens and would therefore appear as a fixed amount when comparing two different individuals. This means that changes in the

government transferred amount would have the potential to equally affect the two compared hypothetical citizens.

Calculations of the annual transfer payment per person are shown in Table 2. The table shows the estimation process that used the average of the actual percentage increase of transfer payments from 2005 to 2009 to estimate the targeted year of 2012. Because the study is using the 2012 personal income tax rates in the analysis, and because the available Statistics Canada transfer payments data is only up to the year of 2009, estimating per person transfer payment for the year 2012 was necessary to compare the 2012 government transfer payments per person with the 2012 personal income taxes paid by the two hypothetical citizens.

**Table 2.** *Annual Government Transfer Payments per Person (Dollars X 1,000,000 except per person number, which reflects the actual average amount)*

Years	2005	2006	2007	2008	2009
Total government transfer payments to persons	\$136,247	\$145,754	\$154,609	\$165,101	\$176,630
Annual Increase in Payments		6.98%	6.08%	6.79%	6.98%
Average Annual Increase in Payments		6.71%			
Years	2009	2010	2011	2012	
Estimated Government transfers in 2010, 2011, 2012	\$176,630	\$188,482	\$201,129	\$214,625	
Canada's Population in December 2012 (Jan, 2013)					35,056,064
Estimated Gov. Trans. Per Person in 2012					\$6,122

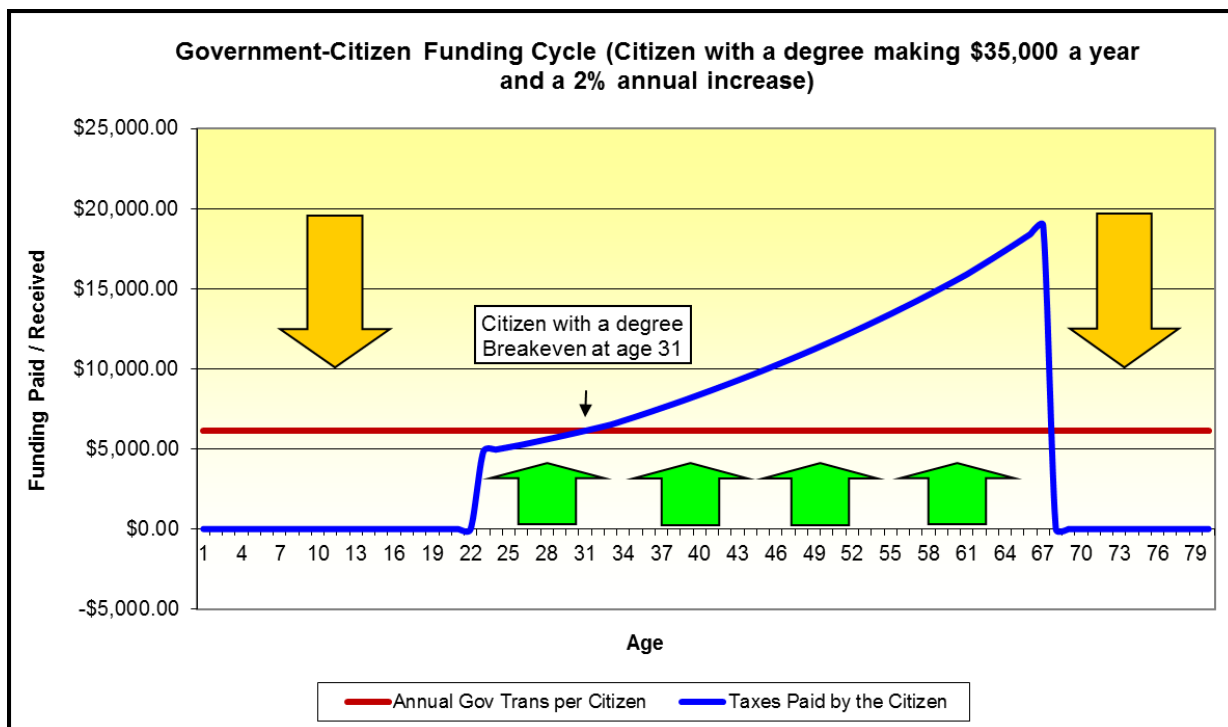
*Note.* Details of the actual government transfer payments, by category, are shown in Appendix D.

The following figures are calculated using the government transfer payment per person and the annual income tax payments of two 'average' *hypothetical* citizens in each province and territory in Canada. These annual income tax payments were calculated based on the average tax

rates in 2012, and by using a public personal income tax calculator provided by Ernst and Young LLP, a major public accounting firm in Canada ([www.ey.com/ca/en/home](http://www.ey.com/ca/en/home)). Lifetime income tax payments for a citizen with a high school diploma, starting at minimum wage of \$10.25 / hour with a two percent annual wage increase, and lifetime income tax payments for a citizen with a university degree, starting at \$35,000 / year and a two percent annual wage increase were compared with the calculated annual government transfer payment per person for each province and territory in Canada. The minimum wage of \$10.25 / hour and the annual wage of \$35,000 were used for comparative purposes only. The purpose was to see how differences in the earned income might affect the lifetime payment of income taxes, the breakeven point of payments (will be clarified later in this chapter), and the breakeven age of citizens (will also be clarified later in this chapter). These calculations were performed for an 'average' citizen in all provinces and territories in Canada. Also, these calculations assume that there was no work interruption due to illness, change of employment, or any other reason for the two compared citizens throughout their working stage, and that they were born and will retire on the same day. Comparative calculations and charts were completed for a hypothetical citizen in each province and for each of the two educational scenarios (i.e. Citizen in that province with a degree and a citizen with a High School diploma), as well as a chart for each province that integrates and compares the comparative calculations and the differential between the two. These comparisons address the first research question, specifically, and then also establish a foundation for the other 3 research questions.

**4.2.1 Description of the findings - Research Question 1.** How does the shape of the government-citizen cash flow cycle explain the partnership of governments and citizens?

Figure 6 (below) shows an illustration of the government-citizen funding cycle for a hypothetical citizen with a degree starting his/her working career making \$35,000 a year and receiving a two percent annual wage increase. The blue line represents the paid taxes by this citizen over the citizen's lifetime and the red line represents the annual government transfer payment per citizen (\$6,122).

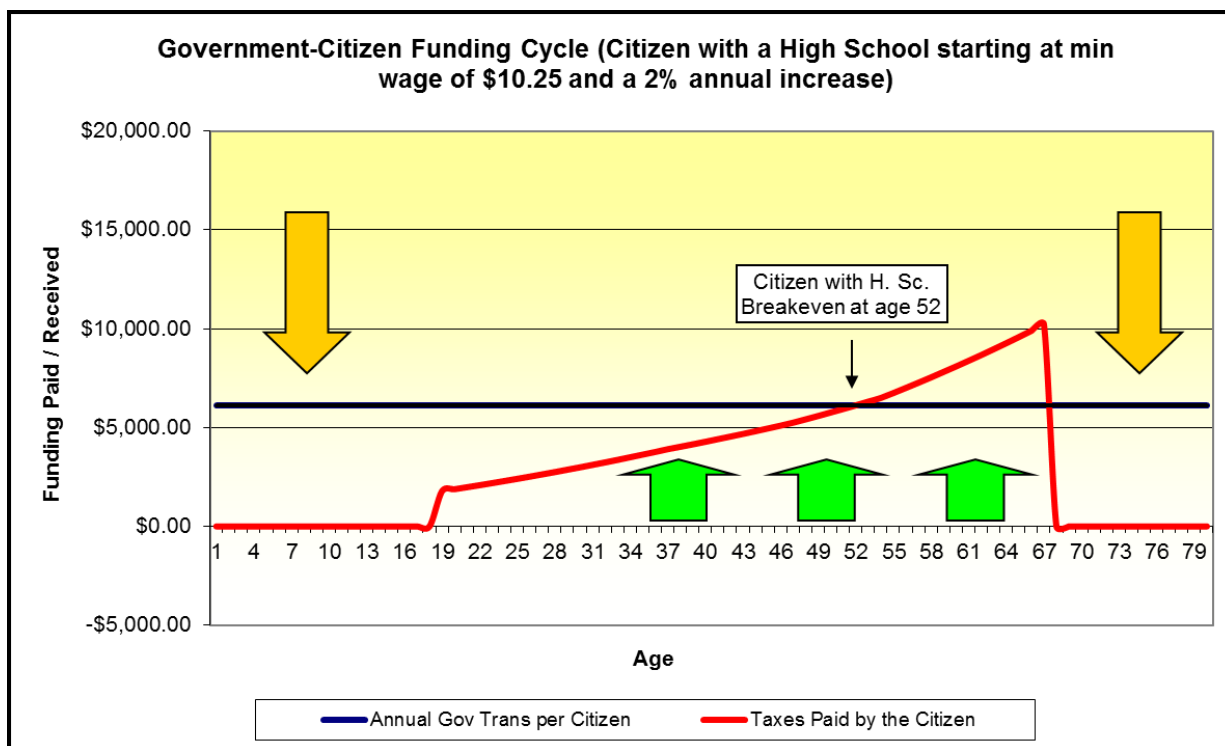


**Figure 6:** Example of Government-citizen funding cycle for a hypothetical citizen who has earned a degree making \$35,000 a year and a two percent annual wage increase.

Figure 6 shows that during the first 22 years of this hypothetical citizen's life (the learning stage), the citizen's tax contribution was zero while the citizen was going through the learning stage of his/her life. Throughout the first 22 years of this citizen's life, the government was providing subsidies to this citizen and the citizen is considered a net recipient of government funding at this stage. At age 23, and after the learning stage of his/her life was completed, this citizen entered the working stage of his/her life and began contributing income

taxes to the provincial and federal government budgets. At age 31, this degree holding resident reached the breakeven point whereby he/she contributed annual income taxes equivalent to the average government annual transfer payment of \$6,122. After age 31 and all the way up to the citizen's retirement age of 67, this citizen was in the 'net contributors' category, by contributing income taxes that are higher than the average annual government transfer payment. After age 67, this hypothetical citizen entered the retirement stage of life, and the citizen's income taxes from employment again dropped to zero while government subsidies continued.

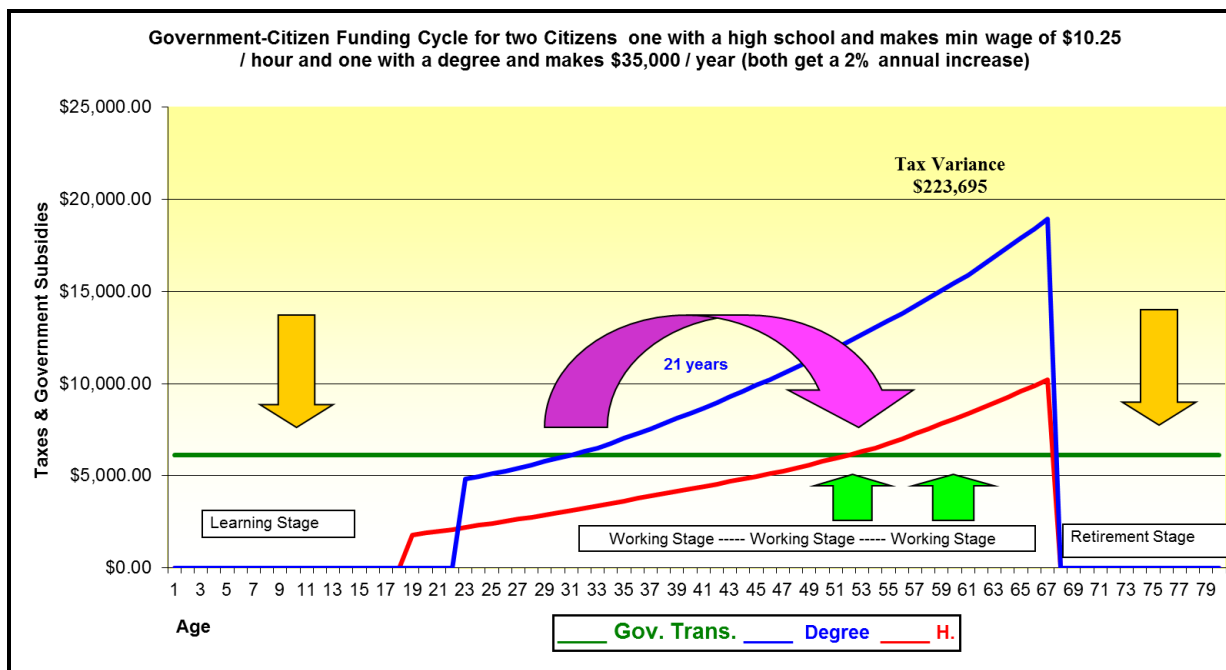
By comparison, Figure 7 (below) shows the government-citizen funding cycle for a hypothetical citizen with a high school education making \$10.25 / hour and earning a two percent annual wage increase. The red line represents the paid taxes by the citizen over the citizen's lifetime and the black line again represents the annual government transfer payment per citizen (\$6,122).



**Figure 7:** Government-citizen funding cycle for a hypothetical citizen with a high school education making \$10.25 / hour and receiving a two percent annual wage increase.

Figure 7 (above) shows that during the first 18 years of the hypothetical citizen's life (the learning stage), the citizen's income tax contribution was zero while the citizen was going through the learning stage of his/her life. Throughout the first 18 years of this high school graduate's life, the government was providing subsidies to this citizen and the citizen is considered to be a net recipient of government funding. At age 19, and after the citizen's learning stage at the high school level is completed, this citizen entered the working stage of his/her life and began contributing income taxes to the government budget. At age 52, this hypothetical resident reached the breakeven point whereby he/she contributed annual income taxes equivalent to the average annual government transfer payment of \$6,122. After age 52 and all the way up to the citizen's retirement age of 67, this hypothetical citizen entered the net contributors category by contributing income taxes that are higher than the average annual government transfer payment. After age 67, this hypothetical citizen entered the retirement stage of life and the citizen's income taxes from employment dropped to zero while government subsidies continued.

To see a clear picture of the comparison of these two hypothetical citizens, Figure 8 (below) combines the lifetime income taxes paid by these two hypothetical citizens from birth and all the way to their retirement stage.



**Figure 8:** Government-citizen funding cycle for two hypothetical citizens one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 8 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens – 20.7 years at the national level – (Table 4 and Figure 10 below). This means that it will take *21 more years* for the hypothetical citizen with a high school diploma to reach the breakeven point when compared with a citizen with a university degree. This also means that a high school level citizen is expected to stay until he/she is 52 in the net recipients category, and only 15 years (from 52 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, the hypothetical degree holder spends 36 years of his/her working life in the net contributors category. At the national level, analysis shows that a degree holder will contribute, on average, \$251,398 more in income taxes throughout the working life of the citizen when compared with a citizen who has high school level education.

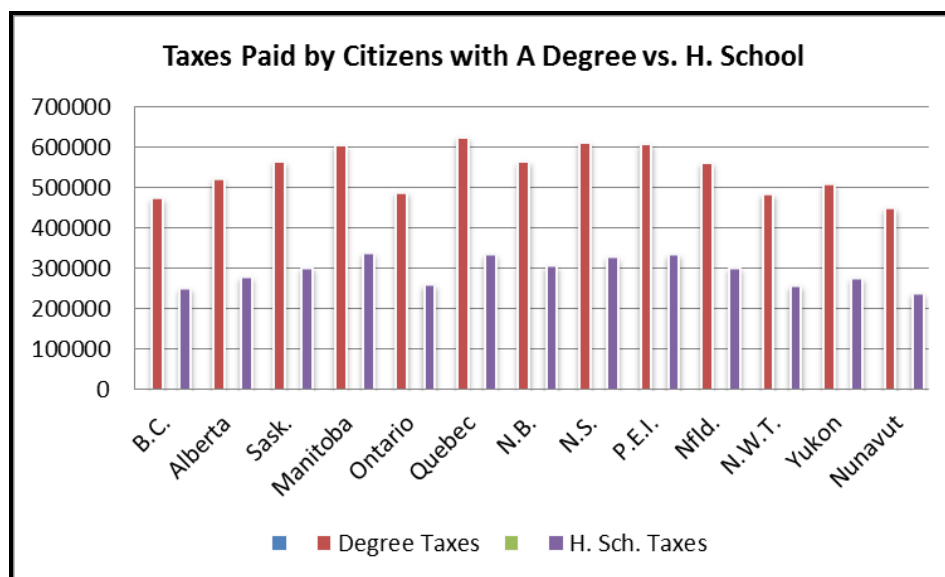
**Charts for the Funding cycle comparisons, by province, are attached in Appendix C**

### **The overall findings/ results of the research undertaken**

**Analysis of government-citizen cash flow cycles.** The above presented government-citizen cash flow cycles detailed in Appendix C represent a hypothetical view of the economic relationship between governments and citizens in Canada, and demonstrate how governments and citizens *exchange* the role of funding over the citizens' lifecycle. While the shapes of these cycles might look alike (start at zero, rise during the working stage, and drop back to zero at age 67), they are, in fact, different and this section will further analyze their differences. Also, as explained earlier in this chapter, an estimated annual government transfer payment of \$6,122 (see table 2 in this chapter for details) was used throughout the life of the two hypothetical compared citizens and for all Canadian provinces and territories. This constant number was used for illustration purposes, and any potential increases or decreases of this number were not the target of analysis. The following table (Table 3) is a summary of an all provinces and territories lifetime income tax comparison of the two compared citizens (one with a degree and one with a high school diploma). The table contains the mean and the standard deviation of the compared variables and also contains the lifetime variance of income tax contribution. This summary table shows that the highest lifetime paid taxes by a citizen with a degree is in the province of Quebec (\$625,234) and the highest variance in income taxes between the two compared citizens is also in Quebec (\$290,654). Nunavut was found to have the lowest lifetime paid taxes by the two compared citizens and the lowest variance between the two (\$211,420). The national average of extra taxes (variance) paid by a citizen with a degree is \$251,398. Figure 9 shows the same results in a chart format.

**Table 3.** *Comparing Lifetime Taxes Paid by Two hypothetical Citizens, One with a Degree and One with a High. School Diploma (all Canadian provinces and territories)*

Province / Territory	Lifetime Taxes Paid by a Citizen with a Degree (Starting at \$35,000 / year and 2% annual increase)	Lifetime Taxes Paid by a Citizen with a H. Sch. (Starting at \$10.25 / hour and 2% annual increase)	Variance of Taxes Paid by A Degree Holder
Province / Territory	Degree Taxes	H. Sch. Taxes	Variance
B.C.	\$474,036.00	\$250,341.00	\$223,695.00
Alberta	\$522,905.00	\$278,335.00	\$244,570.00
Sask.	\$565,089.00	\$301,786.00	\$263,303.00
Manitoba	\$605,279.00	\$337,732.00	\$267,547.00
Ontario	\$488,375.00	\$259,050.00	\$229,325.00
Quebec	\$625,234.00	\$334,580.00	\$290,654.00
N.B.	\$564,594.00	\$305,896.00	\$258,698.00
N.S.	\$613,337.00	\$328,342.00	\$284,995.00
P.E.I.	\$608,710.00	\$334,572.00	\$274,138.00
Nfld.	\$561,556.00	\$301,406.00	\$260,150.00
N.W.T.	\$484,054.00	\$256,970.00	\$227,084.00
Yukon	\$508,776.00	\$276,169.00	\$232,607.00
Nunavut	\$449,052.00	\$237,632.00	\$211,420.00
Mean	\$543,922.85	\$292,523.92	\$251,398.92
SD	\$59,728.24	\$35,181.51	\$25,104.97



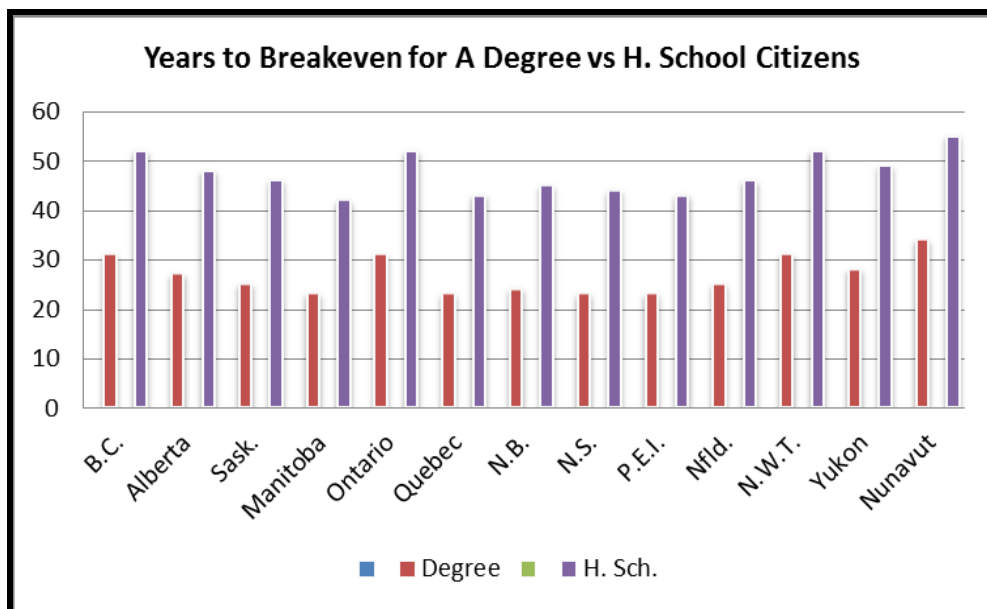
**Figure 9:** Taxes paid by two hypothetical citizens, one with a degree and one with a high school (all Canadian provinces and territories).

Table 4 (below) is a summary of an all provinces and territories comparison of the number of years it would take for breakeven<sup>1</sup> for two citizens, one with a degree and one with a high school diploma. The table contains the mean and the standard deviation of the compared variables and shows the lifetime variance of years to break even. Results show that the average age to break even at the national level in the case of a citizen with a degree is 26.8 years and in the case of a citizen with a high school is 47.5 years. This means that the national variance (gap) is 20.7 years between the two compared citizens. In other words, the government would have to subsidize citizens with high school for 20.7 years more than citizens with a university degree. Figure 10 shows the same results in a chart format. The detailed results, by province, are included in Appendix C.

<sup>1</sup> The Point when the amount of money contributed by a citizen's annual income taxes is equivalent to the average government annual transfer payment of \$6,122.

**Table 4.** *Comparing Years to Breakeven for Two Hypothetical Citizens, One with a Degree and One with A H. School Diploma (all Canadian provinces and territories)*

Province / Territory	Years to Breakeven for a Citizen with a Degree (Starting at \$35,000 / year and 2% annual increase)	Years to Breakeven for a Citizen with a H. Sch. (Starting at \$10.25 / hour and 2% annual increase)	Variance in Years to Breakeven
Province / Territory	Degree	H. Sch.	Variance
B.C.	31	52	-21
Alberta	27	48	-21
Sask.	25	46	-21
Manitoba	23	42	-19
Ontario	31	52	-21
Quebec	23	43	-20
N.B.	24	45	-21
N.S.	23	44	-21
P.E.I.	23	43	-20
Nfld.	25	46	-21
N.W.T.	31	52	-21
Yukon	28	49	-21
Nunavut	34	55	-21
Mean	26.8	47.5	-20.7
SD	3.9	4.2	0.6



**Figure 10:** Years to Breakeven for hypothetical citizens, one with a degree and one with a high school diploma.

I will further illustrate the details and characteristics described in Tables 3 and 4 and Figures 9 and 10 through a narrative description.

The two hypothetical citizens were born in the same day and in the same Canadian province:

1. Joe Party-Son: a high school educated young Canadian man.
2. Smarta Ann McLearn: a university educated young Canadian woman.

Both Mr. Party-Son and Ms. McLearn entered a publicly-funded K-12 school system and both completed high school at age 18. Mr. Party-Son chose to stop at the high school level and decided to enter the job market and not to spend (invest) any more time, energy, and money on higher education. Given his family's economic realities, Mr. Party-Son knew that he would have to borrow money to go to university and he will end up with a mortgage-type student loan that might cripple his future economic advancement. He also knew that going to university

means that he would have to manage four more years without employment income and that the opportunity cost of going to university would be very high for him.

For Mr. Party-Son, the money needed to finance further education beyond the high school level was not the only factor in his decision. He knew that the efforts he would have to put in the process of higher education are enormous and that he would rather spend more time with family and more ‘party’ time with friends. He was relieved that he has finished high school and that he has no further desire for learning and knowledge. He knew that even a job at the minimum wage level would be enough for him to start and that he would be able to progress overtime and live a decent life. Right after graduating from high school, he started his first job at the plaza next door, working for a retail business and making \$10.25 per hour with a potential two percent annual wage increase.

Smarta Ann McLerna, on the other hand, chose to invest four more years of her life beyond the high school level and joined a Canadian university and graduated with a degree in commerce. Neither Ms. McLerna nor her parents were financially able to pay for her four years of post-secondary education and a student loan was the only available option to pay for this expensive journey. And while it has been a tradition of the McLerna’s family to value learning and knowledge, the sacrifice that one has to absorb has also been recognized and understood. The opportunity cost of pursuing higher education, the efforts needed, the time required, and the invested cost of learning (tuition and living expenses) are all part of an academic sacrifice. But knowing that she would harvest the fruits of education ‘**alone**’ after graduation, Ms. McLerna had no hesitation to take the academic route and was all full of energy and hope for a prosperous future.

Soon after graduation at age 22, Ms. McLerna was able to secure her first professional job as a financial analyst and was offered an annual salary of \$35,000 with a two percent annual salary increase. Throughout the working stage of her life, she was harvesting the benefits of her post-secondary education but was also sharing these benefits with federal and provincial governments through her higher income tax rates and payments. Unlike her childhood schoolmate Mr. Joe Party-Son, she was charged higher income tax rates and was paying higher taxes due to her higher income as a professional accountant. And while she was happy with her career progress, she was feeling the injustice of paying higher taxes and sharing a larger portion of her income with a government that did not share with her initial investment at the learning stage. When she was looking at Mr. Party-Son, who ended up as a clerk in her organization after changing many low-paying jobs throughout his working life, and how he is being charged lower tax rates and paying fewer taxes, she felt that she was unfairly treated by a system that had her invest alone in her education and then shared the goodies of her academic investment after graduation.

Ms. McLerna started questioning the rationality of the funding system that had her contribute a national average of \$251,398 (see Table 3 in this chapter) more in income taxes over her working life when compared with Mr. Party-Son. She said to herself that if government has become my partner since graduation and has been sharing the profits of my initial academic investment, why did not the government share my academic cost and paid the tuition fees that I had to borrow? What further frustrated her was that during the first few years of her career, she had to pay back her borrowed tuition fees while paying the government partner the lion's share of the academic profit. Ms. McLerna felt that the current partnership with government is unjust

and it needs to be modified to account for the future contribution of learners throughout their working stage.

Ms. McLerna's argument was based on an economic rationale to public finance for higher education that recognises the duties of all social contractors, including the government. One side of her argument is that it is not acceptable in modern law-protected societies to have a non-participating partner claim any part of the hard-earned profits of a business partnership. It is certainly something unheard of and this scenario may not even exist in real life. And even if it did ever happen, the law will protect the participating partners from any unlawful claim on their profits. But to have the government as the non-participating partner and to allow that 'intruder' to share the hard-earned income of the participating partners is, indeed, something that needs to be reconsidered. Ms. McLerna was left with many questions:

- What makes the government different from any other stranger who might think that a 'free ride' is socially acceptable?
- What makes the government above the law?
- Could Mr. Party-Son share the hard-earned dollars of Ms. McLerna?

Indeed, Smarta Ann McLerna had much to think about before her next town hall meeting. But what was really troubling in Ms. McLerna's arguments is that the economic wisdom of the current funding system does not pass the test of rationality. When she compared her lifelong income tax contributions with those of Joe Party-Son in the above presented 13 Canadian provinces and territories, she found that there is a national breakeven gap of 20.7 years between Joe Party-Son and herself. This means that it will take *20.7 more years* for Party-Son to reach the breakeven point when compared with McLerna. This also means that Mr. Party-Son is expected to stay until he is 47.5 in the net recipients category, and only 19.5 years (from 47.5

to 67) of his working life would be spent in the net contributors category. On the other hand, Ms. McLearna spends 40.2 years of her working life in the net contributors category. Knowing these highlighted results, Ms. Mclearna finds it hard to understand why the government is not being a fair and a true partner with citizens who choose to take the academic route.

Ms. McLearna is now convinced that there has to be a change in her unsigned agreement with government and that her partnership with government should be rewritten to suit these proposed arguments. She even suggested that if governments are not willing to pay part of the academic cost (e.g., tuition fees) and be a fair partner with learners, then governments should not be given the right to share the profits of an academic investment and should not tax those who paid for their education beyond the level of a high school educated citizen. Afterall, the government had treated citizens equally by paying for their K-12 education. Ms. McLearna is also convinced that the lack of government-citizen partnership throughout the three stages of life makes higher taxes for those who paid for their higher education a tax on higher education and mechanism to discriminate against learners and learning. Certainly, higher personal tax rates can be justified by higher personal income, but a higher personal income is, arguably, a function of higher levels of education (see the results in the next section of this chapter).

Ms. McLearna believes that her hypothetical story is, arguably, part of the Canadian academic reality. 57 percent of Canadian undergraduates graduated with debt in 2004 and 2005 (Statistics Canada, 2010). The 43 percent of Canadian students who used their savings to pay for their tuition fees had invested their saved dollars *alone* and ended up also with a non-participating partner who will be sharing their lifelong income. What could even make matters worse is that this non-participating partner shows up only when fruits are ready to be harvested and disappears during the initial hard working learning stage of life. Finally, Ms. McLearna felt

that the mandated relationship with government is not fairly treating those who choose to invest in education and that they would need to *'renegotiate their social contract'*.

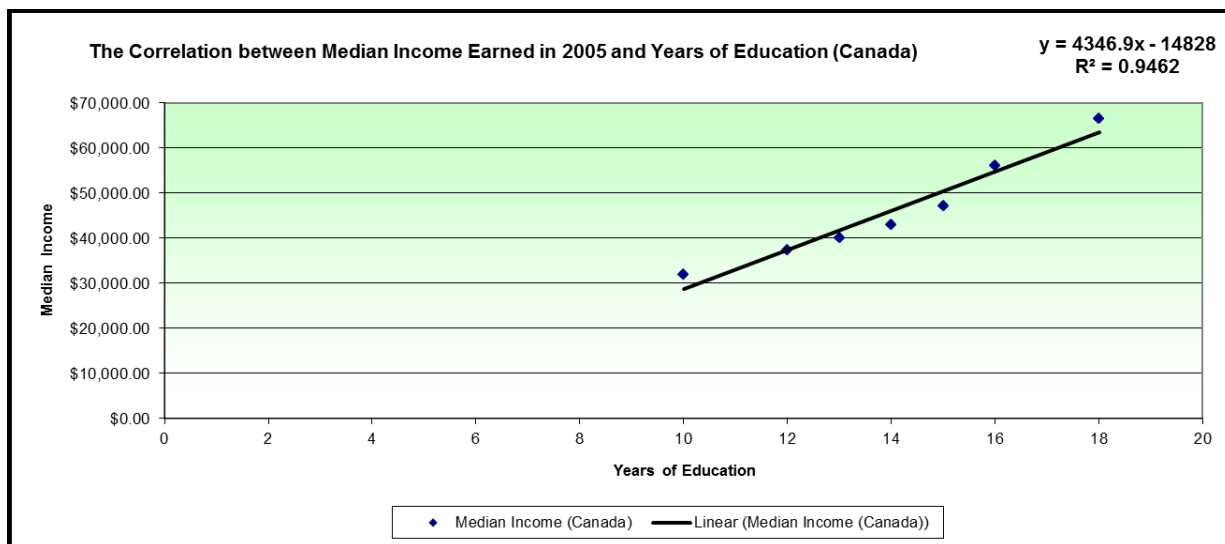
### 4.3 The Correlation between Education and Income

This section contains data analysis for the second and the third research questions in this study. Table 5 (below) shows the national median income for level of education achieved by Canadians. Table 5 is followed by Figure 11 which shows the correlation between the median income earned and years of education, the correlation trend line, the prediction equation, and the coefficient of determination R-Squared ( $R^2$ ). This is also followed by regression statistics summary table.

**Table 5.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Canada*

Education Level	Years of Education	Median Income (Canada)
Less than high school	10	\$32,029.00
High school	12	\$37,403.00
Trades or apprenticeship	13	\$39,996.00
College	14	\$42,937.00
University below bachelor	15	\$47,253.00
Bachelor	16	\$56,048.00
Post-bachelor	18	\$66,535.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 11:** The correlation between median income earned in 2005 and years of education (Canada).

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

Figure 11 (above) shows the correlation between the median income earned in 2005 and the years of education at the national level. The scatter diagram and the fitted line (trend line) shows a statistically significant positive correlation ( $R^2 = 0.94$ ) between income and years of education. Table 6 (below) shows all regression statistics for this correlation at the national level.

**Table 6.** *The Correlation between Median Income Earned in 2005 and Years of Education**Summary Output (Canada)*

<i>Regression Statistics</i>	
Multiple R	0.973
R Square	0.946
Adjusted R Square	0.935
Standard Error	3003.9
Observations	7

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	793623096.2	793623096.2	87.95	0.0002
Residual	5	45116905.21	9023381.04		
Total	6	838740001.4			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-14828.2	6587.7	-2.25	0.0742	-31762.6	2106.0
X Variable 1	4346.9	463.5	9.38	0.0002	3155.4	5538.4

Results at the national level (above) show that income does increase with the years of education in Canada. In other words, this means that the higher the years of education, the higher the income of a Canadian citizen, and the lower the years of education, the lower the income of a Canadian citizen. This strong national positive correlation ( $R^2 = 0.94$ ) means that 94 percent of changes in a citizen's income can be explained by the years of education. The generated national prediction equation from the above analysis:  $Y = 4346.9 X - 14828$  can be used to predict the median income of a Canadian citizen with a standard error of 3003.9. This means that the predicted annual income of a citizen can be accurate with a plus or minus \$3,003.9. To predict the annual median income of a citizen with 20 years of education using the above equation, the citizen's median income is estimated to be:

$$Y = 4346.9 X - 14828$$

$$\text{Median Income} = 4346.9 (20 \text{ years}) - 14828$$

$$\text{Median Income} = \$72,110$$

Also, based on the above national result, a Canadian citizen with zero years of education would not be able to make any income and would even need to be subsidized. The equation shows that the Y intercept (the value of Y when X is zero) is  $-14828$  and this means that income would be in the negative territory ( $-14828$ ) if X (the years of education) is zero.

**4.3.1 Analysis of education and income correlation.** The above results show that education has a strong positive correlation with income in all Canada's provinces and territories. The coefficient of determination R-squared at the national level (94 %) indicates that this national correlation is statistically significant and that 94 percent of changes in Canadian citizens' income can be explained by changes in their level of education. This national result means that education plays a significant role in the economic wellbeing of Canadian citizens. But while this result might lead one to conclude that education leads to personal benefits and, therefore, education is a private good and should not be financed by tax payers, this conclusion might be half accurate and might be telling only half of the story. This section will shed more light on the other half of the education and income story.

Higher education is, arguably, different from regular consumable goods and using the word: 'good' to describe education might not even be appropriate. Also, to attach the word: 'consume' to this extra ordinary 'good' might not be the right approach to describe the attainment and use of knowledge and education. And while a regular good (a banana) will vanish after its consumption, one's stock of education and knowledge will flourish and grow while being consumed (gained and used). Also, while the consumption of a banana will benefit only its consumer, benefits from the consumption of knowledge travel beyond its assumed consumer and allow for an ongoing consumption throughout one's working stage of life. In the

case of higher education benefits, government is the 'hidden' consumer who feeds with every bite of the 'good owner' without paying the purchase price of the consumed products.

While less quantitative personal and societal benefits of education are fully recognized in education literature and are, indeed, hard to be measured, quantitative analysis of economic benefits of education has the potential to shed light on quantifiable benefits. At the same time, it would be premature to infer that education yields only personal economic benefits without further analysis of these benefits throughout the working life of an individual, similar to the analysis done in the first section of this study (government-citizen cash flow cycles). Citizens in Canada pay progressive income taxes and the rates of these taxes and the paid amounts rise with the level of income (see Appendix E & F for the 2012 federal, provincial, and territorial income tax rates in Canada). This means that the higher the income of a Canadian citizen, the higher the paid income taxes. But based on the correlation between education and income, one can rephrase the sentence to say: the higher the level of education, the higher the income, and the higher the taxes paid to government. Or: the lower the level of education, the lower the income, and the lower the taxes paid to government. This makes government a major party in the education and income analysis and excluding this major party would mislead one's understanding of the economic stakeholders of education and would hide the benefits gained by the government. But one should also keep in mind that 'government' is, in fact, the community and the society as a whole and it does represent all citizens.

Knowing the correlation between education and income can lead one to argue that it is rational for government to maximize the number of high-income citizens and to minimize the number of low-income citizens by facilitating citizens' road to higher income. Results from the correlation between education and income in this study indicate that a big portion (94 %) of

changes in citizens' income can be explained by changes in citizens' level of education. This makes the facilitation of education an economic tool to help future government budgets and a mechanism to plan the future economic prosperity of a nation. The facilitation of higher education has the potential to pave the citizens' road to higher income which will translate into higher tax revenues and lower government subsidies. Maintaining the status quo with high tuition fees and allowing the market to take the role of a government would only limit the achievement of this fiscal target.

Indeed, leaning towards the 'market' in the case of higher education might carry with it further problems and might limit the ability of less fortunate Canadian students to be in a high income category. Low-income Canadian students are half as likely to get a post-secondary degree when compared with students from higher income families (AUCC, 2007). Without the intervention of government to facilitate their attainment of higher education, they might be heading towards a low income dead end by inheriting and extending poverty to the next generation.

A government intervention to facilitate higher education has the potential to help all stakeholders of higher education, including students, parents, communities, academic institutions, and the government itself. If the facilitation of post-secondary education can increase the likelihood of less fortunate students to get a degree, then a social need is met while trying to meet an economic need. But the facilitation of education of the less fortunate Canadian students should not be seen by society as a 'social favour'. Instead, it should be seen as the payment of the share of the government partner in the lifelong partnership of two natural partners.

#### 4.4 The Correlation between the Level of Education and Unemployment

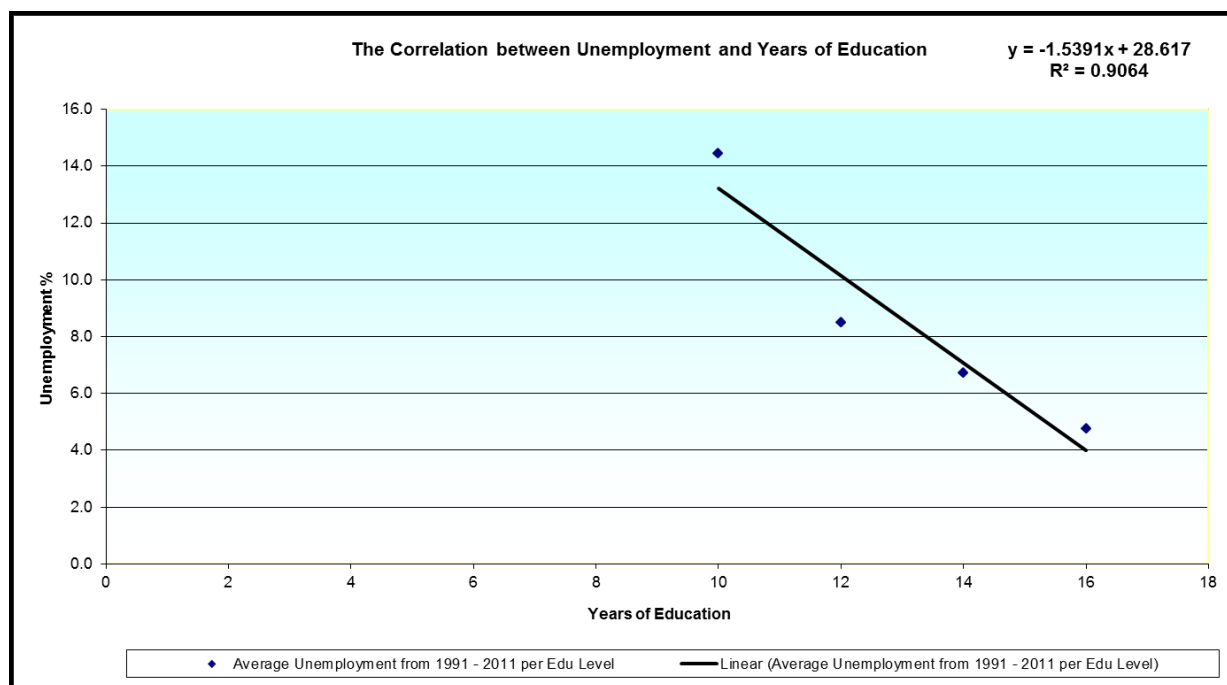
This section provides analysis of the correlation between the unemployment of Canadian citizens and their educational attainment. 20 years (1991 – 2011) of statistics related to unemployment and years of education at the national level were analyzed and are summarized in Table 7. Table 7 is followed by a scattered diagram (Figure 12) and regression summary table (Table 8). Secondary data is only available at the national level and therefore, no provincial or territorial analysis is included.

**Table 7.** *Unemployment rates of population aged 15 and over, by educational attainment,*

*Canada, 1990 to 2011*

Education Level	# of Years of Education	Average Unemployment from 1991 - 2011 per Education Level
Less than high school	10	14.4
High school	12	8.5
College or trade	14	6.7
University	16	4.8

**Data Source:** Statistics Canada, Labour Force Survey (see Appendix H of details).



**Figure 12:** The correlation between unemployment and years of education (Canada), 1990 to 2011

**Data Source:** Statistics Canada, Labour Force Survey (see Appendix H of details).

**Table 8.** The Correlation between Unemployment and Years of Education, 1990 to 2011,

*Summary Output*

<i>Regression Statistics</i>	
Multiple R	0.952
R Square	0.906
Adjusted R Square	0.860
Standard Error	1.564
Observations	4

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	47.38	47.38	19.37	0.048
Residual	2	4.89	2.45		
Total	3	52.27			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	28.617	4.613	6.203	0.025	8.769	48.465
# of Years of Education	-1.539	0.350	-4.401	0.048	-3.044	-0.034

**4.4.1 Analysis of education and unemployment correlation.** Figure 12 and Table 7 (above) show the correlation trend line, the prediction equation, and the R-Squared of the correlation between unemployment and years of education using data from 1990 to 2011. Analysis shows that there is a statistically significant negative correlation (the slope of the line is negative) between unemployment and years of education. This negative correlation means that the higher the years of education the lower the unemployment and vice versa. An R-Squared of 90 percent clearly indicates that there is a strong relationship between unemployment and educational attainment and means that *less* education is associated with *higher rates* of unemployment and vice versa. This section will further explain this correlation.

The generated prediction equation for this correlation ( $Y = - 1.5391 X + 28.617$ ) shows a Y intercept (the value of Y when X is zero) of 28.617. This means that citizens with zero years of education are expected to have an unemployment rate of 28.617% with a standard error of plus or minus 1.564%. To predict the unemployment rate of citizens with 17 years of education using this equation, unemployment is expected to be:

$$Y = - 1.5391 X + 28.617$$

$$\text{Unemployment} = - 1.5391 (17 \text{ years of education}) + 28.617$$

$$\text{Unemployment} = 2.45\%$$

Assessing the correlation between education and unemployment in a topic with a focus on public funding for higher education is, arguably, important and could shed more light on the role of education in the economy and could also help in presenting the main argument in this study. There is an economic cost for unemployment and highlighting this cost is a key factor in the higher education funding argument. Unemployment negatively affects both revenue and expenditure sides of a government budget. This ‘double hit’ effect is due to the loss of income

taxes in the revenues side and the payment of employment insurance to those who are unemployed in the expenditures side. And while quantifying the direct cost of unemployment is not the focus of this study, this cost is believed to be significant and any effort from the government to reduce unemployment could, potentially, translate into benefits for the budget. Certainly, it is rational to think that maximizing the number of employed citizens and minimizing the number of those who are unemployed is in the best interest of any government.

From a pure fiscal point of view, lower unemployment means more money coming in as revenues and less money leaving out as expenditures. This fiscal argument makes understanding the role of the contributing factors of unemployment like education and training an important issue for budgeting and fiscal planning. Knowing that 90 percent of changes in unemployment could be explained by education makes education an important economic factor. It could also make the facilitation of higher education a mechanism to boost the future performance of the economy and a tool to help balance future government budgets. This rational approach could help in highlighting the long-term gains of higher education and in justifying the short-term pains of its public funding.

Economic gains from employment could even be beyond the receipt of income tax revenues and the savings from employment insurance. Other indirect economic costs like the loss of potential sales taxes due to lower consumption of taxable consumer goods during unemployment periods. One can assume that a rational unemployed individual would buy less taxable goods, like appliances as an example, during periods of unemployment. In fact, higher unemployment rates are usually associated with less economic activities and/or with recessions, similar to what the world has seen in 2008 and 2009 in both North America and Europe.

Certainly, unemployment could be affected by other factors and analyzing them is beyond the scope of this study. But education, as presented in the results of this study, is an important factor and could help in reducing the rate of unemployment. Facilitating higher education has the potential to push those who are in the net recipients' category due to unemployment to the contributors' side of the budget line. Traditionally, it is normal to see higher demand for extra education and training during periods of high unemployment and recessions. Some unemployed people are usually encouraged to acquire extra skills to improve their chances of getting a job by enrolling in an educational institution. This means that they would have to pay for this extra training by either borrowing money or by paying from their savings while going through unemployment periods. Regardless of the way people might pay for this extra training, they would find it hard to borrow or to sacrifice some savings during a personal unemployment crisis. Maybe the last thing an unemployed individual would wish for is to pay for anything other than food and shelter. Many people will, arguably, choose not to go for further training, knowing the associated cost of any educational journey and knowing that they would be left alone to manage their way out of unemployment.

It is rational for any government to jump on the opportunity to help those who exit the job market due to unemployment. Those unemployed citizens have been the 'milking cows' of a government throughout their periods of employment and helping them return to the production line is, certainly, the right move for any government. It is wise for any rancher to safeguard all cows under his control to maintain a continuous milk production. But if a cow will need an 'educational surgery' to resume its natural production of milk, is it fair for the cow to be abandoned by its natural farmer and to be asked to borrow for its own treatment? Why should

the cow even return to the same ranch after going through all the trouble to be healed? Why cannot the healing process be part of the cow-rancher contract?

Abandoning unemployed citizens is just like telling the unemployed to fix their own employment problems, and when they are ready to resume working, the government will be waiting to claim part of their income. In other words, government will always be ready to claim its share of citizens' income without being ready to pay for the needed training that is used to generate their income. Certainly, citizens in democratic nations can ask for a rational change to take place, especially during their unemployment periods.

To conclude the discussion of findings, results show that in the three presented sections of this study, (the government-citizen cash flow section, the education and income section, and the education and unemployment section) there are new arguments in favour of a tuition free higher education in Canada. These proposed arguments are presented in this study for further academic discussion and debate and are subject to be analyzed, tested, and challenged by other scholars in the field of higher education administration. The following chapter provides a summary of the findings from the study, a discussion of the findings, implications, limitations of the results, recommendations for further research, and a conclusion.

## Chapter 5: Summary, Discussion, and Implications

### 5.1 Background

This final chapter includes seven sections. The first section is a brief summary of the proposed partnership approach. The second section is a discussion of the findings and their link to main and sub-questions of the study. The last five sections include implications for further research, implications for theory, implications for practice, limitations of the results, and a conclusion.

### 5.2 Summary of the Study

This study presented an analysis of higher education funding in Canada. The goal was to contribute to a better understanding of the finance relationship between governments and their learning citizens, and also to contribute to the ‘higher education as a public versus private good’ debate. The study was motivated by the author’s assumption that the current funding system is unfair to the educated citizens who both paid for their higher education and who are also required to contribute to governments’ budgets through taxes taken from their income after graduation. Moreover, educated citizens are required to finance and to pay for their own higher education to prepare them for the jobs they have and the salaries that they make, and they then must pay higher taxes than do those citizens with a high school or less education due to their higher incomes. The other key argument that was foundational to this study was that governments, through the income tax system, are currently seen as being full partners when sharing *earnings* with educated citizens without being full partners in *financing* their education.

The following question was the main research question in this study:

***Should there be fully funded higher education in Canada through the partnership funding approach?***

As an alternative to the current higher education funding approach in Canada, and to present an alternative philosophy of funding, this study suggests that a partnership approach to public finance for higher education funding could be used as the basis of the funding relationship between governments and citizens. The main idea in this approach is that governments and citizens are lifetime partners and that the government-citizen partnership starts with the birth of the citizen partner and ends when the citizen leaves life (this hypothesis was addressed by research question # 1). Throughout the life journey of the citizen, the citizen goes through three life stages:

1. A learning stage (e. g., the first 22 years of the citizen's life).
2. A working stage (e. g., from age 22 to 67).
3. A retirement stage (e. g., from 67 years old and beyond).

During the learning stage of the citizen's life, the government needs to maintain its role as the financing partner by paying the full cost of all learning levels (Kindergarten and/or elementary – College and/or University levels). The length of a government financing period is determined by the will and academic ability of the learning citizen. If the citizen is only willing and capable of finishing high school, the government role as a financier ends at the high school level. If the citizen is willing and academically capable of moving beyond the high school level, the financing role of the government needs to continue on with the citizen up to the highest feasible academic level. The financing role of the government ends when the learner reaches the full academic potential. At this point, the government role as the financier will end and the citizen's role as the working partner will begin.

After the citizen completes his/her intended level of education, the citizen moves to the working stage of the citizen's life cycle (e. g., get a job, starts own business...), and starts paying the government partner a share of the partnership profit (income taxes) throughout the working life of the citizen partner. The learning citizen's point of entry to the working stage is decided by the learning citizen, based on the citizen's own rational decisions and life choices. Throughout the working stage of the citizen partner (e. g., 45 years), the government collects return on its partnership investment through taxes (e. g., income taxes) paid by the learning citizen. When the citizen partner reaches retirement, the government resumes its financing role through pension payments, old age security payments, or any other kind of payment to help the retired citizen through retirement years (e. g., from 67 years old and beyond).

The rationale for the proposed partnership model is that full public funding of higher education might lead to net gain for federal and provincial governments' budgets. To better explain the effect of the government-learner partnership process on governments' finances, and to link this hypothetical model to the research questions, this study has divided citizens in the nation into three categories based on their position on what the author calls: The Budget Line (this hypothesis was addressed in research question # 1):

1. The first category is for citizens who need government support and are considered net recipients of funds from the budget.
2. The second category, or the breakeven point, is for citizens who are not receiving funds and not contributing to revenues or those with a zero net contribution to the budget, or
3. The third category on the budget line is for citizens who are net contributors to the budget through their tax payments.

This study hypothesizes that a citizen can only be in one of the above-mentioned categories and data analysis of the first research question has shown these three categories. A citizen is a net recipient of funds when the amounts of money received from a government budget through direct or indirect channels are higher than the amounts of money contributed (e.g., income taxes) to the budget through direct or indirect contribution channels. Logically, in the net recipient case, the effect on the budget would be negative. If the amounts received by the citizen are equal to the amounts contributed by the citizen through taxes, the citizen will be sitting in the middle of the budget line (the Breakeven point) and the citizen's effect on the budget would be zero. If the citizen's contribution exceeded the received amounts, the citizen would be a net contributor to the budget and the effect would be positive for the budget (research question # 1 has tested this hypothesis).

This study also hypothesizes that it is in the best interest of governments to help citizens in the net recipients' category (in the learning stage) move to the other side of the budget line (the working stage) and data analysis of the first research question has shown the effect of this movement. However, the movement of citizens (learners) from the net recipients' category to the net contributors' category requires public facilitation of the learning stage. If governments stop the full funding at the high school level, the movement to the other side of the budget line may not take place in some cases, or may take a longer time in other cases (research question # 3 has tested this hypothesis). An abandoned learner at the high school level with financial constraints can be stuck in the net recipients' category or at the middle point, and data analysis to address the first research question has shown the breakeven gap in years between a citizen with a degree and a citizen with a high school diploma. Moreover, this study hypothesizes that if a high school level learner manages to move to the working stage and was then able to enter the net

contributors' category, the level of income taxes contribution may be minimal (research questions # 1 & 2 have addressed this hypothesis). This study also hypothesizes that it would be hard for citizens in a knowledge-based economy to move to the net-contributor's side of the budget line with only a high school diploma, and that they may suffer high rates and/or longer periods of unemployment (research question # 4 has addressed this hypothesis). Unemployment would remove citizens from the net-contributor's category and would shift them back to the net-recipient category (research question # 1 has addressed this hypothesis).

The rationale of the proposed partnership model is also based on the fact that maximizing the number of citizens in the working stage and minimizing the number of citizens in the net-recipient category is in the best interest of governments' budgets (research question # 1, 2, 3, & 4). Consequently, citizens in the working stage (net-contributors of funds) would support citizens in the learning and retirement stages (net-recipients of funds) through their taxes. Finally, this study hypothesizes that full public funding of the learning stage has the potential to facilitate a fast and smooth transition from the learning stage to the working stage of citizens' lives which, theoretically, makes economic sense.

### **5.3 Discussion of the Findings**

The results from this study have indicated that a fully funded higher education system in Canada could potentially contribute to both the economic prosperity of the nation and could also help Canadian society to honour its unwritten partnership agreement with educated citizens who are expected to pay more taxes due to their expected higher income and who are expected to demand less government subsidies due to their expected low unemployment rates. This section summarizes the results from this study for each research question.

- Question 1. How does the shape of government-citizen cash flow cycle explain the partnership of governments and citizens?

Understanding the current funding cycle of governments and citizens is, arguably, the first step in attempting to suggest an alternative approach to public finance of higher education. Analysis of the first research question shows that there is, indeed, a partnership between government and citizens, and the shape of the funding line shows this relationship. Regardless of the level of education (high school or post-secondary), the flow of payments from government to citizens (transfer payments) and from citizens to governments (income taxes) indicate that there is a certain funding cycle for each and every citizen in Canada. The funding cycle also indicates that there are three stages in the citizen's life: (1) learning stage; (2) working stage; and (3) retirement stage. Certainly, the shape of that cycle depends on many variables that include:

1. The length of the learning stage of a citizen.
2. The education level of a citizen.
3. The age of a citizen when entering the working stage.
4. The citizen's income.
5. Federal, provincial, territorial tax rates.
6. The length of the working stage.
7. Work interruption due to unemployment.
8. The government mandated retirement age.
9. The length of the retirement stage of a citizen.
10. Other personal factors.

A closer look at the results detailed in chapter four shows that while the average government transfer payments and the tax rates are, theoretically, the same for all citizens, the

tax contributions of citizens are not the same. Each citizen contributes to this lifelong partnership with the government based on his/her personal circumstances that include the above-mentioned variables. Results from this study show that in the case of the first two compared hypothetical citizens (degree versus high school); a citizen with a degree pays a national average of \$251,398 more in lifetime income taxes than a citizen with a high school diploma. This extra amount in taxes is attributed to the higher income of the degree holding citizen in the first question.

Results from this study have also indicated that citizens reach the breakeven point at different ages, and the lengths of subsidy periods are not the same for all citizens. At the national level, there is an average gap of 20.7 years to reach the breakeven point when comparing a hypothetical citizen with a university degree and a hypothetical citizen with a high school diploma. Similar to the variance of lifetime income tax contributions, this extra period to reach the breakeven point has its effect on the revenue and the expenditure sides of federal and provincial governments' budgets and has the potential to justify full public funding of post-secondary education in Canada.

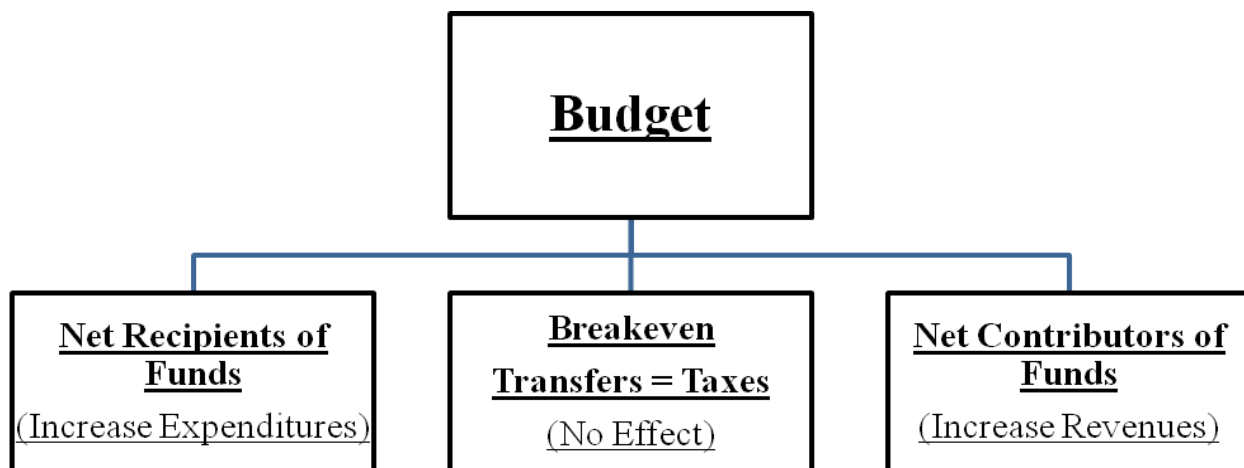
The above highlighted results are consistent with those found in the literature. Both the higher tax revenues and the lower welfare expenditure in the case of post-secondary educated citizens were highlighted by AUCC (2011). They suggested that tremendous economic benefits could be gained by the public by having educated citizens who are responsible for 44 percent of income tax revenues and only get 16 percent of governments' transfer payments. The difference between their contribution and their consumption is then used to support less educated citizens in a society.

It was certainly interesting to find out from this research that the province of Quebec is benefiting the most from those with post-secondary education due to the tax rates adopted in Quebec. Results show that a hypothetical degree holder in Quebec resident would pay \$290,654 more in income taxes when compared with a hypothetical Quebec resident with a high school diploma. This amount is almost \$40,000 above the national average and can, indeed, justify a tuition-free higher education in Quebec. At the same time, all Canadian provinces and territories were shown to have been benefiting from higher education, and a tuition-free case could be made in all of them, even if the post-secondary training would only lead to a one dollar difference in hourly wages.

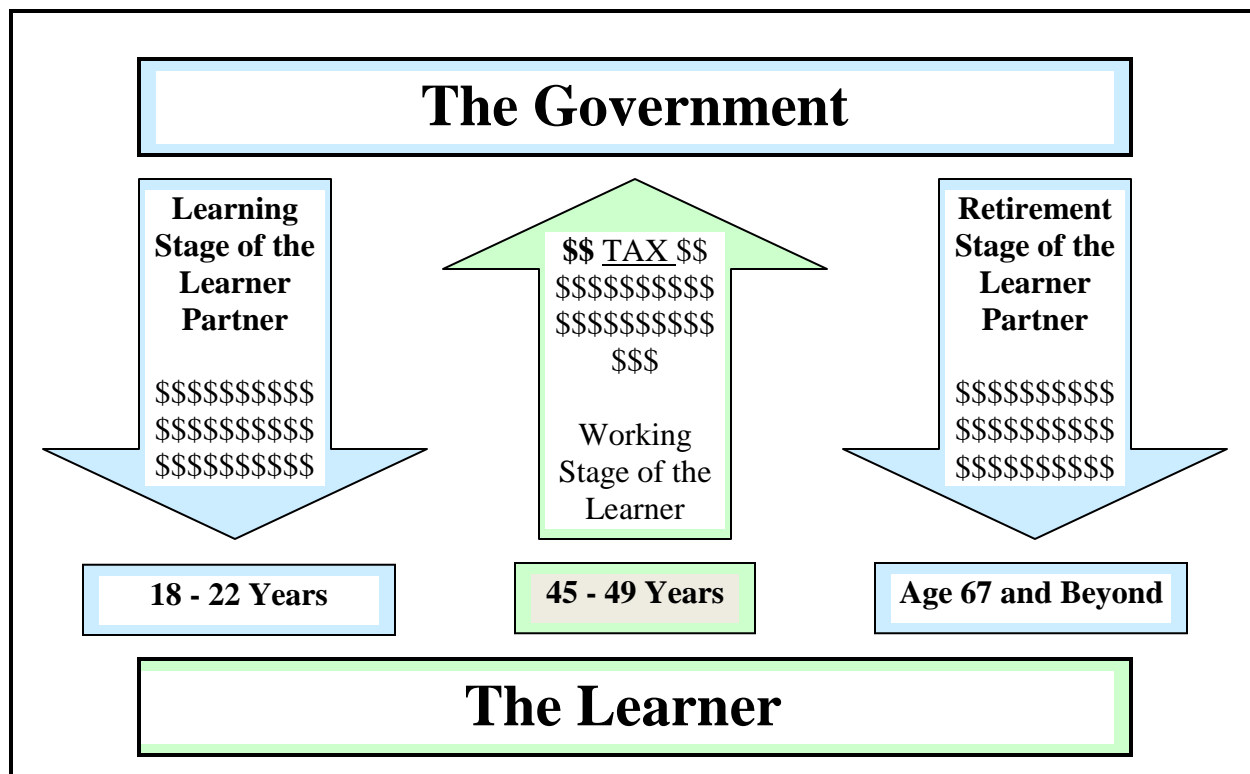
Moreover, it is important to remember that tax-payers in Canada are paying *both* federal and provincial taxes and, arguably, the federal government should play a direct role in funding higher education. Indeed, federal politicians are having fewer ‘headaches’ in the current hands-off system and it might be safer for them to maintain the status quo and to shift the political risk of funding higher education to the provinces and territories. But the Canadian tax-payer is, in fact, financing *both* the federal and the provincial governments based on an unwritten government-citizen social contract, and the two levels of government are seen as the ‘government’ in the eyes of a tax-payer. It is common to hear a tax-payer at year end say: *‘I paid my taxes’*, and it is uncommon to hear a tax payer say *‘I paid my provincial taxes only’*. Certainly, tax-payers’ money goes first to the Ministry of National Revenue through Canada Revenue Agency, which is a federal agency, before any money is allocated to the provinces and territories. Also, the calculated annual government transfer per person (\$6,122) which was used in this study is the sum of all transfer payments from the two levels of government (Appendix

D), and analysis was presented as money transferred from ‘the government’ and taxes received by ‘the government’.

To summarize the above results, and based on the findings of the first research question, Figures 13 and 14 (below) show the movement of citizens on the budget line (Figure 13) and the three life stages of citizens in Canada (Figure 14). The Results show that participation in higher education has the potential to decrease the number of citizens in need of government subsidies and to shift them to the contributors’ side of the budget line (Figure 13 below). The federal and the provincial governments could both increase their revenues and reduce their subsidy payments by helping citizens to move from the net recipient category (the learning stage) and enter the working stage and to then move beyond the breakeven point to become net contributors of funds (Figures 13 & 14).



**Figure 13:** Citizens on the budget line.



**Figure 14:** A Hypothetical Model of Government-Citizen Partnership.

Figure 14 (above) is a hypothetical model of government-citizen partnership and a simulation of the results of research Question One which shows that citizens are learning partners of their governments. The years indicated in this model are hypothetical assumptions of the length of each stage of the partnership. The years can vary based on the length of each stage for each citizen. The learning stage and the working stage may exchange places for some time when citizens stop working to go back to school or the other way around. Some citizens may choose to work for a few years before going to higher education and some may stop at the high school level. They may also choose to get a degree while working or during retirement. Moreover, different countries can have stages with different lengths.

- Question 2. Are citizens with some higher education and/or post-secondary credentials earning higher income and paying more taxes than are citizens with a high school education or less?
- Question 3. What level of education do low income citizens have?

Unlike Tal and Eneajor (2013) who argued that “the education premium [is] narrowing [and] the number of low-income outliers is rising” (p.1), results from this study show that income is highly correlated with the level of education for Canadian citizens. In fact, results (figure 11) show that there is a statistically significant correlation between income and the level of education ( $R$ -squared = 0.94) at the national level. This high positive correlation is also true at the provincial and territorial levels (Table 9 below). The highest correlation was noted in Newfoundland (0.95) and the lowest in Yukon (0.88). But the Yukon correlation could still be considered a high correlation according to Creswell (2008), who recommended the following standard to interpret the strength of the correlation. He explained that a correlation of:

- 20 – 35 percent means that there is a slight relationship.
- 36 – 65 percent means that the equation has limited prediction usefulness.
- 66 – 85 percent means that the equation has good prediction ability.
- 86 – 100 percent means that the equation has high prediction ability.

**Table 9.** *Summary Table of R-Squared (The Correlation between Median Income Earned in 2005 and Years of Education for all Canadian Provinces and Territories)*

<b>Geographic name</b>	<b>R-Squared</b>
<b>Canada</b>	<b>0.94</b>
Newfoundland and Labrador	0.95
Prince Edward Island	0.93
Nova Scotia	0.92
New Brunswick	0.92
Quebec	0.94
Ontario	0.92
Manitoba	0.93
Saskatchewan	0.93
Alberta	0.91
British Columbia	0.90
Yukon	0.88
Northwest Territories	0.92
Nunavut	0.89

This result is also consistent with literature. AUCC (2011) suggested that individuals with university degrees enjoy higher income and have lower probability of going through low income periods when compared with those without university degrees. And while Tal and Erenajor (2013) acknowledged the narrowing of education premium, they noted that “a Bachelor’s degree buys you more than a 30% earnings premium over high school graduates, and the hard work that went to MA or PhD studies adds an additional 15% to that premium” (p. 2). Certainly, the higher income taxes received by governments, as shown in the first research question, are the result of both higher individual income and higher tax rates due to the higher income (Appendices E & F). This means that those with the higher income who are associated with higher levels of education are carrying heavier burdens of income taxes and are supporting and subsidizing those with lower income who are associated with less education. This might

lead one to argue that it is an obligation for governments to pay for the education of the heavy weight tax payers and to fulfil its role as a true partner throughout the life cycles of citizens.

- Question 4. Is there a correlation between individuals' education levels and their employment status?

Unemployment was found to be highly correlated with the level of education. Results from this study show that there is a negative correlation between unemployment and the level of education. This means that the higher the years of education the lower the probability of unemployment. The correlation of unemployment and education at the national level is statistically significant (figure 12) with an R-squared of 0.90. This result is consistent with literature. Cappelli (2008) suggested that higher education allows an individual to make higher income and to become less subject to unemployment. AUCC (2011) noted that individuals with university degrees have lower probability of being unemployed when compared with those without university degrees. OECD (2012a) also stated that "In general, the less educated have faced more job loss, especially during downturns, than those with more credentials" (p. 26).

It was also important to consider analysing the correlation between education and *unemployment* in this study. Unemployment is a phenomenon that could affect all social members in one way or the other. It has a devastating effect on the economic and personal life of the unemployed citizens. But its harm effect is also shared by the rest of society, especially, its 'double punch' to the government budget. Both revenues and expenditures sides of a government budget would suffer because of unemployment due to the loss of the potential income taxes in one side, and the payment of employment insurance to the unemployed in the other side. Indeed, it could be argued that it is in the best interest of governments to fight

unemployment with whatever available tools and to be proactive in doing so. Results from this study show that the probability of unemployment decreases with more years of education. This result could be explained by the increasingly demanding job market and the need for higher levels of skills. And while the aim of this question was only to measure the correlation of education and unemployment, one could argue that the quantifiable and the unquantifiable effects of unemployment are important enough to support education and training at the post-secondary level to limit the harmful effects of this social and economic phenomenon.

#### **5.4 Implications for Future Research**

There is no doubt that one study alone might not be able to provide all the answers to any specific question. While a study could focus on one side of a topic, the remaining sides might need similar attention to allow for the full picture of one area of research to be seen in its entirety. The focus of this study was on the financing of higher education and on the nature of the financial relationship between government and citizens and how it may or may not justify full public funding of higher education in Canada.

The results from this study suggest that full public funding can be justified based on the additional generated income tax revenues by the government from educated citizens. Full public funding can also be justified based on the gap in years of subsidizing citizens without higher education or based on the cost of higher unemployment due to less education. Because the focus of this study was on Canada, further research can be done to study different countries with different government transfer payments, different tax systems, and different higher education and job markets to see if a tuition-free case can be made.

In future research, case studies could also be undertaken to study countries with established tuition-free higher education systems like Finland. It would be interesting to know

the full story of the Finnish higher education funding system, its effect on the government's budget, how and if their funding model has changed over the years, and if accessibility was the price to pay for higher education affordability. Countries other than Finland have also adopted tuition-free higher education systems, and detailed knowledge of their experience could also potentially further our knowledge and understanding of higher education funding. It would be interesting to know how, for example, Greece is coping with the cost of free higher education after the country's financial problems in 2012 and 2013 and after their shift towards less spending on social programs.

On the other side of the funding argument, it might be important to study the financial impact on government, as well as on citizens, of choosing to reduce or even eliminate spending on post-secondary education by moving to a market model. Could this scenario work and be in the best interest of national stakeholders in a given nation? And if it did, is this nation better-off with a market model in terms of affordability, accessibility, economic prosperity, social progress, and so on. The door is wide open for further research on higher education funding, and the changing variables and realities overtime will always feed the need for another model of funding.

### **5.5 Implications for Theory**

While this study proposes a partnership approach as an alternative higher education funding rationale, other researchers have focused on the individual benefits of higher education and yet have ignored the public benefits. According to Stager (1996), "The benefits of education for the economy as a whole consist primarily of the benefits accruing to an individual graduate, plus 'externalities' – the benefits accruing to the rest of the economy" (p. 6). Previous studies might not have noticed that a government is, indeed, the lifelong partner of educated and uneducated citizens and is sharing the 'goodies' of higher education over the working life of

educated citizens while also subsidizing those with less education. While Stager acknowledged that there are benefits accruing to the economy, he completely ignored the higher income taxes paid by individuals with higher education. Okrah and Adabor (2010) argued that higher education gives personal benefits and that private individuals should fund their own education. They claimed that “higher education does not meet the criteria for a purely public good but rather exhibits important aspects of a private good” (p. 55). Johnstone (1998) also suggested that higher education has private benefits and should not be viewed as a public good. These personal benefits (e.g., higher income, lower probability of going through low-income periods, lower probability of being unemployed) were used by researchers and governments as the reason to justify the payment of tuition fees by the learning citizens. This justification was suggested by Rasmussen (2006), who noted that the change in governments’ beliefs that individuals are benefiting the most from higher education has resulted in a push towards a user fee philosophy, resulting in a cost recovery approach to higher education funding and a global use of student loans to pay for the government-adopted tuition fees. The cornerstone of the user fee philosophy was the claim that it is more suitable to charge for a public service when the benefit of the service is limited to the individual user, thus avoiding the unnecessary subsidization of a public service (Bailey, 1994). He argued that “only in the extreme and rare case ... could complete public financing be justified in efficiency terms and even that is subject to some qualification” (p. 367).

Unlike these previous studies (Friedman, 1968; Johnstone, 1998; Okrah & Adabor, 2010; Stager, 1996; West, 1994) that had a focus on the *public versus private good* argument to justify a funding approach, results from this study show that full public funding of higher education can be justified based on *the lifelong partnership* between governments and citizens. Even though

education is believed to be the key success factor in the economic life of educated citizens and the road to their prosperity, this success is, indeed, shared by the government through the lifelong income tax contributions of educated citizens. This philosophical argument is supported by the empirical results of this study and has the potential to shift attention towards another way to rationalize higher education funding. These results could lead one to assert that a tuition-free higher education should no longer be viewed as ‘a gift’ from government to its learning citizens or a waste of tax payers’ money. It should no longer be viewed solely as a shift towards socially-driven policies and should not be seen as a move away from capitalism. Honouring a partnership agreement, even if the agreement is not written on legal documents, will not ‘betray’ a market economy and should not be considered as siding with socialism. In fact, achieving social objectives while maximising economic benefits for the whole nation should, arguably, be the target of any rational thinking, regardless of the underlying political philosophy of a government.

The partnership approach argument is not based on a certain political or personal ideology but it is driven by the facts, as was demonstrated by the findings from this study. The unwritten social contract that has justified the shape of the funding cycle between a government and its citizens was found not to be fully honoured in the current funding system. Fixing the imbalance in this partnership by funding the learning stage of citizens could make the unwritten government-citizen partnership agreement, a fair agreement. Without adjusting the higher education funding approach, the extra taxes paid by a citizen with education beyond high school might not be fairly justified. A government can either pay for those who take the route to higher education and be their lifelong partner, or stop taxing their income beyond a high school level income. Maintaining the status quo of funding is only maintaining the injustice of ‘a free-ride partner’.

## 5.6 Implications for Practice

Understanding higher education funding is important for both academic leaders and also for students specializing in higher education leadership. In fact, some knowledge of finance is important for any management level position in both public and private organizations. While those who work in accounting departments of organizations do the daily accounting functions and practice their transactional judgements, leaders, regardless of their technical knowledge of finance, need to integrate all functions and transactions to see the big picture of an organization. An important side of this picture is the financial side, and how it could affect and be affected by internal and external factors. Leaders' ability to connect the transactional pieces of an organization is, arguably, the prerequisite to maintain success and plan for future progress. Therefore, some kind of knowledge of the role of funding is needed to successfully lead academic institutions and to propose and implement academic related policies. Higher education leadership students are the future academic leaders and policy makers and their ability to see the role of funding in academia can be critical to their future success. It would make sense to overcome the funding literacy of higher education leadership students by adding some funding literature to their curriculum.

Results from this study are directed towards current and future federal and provincial academic policy makers. This study will help in rethinking and/or in understanding better how funding policies are adopted and how these policies are rationalized. Both federal and provincial politicians have a continuous need to justify their spending policies and why a certain approach has been taken or is being considered. This empirical study is offering an alternative post-secondary funding strategy. It also has the potential to provide the rationale for bringing change to how funding policies are adopted and justified.

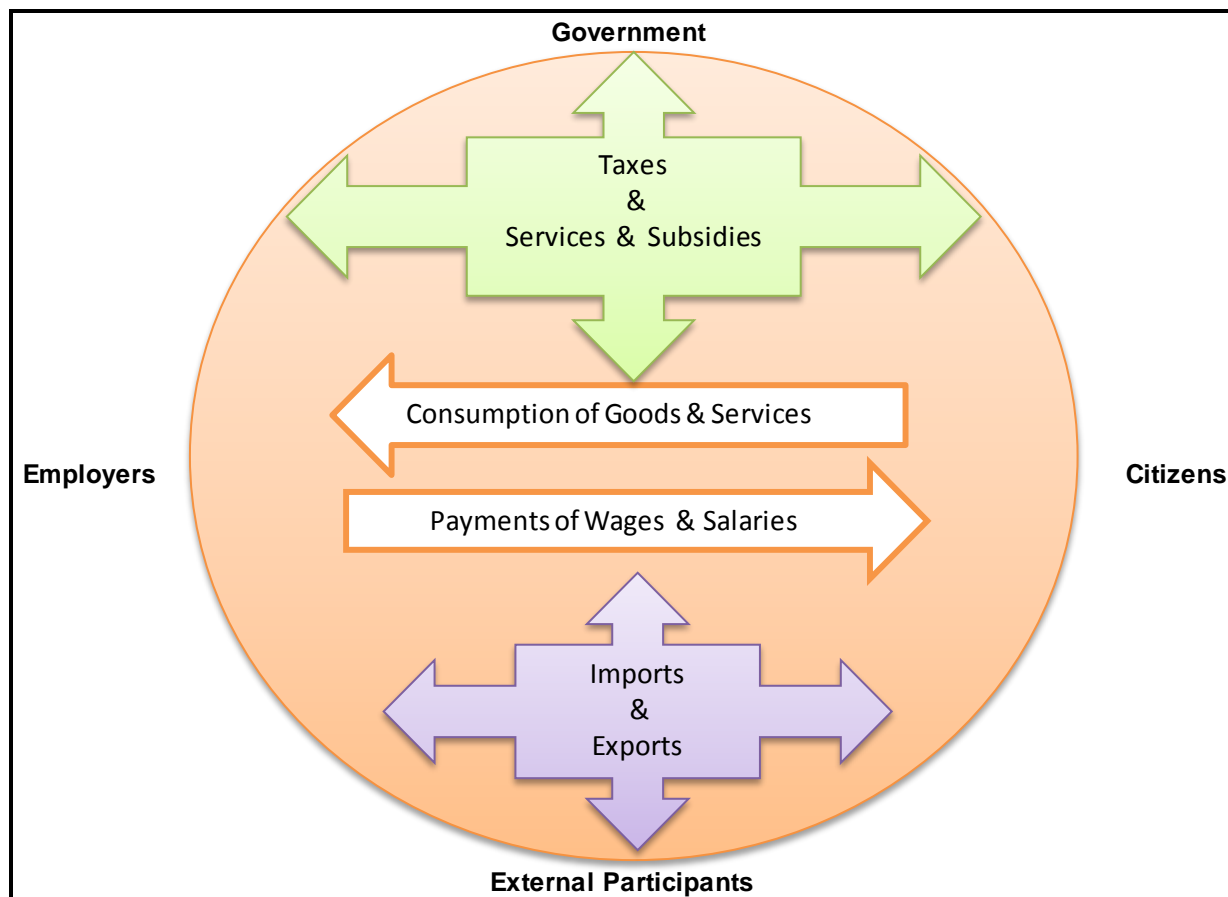
On the other hand, implementing a tuition-free strategy by paying the full cost of higher education will not be easy to do. The Canadian federal government and some provincial and territorial governments are struggling with budget deficits and some debt, and any extra money required for funding of higher education would have to be generated. An attempt to increase public spending by borrowing to pay more for higher education will lead to higher public debt. Some governments might not be able to borrow easily due to their high debt levels or due to the lack of public support to raise the debt levels. Also, it could be argued that exporting the burden of the current economic challenges to future generations by borrowing more money is morally wrong. Current economic problems need to be addressed by current solutions, and current generations need to take the responsibility of solving them. Adding more debt to the current debt may no longer be the 'optimal' solution (or even a doable solution).

Provincial and territorial governments, with the help and support of the federal government, can reallocate funds and redesign their spending priorities to pay the full cost of higher education. This approach is, arguably, a doable alternative to public borrowing for the purpose of increasing funding for higher education, and until the long term 'fruits' from a fully funded higher education system can be harvested. This reallocation process might be considered as 'short term-pain' that has the potential to generate 'long-term gain'. Indeed, raising tax rates as an alternative to generate more government revenues might not be politically acceptable to some policy makers or might not be an easy sell to voters. But a short-term sacrifice might be needed to kick-start a fully funded higher education system, and Canada, as a rich nation, would be able to overcome the short-term fiscal inconvenience. If other less fortunate countries were able to manage a fully funded higher education system, then Canada could also succeed if Canadian politicians and citizens have the will to see the rationale for a fully funded post-

secondary system. Sun and Barrientos (2009) stated that investments in higher education have higher rates of return than do many other investments. Universities Australia (2011) stated that “funding of higher education should therefore be viewed as a long-term investment, not just as a short-term cost” (p. 8).

It is important to note that while analysing data for this dissertation, I did a quick calculation of the lifetime income tax revenues that would result from to a *one dollar increase in the minimum wage*. The findings were surprising. When two hypothetical citizens with a one dollar difference in their hourly wages (\$10.25 & \$11.25 / hour) were compared, the citizen with the higher wage (\$11.25) was found to contribute \$48,301 more in income taxes due to the one dollar increase in the citizen’s wage. This means that the government income tax opportunity cost (the forgone taxes) of keeping the minimum wage at \$10.25 (or lower in some provinces) is equal to \$48,301 for every minimum wage working citizen. Also, while this experiment demonstrated the effect of a one dollar increase in the minimum wage on income taxes paid, it could be argued that other taxes (e. g., sales taxes) are also expected to increase due to a higher minimum wage. The higher minimum wage hypothetical citizen had extra lifetime income of \$170,436 (Appendix C) when compared with the lower minimum wage hypothetical citizen. Assuming that this extra amount will become disposable income, and using a Harmonized Sales Tax (HST) rate of 13 percent, the government is expected to receive an extra \$22,156 in sales taxes per citizen due to a one dollar increase in minimum wage. This difference in taxes could lead one to conclude that adjusting the minimum wage might be one way to generate revenues to facilitate the full funding of higher education by using the extra generated taxes. This adjustment could be done by indexing the minimum wage and linking the increase in minimum wage to the consumer price index and the rate of inflation.

Moreover, while increasing the minimum wage can generate tax revenues, it might also be a tool to stimulate the economy (Figure 15). A recession could also be the result of less consumer spending due to the rising cost of necessary goods. When the costs of goods and services increase without an equal adjustment to consumers' income, consumers will spend their income on fewer goods and services and economic activities will, therefore, decrease. Rational consumers will satisfy their need for necessary goods and services first and will then try to use whatever is left of their income to buy other goods and services. Some consumers might not even have the ability to satisfy all their needs of necessary goods and services due to the overall rising prices if the consumers' level of income does not increase with price levels. If the level of income were to be kept consistent with the cost of living, the same economic activities could potentially be sustained. If income levels are pushed higher than the increase in price levels, higher economic activities might be generated and the economy might see further growth. Thus, a continuous adjustment to the minimum wage, guided by the rate of inflation, might solve many problems at the same time.



*Figure 15:* Participants in the Economy.

### 5.8 Limitations of the Results

To start with, it should be noted that not knowing the exact amount or proportion of the transfer payment from the federal government to the provincial and territorial governments that went to post-secondary education at the individual level might be considered a limitation. However, the intention of the analysis was to compare the direct income tax payments by individuals with the direct government transfer payments to individuals paid by all government levels throughout the life of citizens. Also, the intention was to see the direct lifelong transfer payments (from Child Tax Benefit to Old Age Security) to an individual citizen and to compare

them with the lifetime taxes paid by that individual citizen as shown in all illustrations provided for all provinces and territories.

It is arguable that historical data might not accurately represent current realities and the prediction of future based on the past risks unforeseen errors. Time has the ability to change social, political, and economic realities and what could be good, applicable, and acceptable today might be inferior, unrelated, or rejected tomorrow. Also, unlike natural science, there is no perfect answer in social science, and the economics of higher education is a social science. Regardless of the level of perfection of social, economic, or political models, they are expected to have limitations and drawbacks. A change in any variable in building a model might lead to different results and might trigger applicability questions. The complicated interactions of social, economic, and political variables can also be far from being captured in one proposed and/or discovered model.

Results in this study have shown that there is a positive correlation between years of education and income. What was not captured in the reported Statistics Canada data is the interaction of the supplied quantity of job seekers at each education level and the demanded quantity of available positions in the job market. Indeed, the interaction of supply and demand in the job market is what yields a certain 'price' for labour in the job market. Changes in the supplied quantity of labour at a certain education level and changes in the available jobs in the job market will yield different salaries/wages at that education level. The oversupply of high credentials in the job market might lead to lower income for educated citizens and might increase the demand for trade-related occupations. In other words, the 'credentialization' of the job market might dilute the value of higher academic degrees. What should also be highlighted as a limitation are the different returns of different fields of education. According to Tal and

Eneajor (2013), “one’s field of study is the most important factor determining labour market outcomes” (p. 1). They explained that “there is a much greater risk of falling into a lower-income category for graduates of humanities and social sciences, with a limited risk for students of health, engineering or business” (p. 3). Also, because tax contributions of citizens are linked to their income and to the tax rates in their provinces or territories, changes in these variables might lead to different results.

There are negative effects of full public funding of post-secondary education present in the limitations. While a tuition-free higher education might remove the financial restrictions to enter an academic institution, it might create different kinds of restrictions. Economic problems might force provincial governments to reduce the amounts that they currently transfer to operating budgets of academic institutions and, at the same time, to continue to claim that higher education is free of charge for those who are attending any public academic institution. This scenario might lead academic institutions to raise their admission standards and to expand their pick and choose policy to admit students based on the available fiscal room in their budgets. This has the potential to create what could be called an ‘affordable but not accessible’ higher education system. This scenario, according to Psacharopoulos and Papakonstantinou (2005), has taken place in Greece and the free higher education in Greece has become only a “political slogan”, and not a reality.

## **5.9 Conclusion**

Within the limit of a doctoral dissertation, it is difficult to fully demonstrate the effects of higher education on all aspects of a nation. Many social and economic benefits of education are hard to measure and can only be recognized without being quantified. Fortunately, what researchers are able to quantify when studying the economics of higher education can still

contribute to the advancement of our understanding of higher education funding. The availability of federal quantitative data has made this mission possible and has enabled researchers to weigh in with their findings on some of the ongoing post-secondary debates. The available federal data has also facilitated the testing and retesting of results by different researchers. The correlation of higher education and personal income, higher education and income taxes, and higher education and unemployment are only some examples of research areas that can benefit from quantitative data and statistical analysis.

The aim of this study was to explore the existing funding relationship between government and citizens by analyzing government transfer payments per citizen, lifelong income taxes of citizens at different levels of education, the correlation of education and income, and the correlation of education and unemployment. The results show that full public funding of higher education can be justified and rationalized based on the lifelong income taxes paid by educated citizens. The flow of funds between citizens and their government over the lifetime of citizens is dictated by the unwritten partnership agreement between them. Analysis of the current tax rates and the lifelong paid taxes of citizens with different levels of education have shown that there is a significant variance of the paid taxes (a national average of \$251,398) between those with higher education and those with a high school education or less. There is also a 20.7 years gap in the needed years to breakeven with government subsidies at the national level.

Also, while those with post-secondary education were found to be paying more income taxes due to their higher incomes, they were also found to have lower unemployment rates. This means that they are expected to contribute more in income taxes and demand less government subsidies (less expenditure on employment insurance). This combined effect of post-secondary education is, indeed, a 'win win' scenario for a government budget and can positively affect both

revenues and expenditures. At the same time, less higher education can negatively affect revenues and expenditures of a government budget due to the lower tax rates, the lower lifelong income, and also due to higher rates of unemployment.

Rational analysis of the results of this study also has the potential to lead to some conclusions regarding the behaviour of government funding of higher education in Canada. The current government-citizen relationship is, arguably, not honouring the unwritten lifelong partnership agreement between citizens and government in Canada. This lifelong partnership can be honoured if each party pays its fair share of the cost and gets its fair share of the benefits. In the case of citizens with post-secondary education, the government is not financing their higher education which was the basis for their higher income and is unfairly benefiting from their higher taxes. This unjust relationship could be fixed if governments pay the dollar cost of the learning stage and learners pay through their time, efforts, opportunity cost, and income taxes after graduation. The hard work of learners while learning and throughout their working life is the learning citizens' share of the cost of this partnership. It would be an unfair partnership if the learner citizen has to finance the learning stage, spend the time and put the efforts alone, and at the same time pay a share of the profit (income taxes) to a non-existing partner (the government).

Improving the current funding system can be done through full public funding of higher education. Results from this study show that education is the key factor in citizens' higher income, higher lifetime income taxes, and the key factor in their ability to reach the breakeven point and maintain their employment status. In fact, it does make economic sense to encourage citizens to pursue post-secondary education and it does make economic sense to eliminate all financial barriers to higher education.

The proposed government-citizen partnership approach has the potential to balance the financing relationship of governments and learners. In this approach, a fair relationship could be established throughout the lifelong funding relationship in which the flow of funds is going both ways and not only the government way. Helping citizens in the learning stage to maximize their learning potential is, arguably, in the best interest of governments and tax payers. This investment will payoff throughout the length of the working stage of educated citizens. Helping citizens in need of support at the learning stage by enabling them to work and pay taxes could be the 'win win' scenario for all national stakeholders. It is by giving citizens the tools to help themselves and their fellow citizens in the net recipients' category. It is when workers in the working stage support learners in the learning stage in order for them to find support in their retirement stage. It is when learners are seen as the future workers, the future tax payers, and the future providers of funds. It is when a citizen's cycle of life is fully included in the funding formula.

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## Appendices

### Appendix A

Taxes Paid in Every Province for a Citizen with a Degree Starting at \$35,000 / year and a 2%

Annual Increase

<i>Aga</i>	<b>B.C.</b>	<b>Alberta</b>	<b>Sask.</b>	<b>Manitoba</b>	<b>Ontario</b>	<b>Quebec</b>	<i>Annual Income</i>
1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
8	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
13	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
19	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
21	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
22	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
23	\$4,823	\$5,398	\$5,833	\$6,552	\$4,919	\$6,443	<b>\$35,000.00</b>
24	\$4,963	\$5,573	\$6,015	\$6,746	\$5,059	\$6,643	<b>\$35,700.00</b>
25	\$5,107	\$5,752	\$6,200	\$6,944	\$5,203	\$6,846	<b>\$36,414.00</b>
26	\$5,256	\$5,934	\$6,390	\$7,146	\$5,349	\$7,054	<b>\$37,142.28</b>
27	\$5,425	\$6,120	\$6,583	\$7,353	\$5,498	\$7,266	<b>\$37,885.13</b>
28	\$5,597	\$6,309	\$6,780	\$7,563	\$5,649	\$7,482	<b>\$38,642.83</b>
29	\$5,772	\$6,502	\$6,981	\$7,777	\$5,820	\$7,702	<b>\$39,415.68</b>
30	\$5,951	\$6,699	\$7,186	\$7,996	\$6,011	\$7,932	<b>\$40,204.00</b>
31	\$6,134	\$6,900	\$7,395	\$8,219	\$6,205	\$8,193	<b>\$41,008.08</b>
32	\$6,320	\$7,105	\$7,608	\$8,447	\$6,403	\$8,460	<b>\$41,828.24</b>
33	\$6,510	\$7,314	\$7,837	\$8,679	\$6,605	\$8,732	<b>\$42,664.80</b>
34	\$6,760	\$7,584	\$8,133	\$8,972	\$6,868	\$9,057	<b>\$43,518.10</b>
35	\$7,019	\$7,863	\$8,438	\$9,275	\$7,139	\$9,391	<b>\$44,388.46</b>
36	\$7,282	\$8,147	\$8,749	\$9,583	\$7,416	\$9,731	<b>\$45,276.23</b>
37	\$7,551	\$8,437	\$9,065	\$9,898	\$7,698	\$10,079	<b>\$46,181.76</b>
38	\$7,825	\$8,732	\$9,389	\$10,219	\$7,985	\$10,433	<b>\$47,105.39</b>
39	\$8,105	\$9,034	\$9,718	\$10,546	\$8,279	\$10,795	<b>\$48,047.50</b>
40	\$8,391	\$9,341	\$10,055	\$10,880	\$8,578	\$11,163	<b>\$49,008.45</b>

### Appendix A (cont.)

Taxes Paid in Every Province for a Citizen with a Degree Starting at \$35,000 / year and a 2%

Annual Increase

<i>Aga</i>	<b>B.C.</b>	<b>Alberta</b>	<b>Sask.</b>	<b>Manitoba</b>	<b>Ontario</b>	<b>Quebec</b>	<i>Annual Income</i>
41	\$8,682	\$9,655	\$10,398	\$11,221	\$8,883	\$11,539	<b>\$49,988.62</b>
42	\$8,979	\$9,975	\$10,748	\$11,568	\$9,195	\$11,923	<b>\$50,988.39</b>
43	\$9,282	\$10,301	\$11,105	\$11,923	\$9,513	\$12,314	<b>\$52,008.16</b>
44	\$9,591	\$10,634	\$11,469	\$12,284	\$9,837	\$12,713	<b>\$53,048.32</b>
45	\$9,906	\$10,974	\$11,840	\$12,653	\$10,167	\$13,121	<b>\$54,109.29</b>
46	\$10,227	\$11,320	\$12,219	\$13,029	\$10,504	\$13,536	<b>\$55,191.47</b>
47	\$10,555	\$11,673	\$12,605	\$13,412	\$10,848	\$13,959	<b>\$56,295.30</b>
48	\$10,889	\$12,033	\$12,999	\$13,804	\$11,199	\$14,391	<b>\$57,421.21</b>
49	\$11,230	\$12,401	\$13,401	\$14,203	\$11,556	\$14,832	<b>\$58,569.63</b>
50	\$11,578	\$12,776	\$13,811	\$14,610	\$11,921	\$15,282	<b>\$59,741.03</b>
51	\$11,933	\$13,158	\$14,229	\$15,025	\$12,293	\$15,740	<b>\$60,935.85</b>
52	\$12,295	\$13,548	\$14,656	\$15,448	\$12,673	\$16,207	<b>\$62,154.56</b>
53	\$12,664	\$13,946	\$15,091	\$15,880	\$13,060	\$16,684	<b>\$63,397.66</b>
54	\$13,041	\$14,351	\$15,535	\$16,321	\$13,455	\$17,171	<b>\$64,665.61</b>
55	\$13,425	\$14,765	\$15,987	\$16,770	\$13,858	\$17,667	<b>\$65,958.92</b>
56	\$13,817	\$15,188	\$16,449	\$17,242	\$14,269	\$18,174	<b>\$67,278.10</b>
57	\$14,216	\$15,618	\$16,920	\$17,772	\$14,688	\$18,690	<b>\$68,623.66</b>
58	\$14,624	\$16,057	\$17,401	\$18,313	\$15,139	\$19,216	<b>\$69,996.13</b>
59	\$15,040	\$16,505	\$17,891	\$18,864	\$15,601	\$19,754	<b>\$71,396.06</b>
60	\$15,464	\$16,962	\$18,390	\$19,427	\$16,072	\$20,301	<b>\$72,823.98</b>
61	\$15,903	\$17,428	\$18,900	\$20,001	\$16,552	\$20,860	<b>\$74,280.46</b>
62	\$16,386	\$17,904	\$19,420	\$20,586	\$17,042	\$21,430	<b>\$75,766.07</b>
63	\$16,879	\$18,389	\$19,950	\$21,183	\$17,542	\$22,012	<b>\$77,281.39</b>
64	\$17,381	\$18,883	\$20,491	\$21,792	\$18,071	\$22,605	<b>\$78,827.02</b>
65	\$17,893	\$19,388	\$21,043	\$22,413	\$18,628	\$23,218	<b>\$80,403.56</b>
66	\$18,416	\$19,902	\$21,606	\$23,047	\$19,239	\$23,899	<b>\$82,011.63</b>
67	\$18,949	\$20,427	\$22,180	\$23,693	\$19,886	\$24,594	<b>\$83,651.86</b>
68	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
69	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
70	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
71	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
72	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
73	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
74	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
75	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
76	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
77	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
78	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
79	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
80	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

**Total**    \$474,036.00    \$522,905.00    \$565,089.00    \$605,279.00    \$488,375.00    \$625,234.00    **\$2,516,244.86**

**Note.** Tax calculations are based on average tax rates of 2012 using Ernst & Young personal tax calculator.

### Appendix A (cont.)

Taxes Paid in Every Province for a Citizen with a Degree Starting at \$35,000 / year and a 2%

Annual Increase

<i>Aga</i>	<b>N.B.</b>	<b>N.S.</b>	<b>P.E.I.</b>	<b>Nfld.</b>	<b>N.W.T.</b>	<b>Yukon</b>	<b>Nunavut</b>	<i>Annual Income</i>
1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
8	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
13	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
19	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
21	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
22	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
23	\$5,974	\$6,291	\$6,422	\$5,714	\$4,908	\$5,329	\$4,538	<b>\$35,000.00</b>
24	\$6,143	\$6,500	\$6,623	\$5,907	\$5,054	\$5,483	\$4,671	<b>\$35,700.00</b>
25	\$6,315	\$6,714	\$6,829	\$6,103	\$5,203	\$5,640	\$4,807	<b>\$36,414.00</b>
26	\$6,490	\$6,932	\$7,039	\$6,303	\$5,356	\$5,801	\$4,945	<b>\$37,142.28</b>
27	\$6,669	\$7,155	\$7,253	\$6,508	\$5,511	\$5,964	\$5,086	<b>\$37,885.13</b>
28	\$6,865	\$7,381	\$7,471	\$6,716	\$5,669	\$6,131	\$5,230	<b>\$38,642.83</b>
29	\$7,075	\$7,613	\$7,693	\$6,928	\$5,851	\$6,302	\$5,377	<b>\$39,415.68</b>
30	\$7,289	\$7,849	\$7,920	\$7,145	\$6,037	\$6,476	\$5,527	<b>\$40,204.00</b>
31	\$7,506	\$8,090	\$8,152	\$7,366	\$6,226	\$6,653	\$5,688	<b>\$41,008.08</b>
32	\$7,729	\$8,336	\$8,388	\$7,592	\$6,420	\$6,834	\$5,869	<b>\$41,828.24</b>
33	\$7,955	\$8,586	\$8,629	\$7,822	\$6,617	\$7,018	\$6,052	<b>\$42,664.80</b>
34	\$8,243	\$8,899	\$8,932	\$8,113	\$6,876	\$7,284	\$6,297	<b>\$43,518.10</b>
35	\$8,540	\$9,220	\$9,243	\$8,413	\$7,142	\$7,560	\$6,549	<b>\$44,388.46</b>
36	\$8,843	\$9,548	\$9,561	\$8,720	\$7,414	\$7,841	\$6,807	<b>\$45,276.23</b>
37	\$9,151	\$9,882	\$9,885	\$9,032	\$7,690	\$8,128	\$7,069	<b>\$46,181.76</b>
38	\$9,467	\$10,224	\$10,216	\$9,351	\$7,973	\$8,420	\$7,337	<b>\$47,105.39</b>
39	\$9,788	\$10,572	\$10,553	\$9,676	\$8,261	\$8,719	\$7,610	<b>\$48,047.50</b>
40	\$10,115	\$10,927	\$10,897	\$10,007	\$8,555	\$9,023	\$7,889	<b>\$49,008.45</b>

### Appendix A (cont.)

Taxes Paid in Every Province for a Citizen with a Degree Starting at \$35,000 / year and a 2%

Annual Increase

<i>Age</i>	<b>N.B.</b>	<b>N.S.</b>	<b>P.E.I.</b>	<b>Nfld.</b>	<b>N.W.T.</b>	<b>Yukon</b>	<b>Nunavut</b>	<i>Annual Income</i>
41	\$10,450	\$11,289	\$11,248	\$10,345	\$8,855	\$9,334	\$8,173	<b>\$49,988.62</b>
42	\$10,791	\$11,659	\$11,606	\$10,690	\$9,161	\$9,651	\$8,463	<b>\$50,988.39</b>
43	\$11,138	\$12,036	\$11,971	\$11,042	\$9,473	\$9,974	\$8,759	<b>\$52,008.16</b>
44	\$11,493	\$12,420	\$12,343	\$11,401	\$9,792	\$10,303	\$9,061	<b>\$53,048.32</b>
45	\$11,855	\$12,812	\$12,723	\$11,767	\$10,116	\$10,639	\$9,368	<b>\$54,109.29</b>
46	\$12,224	\$13,212	\$13,110	\$12,141	\$10,447	\$10,982	\$9,682	<b>\$55,191.47</b>
47	\$12,600	\$13,620	\$13,506	\$12,521	\$10,785	\$11,332	\$10,002	<b>\$56,295.30</b>
48	\$12,984	\$14,036	\$13,909	\$12,910	\$11,130	\$11,689	\$10,329	<b>\$57,421.21</b>
49	\$13,376	\$14,460	\$14,320	\$13,306	\$11,481	\$12,052	\$10,662	<b>\$58,569.63</b>
50	\$13,775	\$14,903	\$14,739	\$13,710	\$11,840	\$12,424	\$11,002	<b>\$59,741.03</b>
51	\$14,183	\$15,364	\$15,167	\$14,122	\$12,205	\$12,802	\$11,348	<b>\$60,935.85</b>
52	\$14,598	\$15,836	\$15,603	\$14,543	\$12,578	\$13,188	\$11,702	<b>\$62,154.56</b>
53	\$15,022	\$16,316	\$16,048	\$14,972	\$12,959	\$13,582	\$12,062	<b>\$63,397.66</b>
54	\$15,454	\$16,807	\$16,522	\$15,409	\$13,347	\$13,983	\$12,430	<b>\$64,665.61</b>
55	\$15,895	\$17,307	\$17,023	\$15,857	\$13,742	\$14,393	\$12,805	<b>\$65,958.92</b>
56	\$16,345	\$17,817	\$17,534	\$16,322	\$14,146	\$14,811	\$13,187	<b>\$67,278.10</b>
57	\$16,804	\$18,337	\$18,054	\$16,797	\$14,558	\$15,237	\$13,578	<b>\$68,623.66</b>
58	\$17,272	\$18,868	\$18,585	\$17,282	\$14,978	\$15,672	\$13,976	<b>\$69,996.13</b>
59	\$17,750	\$19,410	\$19,127	\$17,776	\$15,406	\$16,116	\$14,382	<b>\$71,396.06</b>
60	\$18,236	\$19,961	\$19,679	\$18,280	\$15,843	\$16,568	\$14,796	<b>\$72,823.98</b>
61	\$18,733	\$20,525	\$20,243	\$18,794	\$16,289	\$17,029	\$15,218	<b>\$74,280.46</b>
62	\$19,240	\$21,099	\$20,818	\$19,319	\$16,743	\$17,500	\$15,649	<b>\$75,766.07</b>
63	\$19,759	\$21,685	\$21,405	\$19,854	\$17,207	\$17,980	\$16,088	<b>\$77,281.39</b>
64	\$20,291	\$22,283	\$22,003	\$20,399	\$17,733	\$18,470	\$16,537	<b>\$78,827.02</b>
65	\$20,833	\$22,893	\$22,613	\$20,956	\$18,272	\$18,969	\$16,994	<b>\$80,403.56</b>
66	\$21,386	\$23,514	\$23,235	\$21,523	\$18,822	\$19,481	\$17,471	<b>\$82,011.63</b>
67	\$21,950	\$24,149	\$23,870	\$22,102	\$19,383	\$20,009	\$17,980	<b>\$83,651.86</b>
68	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
69	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
70	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
71	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
72	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
73	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
74	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
75	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
76	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
77	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
78	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
79	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
80	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>Total</b>	\$564,594.00	\$613,337.00	\$608,710.00	\$561,556.00	\$484,054.00	\$508,776.00	\$449,052.00	<b>\$2,516,244.86</b>

**Note.** Tax calculations are based on average tax rates of 2012 using Ernst & Young personal tax calculator.

## Appendix B

Taxes Paid in Every Province for a Citizen with a H. Sch. Starting at \$10.25 / hour and a 2%

Annual Increase

<i>Aga</i>	<b>B.C.</b>	<b>Alberta</b>	<b>Sask.</b>	<b>Manitoba</b>	<b>Ontario</b>	<b>Quebec</b>	<i>Annual Income</i>
1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
8	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
13	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
19	\$1,785	\$1,978	\$2,276	\$2,945	\$2,176	\$2,541	<b>\$21,320.00</b>
20	\$1,884	\$2,085	\$2,387	\$3,054	\$2,262	\$2,662	<b>\$21,746.40</b>
21	\$1,985	\$2,194	\$2,500	\$3,167	\$2,349	\$2,786	<b>\$22,181.33</b>
22	\$2,088	\$2,304	\$2,615	\$3,281	\$2,438	\$2,913	<b>\$22,624.95</b>
23	\$2,193	\$2,418	\$2,733	\$3,398	\$2,528	\$3,042	<b>\$23,077.45</b>
24	\$2,301	\$2,533	\$2,853	\$3,517	\$2,621	\$3,174	<b>\$23,539.00</b>
25	\$2,410	\$2,651	\$2,975	\$3,638	\$2,715	\$3,308	<b>\$24,009.78</b>
26	\$2,522	\$2,771	\$3,100	\$3,762	\$2,812	\$3,445	<b>\$24,489.98</b>
27	\$2,636	\$2,893	\$3,227	\$3,889	\$2,910	\$3,585	<b>\$24,979.78</b>
28	\$2,752	\$3,018	\$3,357	\$4,018	\$3,010	\$3,727	<b>\$25,479.37</b>
29	\$2,871	\$3,145	\$3,490	\$4,149	\$3,112	\$3,872	<b>\$25,988.96</b>
30	\$2,991	\$3,275	\$3,625	\$4,283	\$3,216	\$4,021	<b>\$26,508.74</b>
31	\$3,115	\$3,408	\$3,763	\$4,420	\$3,323	\$4,172	<b>\$27,038.92</b>
32	\$3,241	\$3,543	\$3,903	\$4,559	\$3,431	\$4,326	<b>\$27,579.69</b>
33	\$3,369	\$3,681	\$4,047	\$4,702	\$3,542	\$4,484	<b>\$28,131.29</b>
34	\$3,500	\$3,822	\$4,193	\$4,847	\$3,655	\$4,644	<b>\$28,693.91</b>
35	\$3,633	\$3,965	\$4,342	\$4,995	\$3,770	\$4,808	<b>\$29,267.79</b>
36	\$3,770	\$4,112	\$4,495	\$5,146	\$3,887	\$4,975	<b>\$29,853.15</b>
37	\$3,908	\$4,261	\$4,650	\$5,300	\$4,007	\$5,145	<b>\$30,450.21</b>
38	\$4,032	\$4,413	\$4,808	\$5,458	\$4,129	\$5,319	<b>\$31,059.21</b>
39	\$4,157	\$4,568	\$4,970	\$5,631	\$4,253	\$5,496	<b>\$31,680.40</b>
40	\$4,284	\$4,727	\$5,134	\$5,807	\$4,381	\$5,677	<b>\$32,314.01</b>

### Appendix B (cont.)

Taxes Paid in Every Province for a Citizen with a H. Sch. Starting at \$10.25 / hour and a 2%

Annual Increase

<i>Aga</i>	<b>B.C.</b>	<b>Alberta</b>	<b>Sask.</b>	<b>Manitoba</b>	<b>Ontario</b>	<b>Quebec</b>	<i>Annual Income</i>
41	\$4,414	\$4,888	\$5,302	\$5,986	\$4,510	\$5,861	<b>\$32,960.29</b>
42	\$4,546	\$5,053	\$5,474	\$6,169	\$4,642	\$6,049	<b>\$33,619.49</b>
43	\$4,681	\$5,221	\$5,648	\$6,355	\$4,777	\$6,241	<b>\$34,291.88</b>
44	\$4,818	\$5,393	\$5,827	\$6,546	\$4,914	\$6,437	<b>\$34,977.72</b>
45	\$4,959	\$5,568	\$6,009	\$6,740	\$5,055	\$6,636	<b>\$35,677.27</b>
46	\$5,102	\$5,746	\$6,194	\$6,938	\$5,198	\$6,840	<b>\$36,390.82</b>
47	\$5,251	\$5,928	\$6,384	\$7,140	\$5,344	\$7,047	<b>\$37,118.64</b>
48	\$5,419	\$6,114	\$6,577	\$7,346	\$5,493	\$7,259	<b>\$37,861.01</b>
49	\$5,591	\$6,303	\$6,774	\$7,556	\$5,644	\$7,475	<b>\$38,618.23</b>
50	\$5,766	\$6,496	\$6,974	\$7,770	\$5,814	\$7,695	<b>\$39,390.59</b>
51	\$5,945	\$6,693	\$7,179	\$7,989	\$6,005	\$7,923	<b>\$40,178.41</b>
52	\$6,128	\$6,894	\$7,388	\$8,212	\$6,199	\$8,184	<b>\$40,981.97</b>
53	\$6,314	\$7,099	\$7,601	\$8,439	\$6,397	\$8,451	<b>\$41,801.61</b>
54	\$6,503	\$7,308	\$7,830	\$8,671	\$6,599	\$8,723	<b>\$42,637.65</b>
55	\$6,752	\$7,575	\$8,123	\$8,963	\$6,859	\$9,046	<b>\$43,490.40</b>
56	\$7,010	\$7,854	\$8,428	\$9,265	\$7,130	\$9,380	<b>\$44,360.21</b>
57	\$7,274	\$8,138	\$8,738	\$9,573	\$7,407	\$9,720	<b>\$45,247.41</b>
58	\$7,542	\$8,427	\$9,055	\$9,888	\$7,688	\$10,067	<b>\$46,152.36</b>
59	\$7,817	\$8,723	\$9,378	\$10,208	\$7,976	\$10,422	<b>\$47,075.41</b>
60	\$8,096	\$9,024	\$9,708	\$10,535	\$8,269	\$10,783	<b>\$48,016.91</b>
61	\$8,381	\$9,331	\$10,044	\$10,869	\$8,568	\$11,151	<b>\$48,977.25</b>
62	\$8,672	\$9,645	\$10,387	\$11,210	\$8,873	\$11,527	<b>\$49,956.80</b>
63	\$8,969	\$9,964	\$10,736	\$11,557	\$9,185	\$11,910	<b>\$50,955.93</b>
64	\$9,272	\$10,291	\$11,093	\$11,911	\$9,502	\$12,302	<b>\$51,975.05</b>
65	\$9,580	\$10,623	\$11,457	\$12,272	\$9,826	\$12,700	<b>\$53,014.55</b>
66	\$9,895	\$10,962	\$11,828	\$12,641	\$10,156	\$13,107	<b>\$54,074.84</b>
67	\$10,217	\$11,309	\$12,207	\$13,017	\$10,493	\$13,522	<b>\$55,156.34</b>
68	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
69	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
70	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
71	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
72	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
73	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
74	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
75	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
76	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
77	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
78	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
79	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
80	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>Total</b>	\$250,341.00	\$278,335.00	\$301,786.00	\$337,732.00	\$259,050.00	\$334,580.00	<b>\$1,746,973.37</b>

**Note.** Tax calculations are based on average tax rates of 2012 using Ernst & Young personal tax calculator.

### Appendix B (cont.)

Taxes Paid in Every Province for a Citizen with a H. Sch. Starting at \$10.25 / hour and a 2%

Annual Increase

<i>Age</i>	<b>N.B.</b>	<b>N.S.</b>	<b>P.E.I.</b>	<b>Nfld.</b>	<b>N.W.T.</b>	<b>Yukon</b>	<b>Nunavut</b>	<i>Annual Income</i>
1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
8	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
13	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
19	\$2,296	\$2,703	\$2,908	\$2,508	\$2,049	\$2,314	\$1,939	\$21,320.00
20	\$2,411	\$2,804	\$3,014	\$2,604	\$2,138	\$2,407	\$2,020	\$21,746.40
21	\$2,529	\$2,908	\$3,122	\$2,703	\$2,229	\$2,503	\$2,102	\$22,181.33
22	\$2,649	\$3,013	\$3,232	\$2,804	\$2,321	\$2,601	\$2,187	\$22,624.95
23	\$2,772	\$3,121	\$3,344	\$2,907	\$2,416	\$2,701	\$2,273	\$23,077.45
24	\$2,897	\$3,231	\$3,459	\$3,012	\$2,513	\$2,803	\$2,360	\$23,539.00
25	\$3,024	\$3,343	\$3,575	\$3,118	\$2,611	\$2,906	\$2,450	\$24,009.78
26	\$3,155	\$3,457	\$3,694	\$3,227	\$2,711	\$3,012	\$2,541	\$24,489.98
27	\$3,287	\$3,573	\$3,816	\$3,338	\$2,814	\$3,120	\$2,634	\$24,979.78
28	\$3,423	\$3,692	\$3,940	\$3,452	\$2,918	\$3,230	\$2,729	\$25,479.37
29	\$3,561	\$3,814	\$4,066	\$3,567	\$3,024	\$3,342	\$2,826	\$25,988.96
30	\$3,702	\$3,937	\$4,195	\$3,685	\$3,133	\$3,457	\$2,925	\$26,508.74
31	\$3,845	\$4,063	\$4,326	\$3,806	\$3,244	\$3,574	\$3,025	\$27,038.92
32	\$3,992	\$4,192	\$4,461	\$3,929	\$3,357	\$3,693	\$3,128	\$27,579.69
33	\$4,141	\$4,323	\$4,598	\$4,054	\$3,472	\$3,815	\$3,233	\$28,131.29
34	\$4,294	\$4,457	\$4,737	\$4,181	\$3,590	\$3,939	\$3,340	\$28,693.91
35	\$4,449	\$4,594	\$4,879	\$4,312	\$3,710	\$4,065	\$3,449	\$29,267.79
36	\$4,608	\$4,749	\$5,025	\$4,445	\$3,832	\$4,194	\$3,560	\$29,853.15
37	\$4,770	\$4,928	\$5,173	\$4,580	\$3,957	\$4,326	\$3,674	\$30,450.21
38	\$4,935	\$5,110	\$5,324	\$4,719	\$4,084	\$4,460	\$3,789	\$31,059.21
39	\$5,103	\$5,296	\$5,478	\$4,860	\$4,214	\$4,597	\$3,907	\$31,680.40
40	\$5,275	\$5,486	\$5,648	\$5,003	\$4,347	\$4,737	\$4,028	\$32,314.01

### Appendix B (cont.)

Taxes Paid in Every Province for a Citizen with a H. Sch. Starting at \$10.25 / hour and a 2%

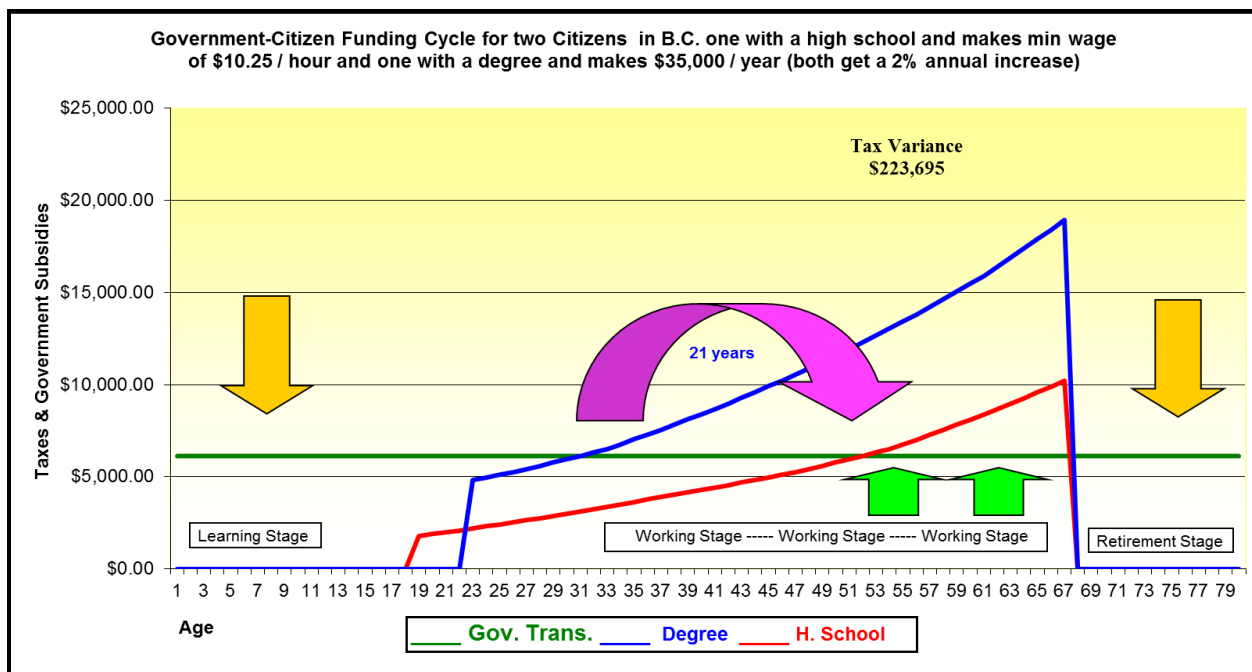
#### Annual Increase

<i>Age</i>	<b>N.B.</b>	<b>N.S.</b>	<b>P.E.I.</b>	<b>Nfld.</b>	<b>N.W.T.</b>	<b>Yukon</b>	<b>Nunavut</b>	<i>Annual Income</i>
41	\$5,450	\$5,680	\$5,834	\$5,153	\$4,482	\$4,879	\$4,150	<b>\$32,960.29</b>
42	\$5,629	\$5,877	\$6,024	\$5,334	\$4,619	\$5,024	\$4,276	<b>\$33,619.49</b>
43	\$5,803	\$6,078	\$6,217	\$5,519	\$4,760	\$5,172	\$4,403	<b>\$34,291.88</b>
44	\$5,968	\$6,284	\$6,415	\$5,708	\$4,903	\$5,324	\$4,534	<b>\$34,977.72</b>
45	\$6,137	\$6,493	\$6,617	\$5,900	\$5,049	\$5,478	\$4,667	<b>\$35,677.27</b>
46	\$6,309	\$6,707	\$6,822	\$6,096	\$5,198	\$5,635	\$4,802	<b>\$36,390.82</b>
47	\$6,484	\$6,925	\$7,032	\$6,297	\$5,351	\$5,795	\$4,940	<b>\$37,118.64</b>
48	\$6,664	\$7,148	\$7,246	\$6,501	\$5,506	\$5,959	\$5,082	<b>\$37,861.01</b>
49	\$6,859	\$7,374	\$7,464	\$6,709	\$5,664	\$6,126	\$5,225	<b>\$38,618.23</b>
50	\$7,068	\$7,605	\$7,686	\$6,921	\$5,845	\$6,296	\$5,372	<b>\$39,390.59</b>
51	\$7,281	\$7,841	\$7,913	\$7,138	\$6,031	\$6,470	\$5,522	<b>\$40,178.41</b>
52	\$7,499	\$8,082	\$8,144	\$7,359	\$6,220	\$6,647	\$5,682	<b>\$40,981.97</b>
53	\$7,721	\$8,328	\$8,380	\$7,584	\$6,414	\$6,828	\$5,863	<b>\$41,801.61</b>
54	\$7,948	\$8,578	\$8,621	\$7,814	\$6,611	\$7,012	\$6,047	<b>\$42,637.65</b>
55	\$8,234	\$8,888	\$8,922	\$8,104	\$6,867	\$7,275	\$6,289	<b>\$43,490.40</b>
56	\$8,530	\$9,210	\$9,233	\$8,404	\$7,133	\$7,551	\$6,541	<b>\$44,360.21</b>
57	\$8,833	\$9,537	\$9,551	\$8,710	\$7,405	\$7,832	\$6,798	<b>\$45,247.41</b>
58	\$9,142	\$9,872	\$9,875	\$9,022	\$7,682	\$8,119	\$7,061	<b>\$46,152.36</b>
59	\$9,456	\$10,213	\$10,205	\$9,341	\$7,964	\$8,411	\$7,329	<b>\$47,075.41</b>
60	\$9,777	\$10,561	\$10,542	\$9,665	\$8,252	\$8,709	\$7,601	<b>\$48,016.91</b>
61	\$10,105	\$10,916	\$10,886	\$9,997	\$8,546	\$9,013	\$7,880	<b>\$48,977.25</b>
62	\$10,439	\$11,277	\$11,236	\$10,334	\$8,846	\$9,324	\$8,164	<b>\$49,956.80</b>
63	\$10,779	\$11,646	\$11,594	\$10,679	\$9,151	\$9,640	\$8,454	<b>\$50,955.93</b>
64	\$11,127	\$12,023	\$11,959	\$11,031	\$9,463	\$9,963	\$8,750	<b>\$51,975.05</b>
65	\$11,481	\$12,407	\$12,331	\$11,389	\$9,781	\$10,292	\$9,051	<b>\$53,014.55</b>
66	\$11,843	\$12,799	\$12,711	\$11,755	\$10,106	\$10,628	\$9,358	<b>\$54,074.84</b>
67	\$12,212	\$13,199	\$13,098	\$12,128	\$10,437	\$10,971	\$9,672	<b>\$55,156.34</b>
68	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
69	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
70	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
71	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
72	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
73	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
74	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
75	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
76	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
77	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
78	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
79	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
80	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>Total</b>	\$305,896.00	\$328,342.00	\$334,572.00	\$301,406.00	\$256,970.00	\$276,169.00	\$237,632.00	<b>\$1,746,973.37</b>

**Note.** Tax calculations are based on average tax rates of 2012 using Ernst & Young personal tax calculator.

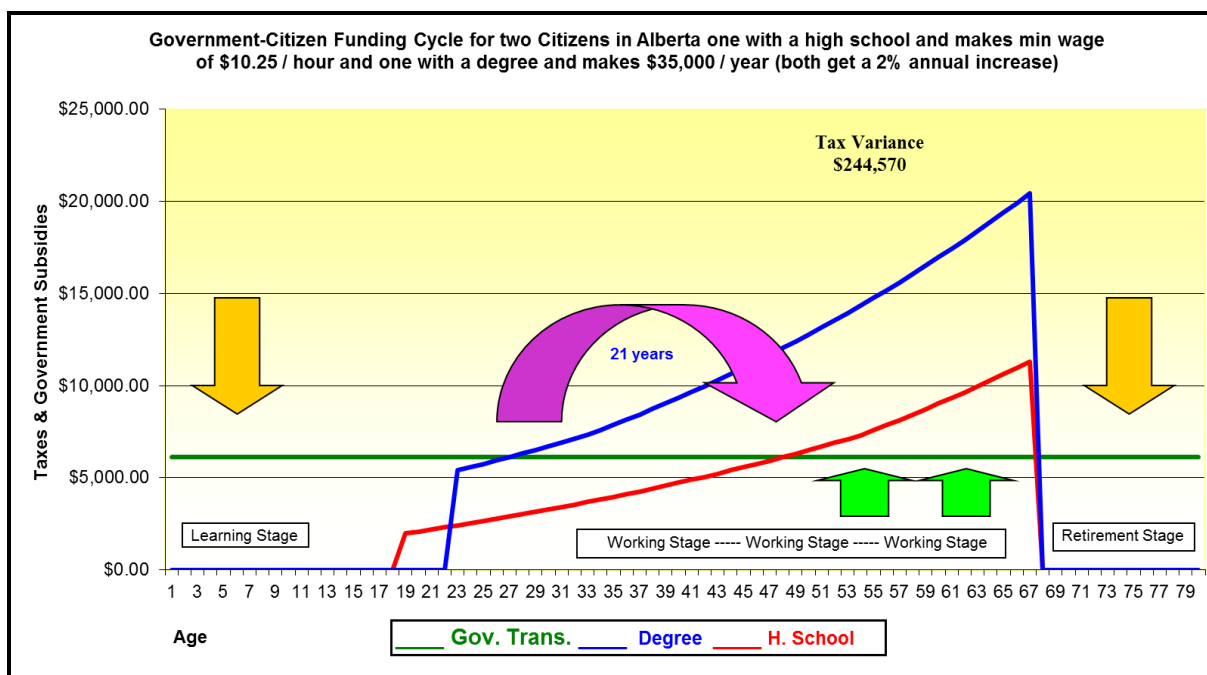
### Appendix C

**British Columbia.** Figure 16 (below) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical B.C. citizen with a high school diploma to reach the breakeven point when compared with a B.C. citizen with a university degree. This also means that a high school level citizen in B.C. is expected to stay until he/she is 52 in the net recipients category, and only 15 years (from 52 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, hypothetical degree holder B.C. residents spend 36 years of their working life in the net contributors category. Analysis also shows that a degree holder in B.C. will contribute, on average, \$223,695 more in income taxes throughout the working life of the citizen when compared with a B.C. citizen who has high school level education.



**Figure 16:** Government-citizen funding cycle for two hypothetical citizens in B.C., one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

**Alberta.** Figure 17 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Alberta starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.

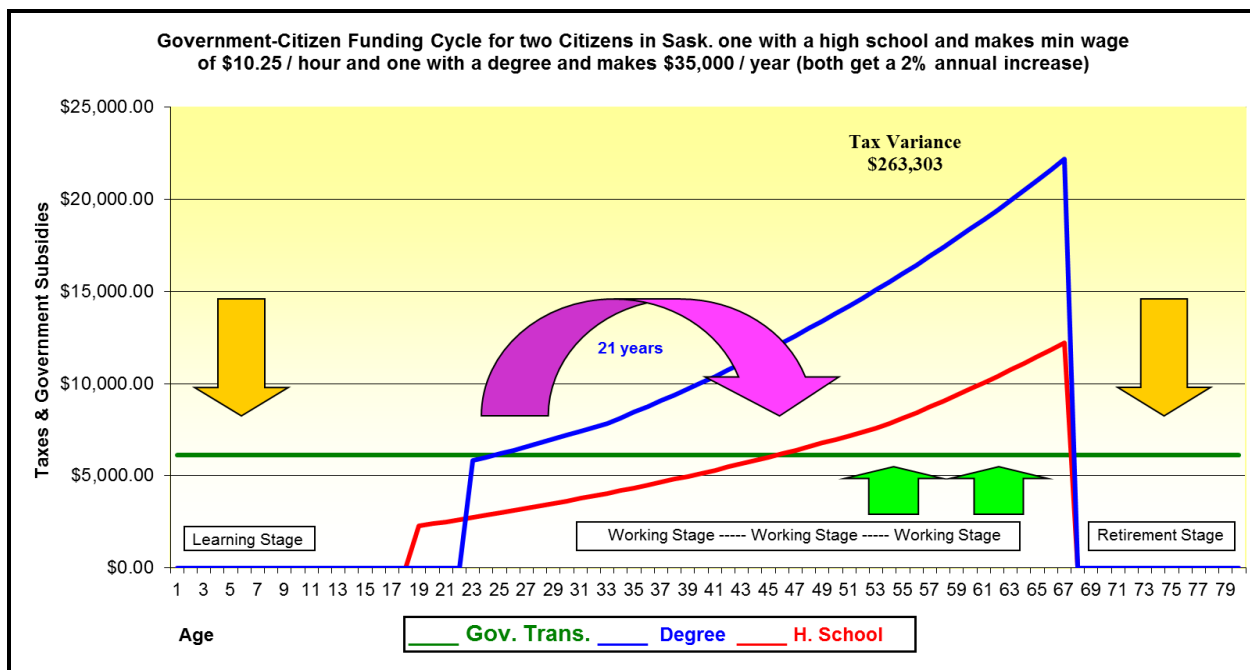


**Figure 17:** Government-citizen funding cycle for two hypothetical citizens in Alberta, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 17 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Alberta citizen with a high school diploma to reach the breakeven point when compared with an Alberta

citizen with a university degree. This also means that a high school level citizen in Alberta is expected to stay until he/she is 48 in the net recipients category, and only 19 years (from 48 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder Alberta resident spends 40 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Alberta will contribute, on average, \$244,570 more in income taxes throughout the working life of the citizen when compared with an Alberta citizen who has high school level education. The differences in the amount of taxes paid and the breakeven in years between B.C. and Alberta are attributed to the differences in the tax rates in the two provinces. Eventhough the federal tax rates are the same for all provinces, each province and territory has its own tax rates (Appendix B & C).

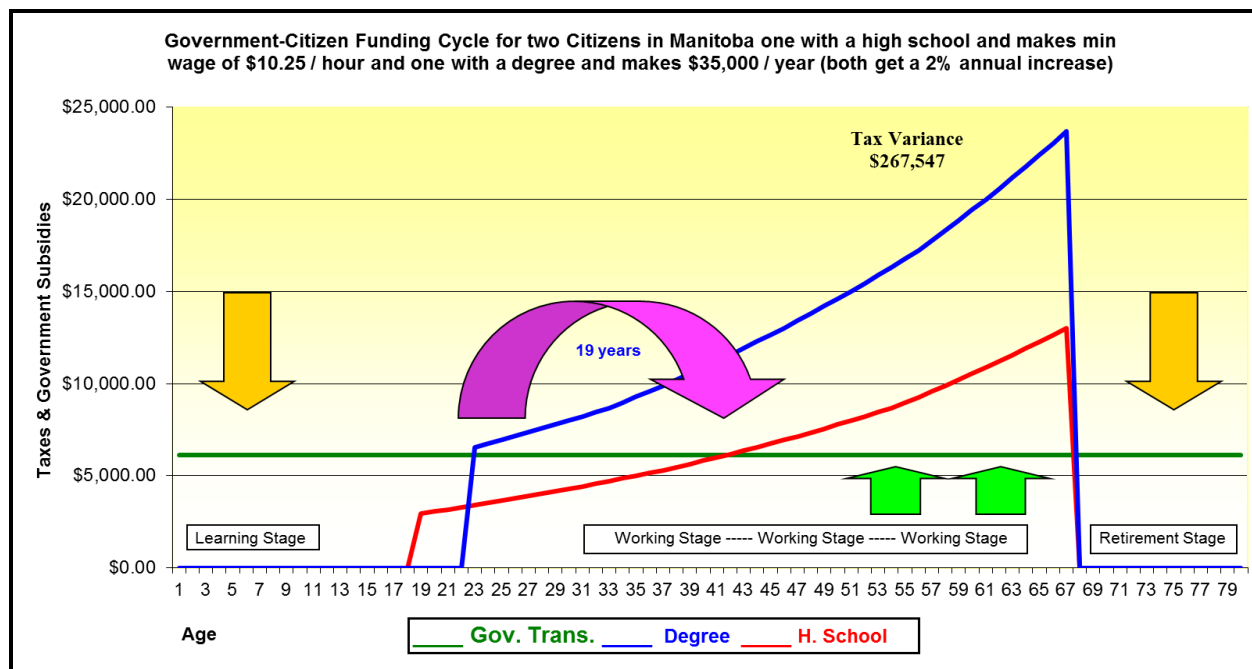
**Saskatchewan.** Figure 18 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Saskatchewan starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.



**Figure 18:** Government-citizen funding cycle for two hypothetical citizens in Saskatchewan, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 18 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Saskatchewan citizen with a high school diploma to reach the breakeven point when compared with a Saskatchewan citizen with a university degree. This also means that a high school level citizen in Saskatchewan is expected to stay until he/she is 46 in the net recipients category, and only 21 years (from 46 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder Saskatchewan resident spends 42 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Saskatchewan will contribute, on average, \$263,303 more in income taxes throughout the working life of the citizen when compared with a Saskatchewan citizen who has high school level education.

**Manitoba.** Figure 19 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Manitoba starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.

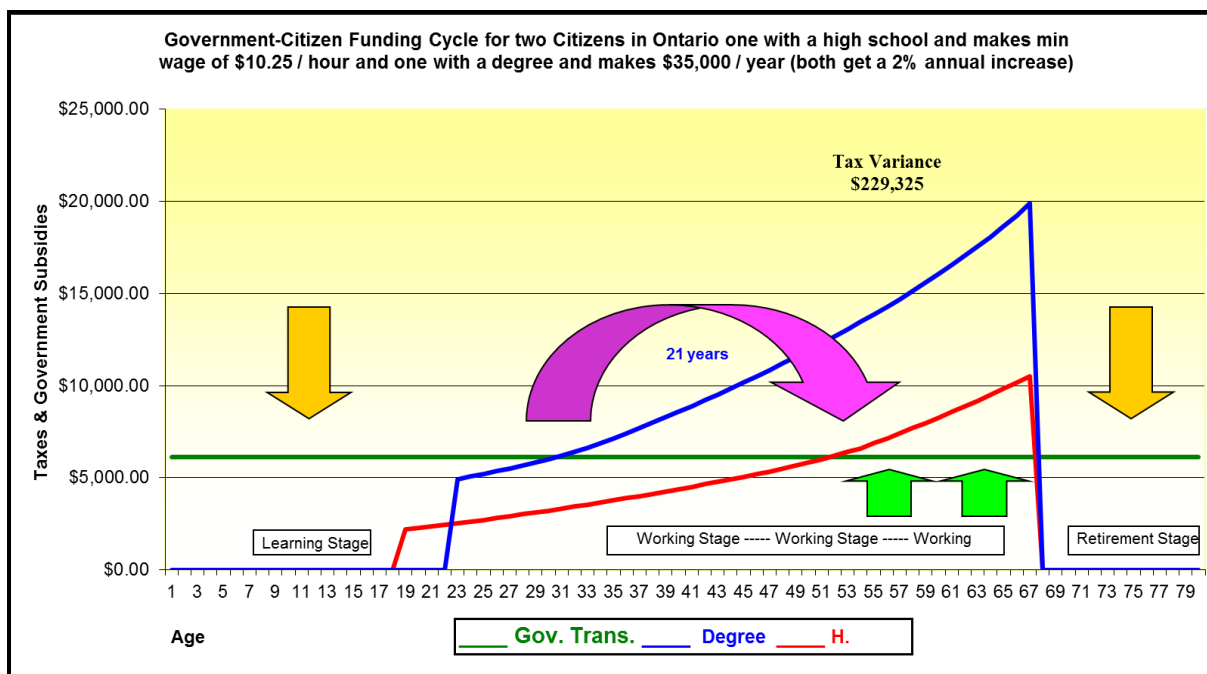


**Figure 19:** Government-citizen funding cycle for two hypothetical citizens in Manitoba, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 19 (above) shows that there is a breakeven gap of 19 years between the two hypothetical citizens. This means that it will take *19 more years* for the hypothetical Manitoba citizen with a high school diploma to reach the breakeven point when compared with a Manitoba citizen with a university degree. This also means that a high school level citizen in Manitoba is expected to stay until he/she is 42 in the net recipients category, and only 25 years (from 42 to 67) of the high school citizen's working life would be spent in the net contributors category. On

the other hand, a hypothetical degree holder Manitoba resident spends 44 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Manitoba will contribute, on average, \$267,547 more in income taxes throughout the working life of the citizen when compared with a Manitoba citizen who has high school level education.

**Ontario.** Figure 20 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Ontario starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.

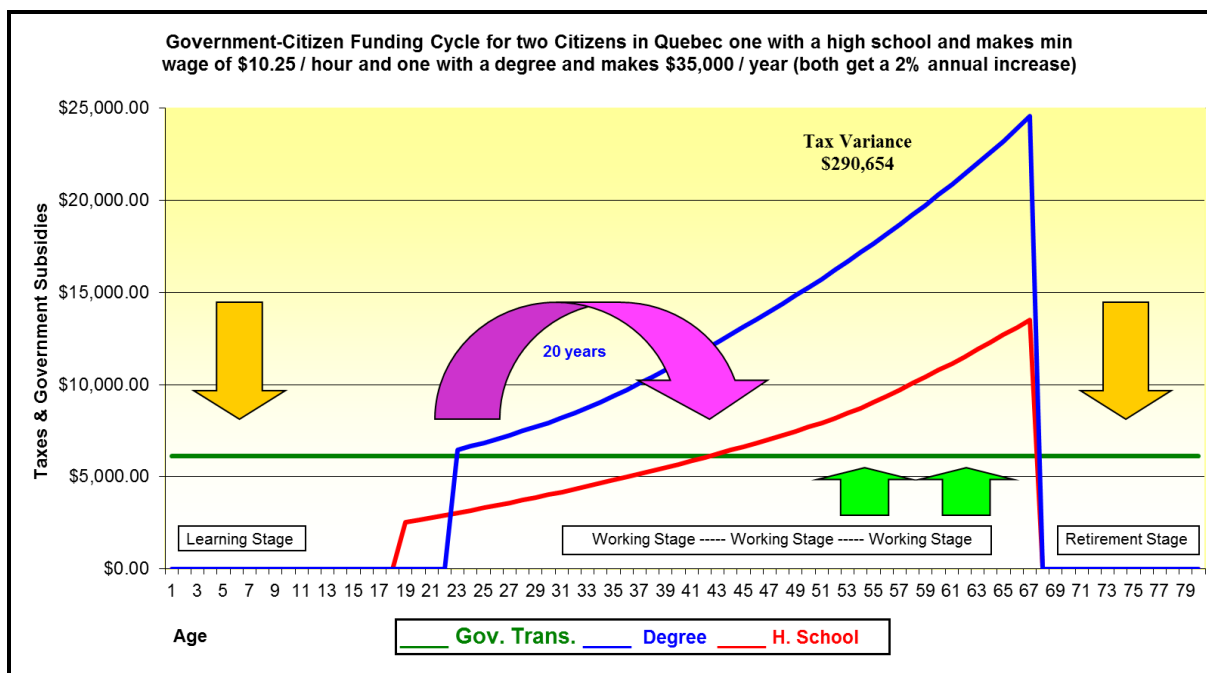


**Figure 20:** Government-citizen funding cycle for two hypothetical citizens in Ontario, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 20 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Ontario

citizen with a high school diploma to reach the breakeven point when compared with an Ontario citizen with a university degree. This also means that a high school level citizen in Ontario is expected to stay until he/she is 52 in the net recipients category, and only 15 years (from 52 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder Ontario resident spends 36 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Ontario will contribute, on average, \$229,325 more in income taxes throughout the working life of the citizen when compared with an Ontario citizen who has high school level education.

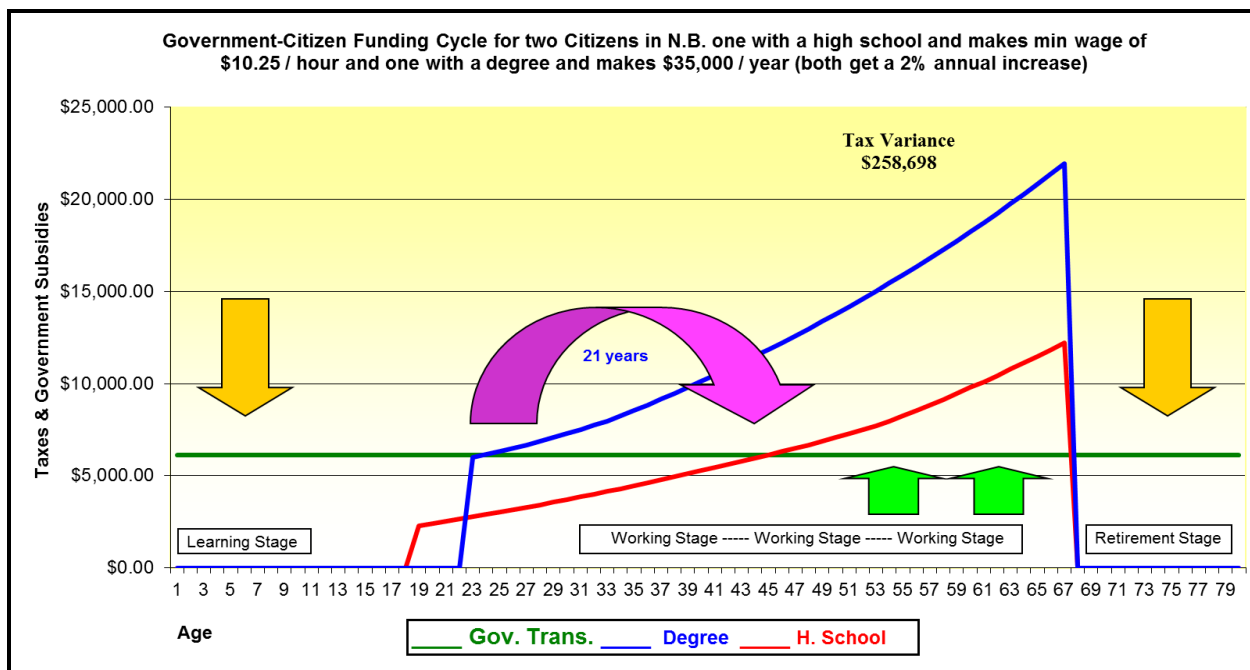
**Quebec.** Figure 21 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Quebec starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.



**Figure 21:** Government-citizen funding cycle for two hypothetical citizens in Quebec, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 21 (above) shows that there is a breakeven gap of 20 years between the two hypothetical citizens. This means that it will take *20 more years* for the hypothetical Quebec citizen with a high school diploma to reach the breakeven point when compared with a Quebec citizen with a university degree. This also means that a high school level citizen in Quebec is expected to stay until he/she is 43 in the net recipients category, and only 24 years (from 43 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder Quebec resident spends 44 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Quebec will contribute, on average, \$290,654 more in income taxes throughout the working life of the citizen when compared with a Quebec citizen who has high school level education.

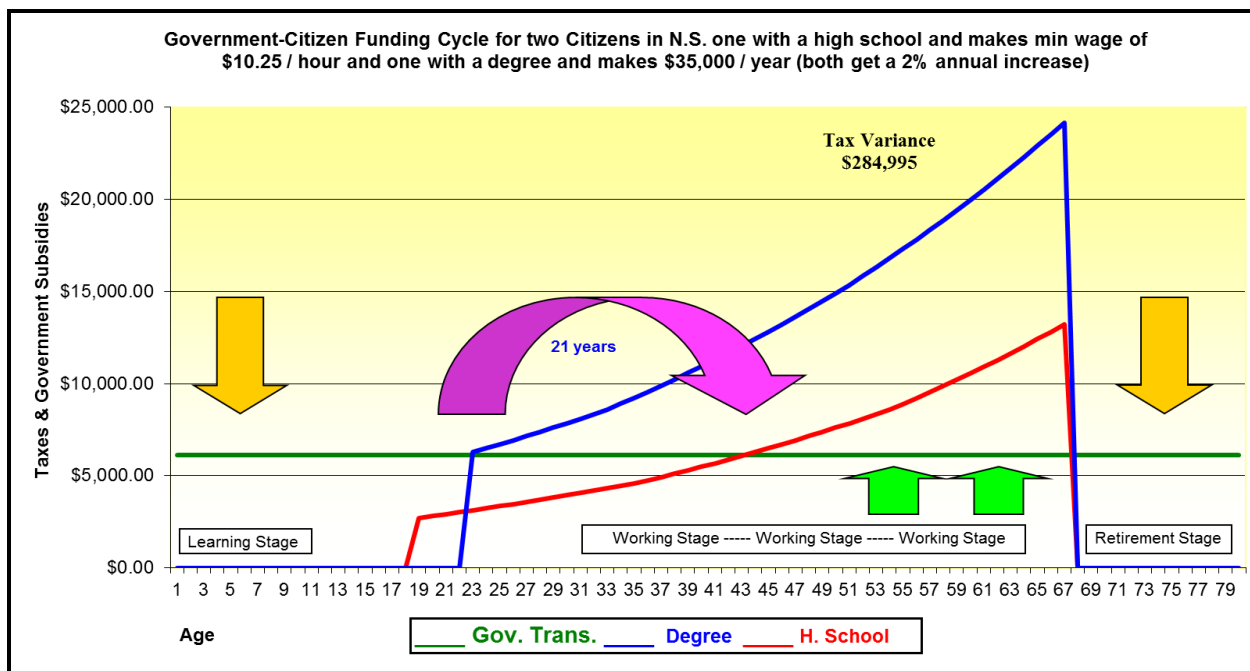
**New Brunswick.** Figure 22 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in New Brunswick starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.



**Figure 22:** Government-citizen funding cycle for two hypothetical citizens in New Brunswick, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 22 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical New Brunswick citizen with a high school diploma to reach the breakeven point when compared with a New Brunswick citizen with a university degree. This also means that a high school level citizen in New Brunswick is expected to stay until he/she is 45 in the net recipients category, and only 22 years (from 45 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder New Brunswick resident spends 43 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in New Brunswick will contribute, on average, \$258,698 more in income taxes throughout the working life of the citizen when compared with a New Brunswick citizen who has high school level education.

**Nova Scotia.** Figure 23 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Nova Scotia starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.

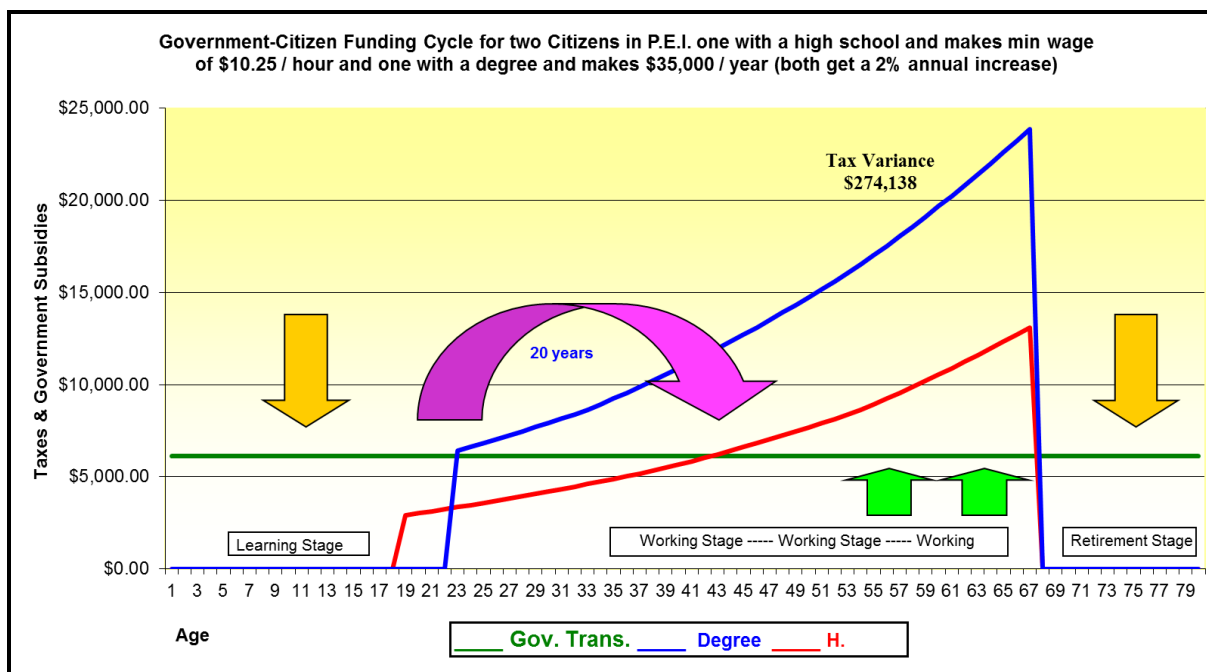


**Figure 23:** Government-citizen funding cycle for two hypothetical citizens in Nova Scotia, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 23 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Nova Scotia citizen with a high school diploma to reach the breakeven point when compared with a Nova Scotia citizen with a university degree. This also means that a high school level citizen in Nova Scotia is expected to stay until he/she is 44 in the net recipients category, and only 23 years (from 44 to 67) of the high school citizen's working life would be spent in the net

contributors category. On the other hand, a hypothetical degree holder Nova Scotia resident spends 44 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Nova Scotia will contribute, on average, \$284,995 more in income taxes throughout the working life of the citizen when compared with a Nova Scotia citizen who has high school level education.

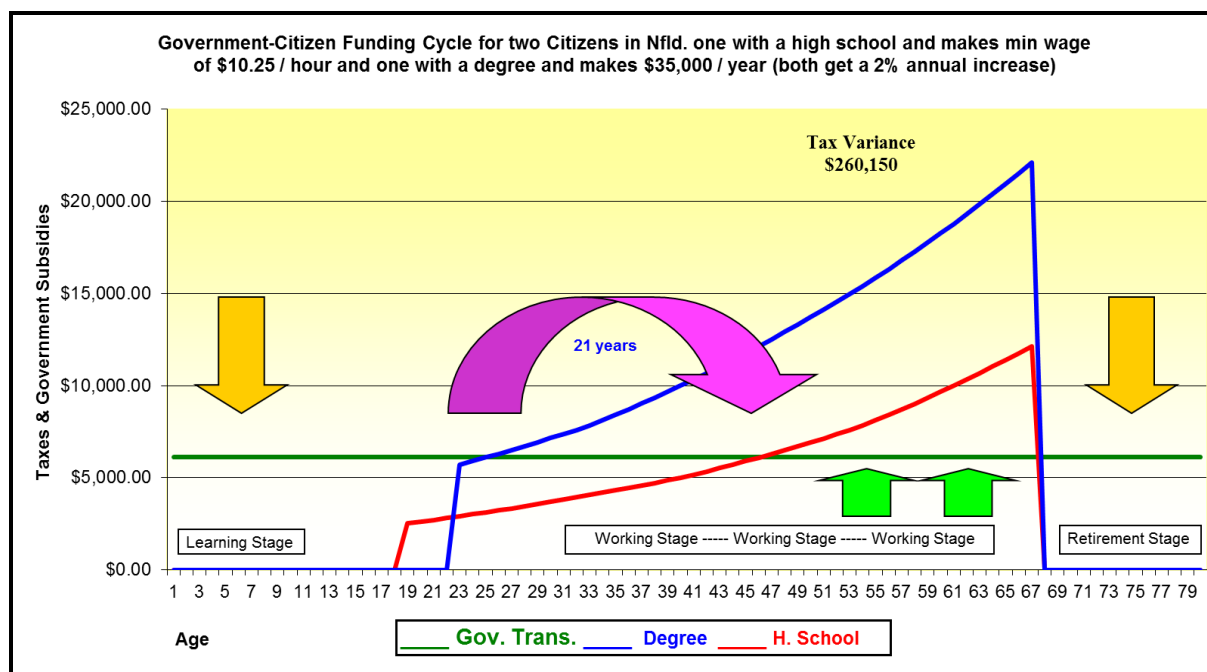
**Prince Edward Island.** Figure 24 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Prince Edward Island starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.



**Figure 24:** Government-citizen funding cycle for two hypothetical citizens in Prince Edward Island, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 24 (above) shows that there is a breakeven gap of 20 years between the two hypothetical citizens. This means that it will take *20 more years* for the hypothetical P.E.I. citizen with a high school diploma to reach the breakeven point when compared with a P.E.I. citizen with a university degree. This also means that a high school level citizen in P.E.I. is expected to stay until he/she is 43 in the net recipients category, and only 24 years (from 43 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder P.E.I. resident spends 44 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in P.E.I. will contribute, on average, \$274,138 more in income taxes throughout the working life of the citizen when compared with a P.E.I. citizen who has high school level education.

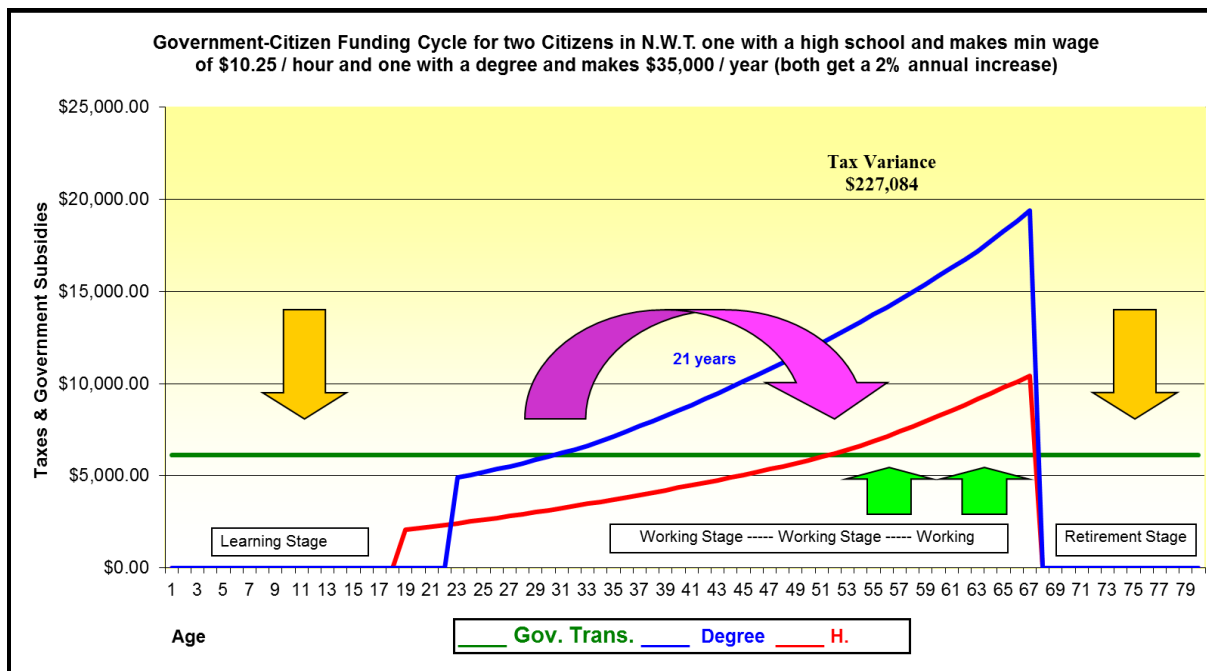
**Newfoundland.** Figure 25 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Newfoundland starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.



**Figure 25:** Government-citizen funding cycle for two hypothetical citizens in Newfoundland, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 25 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Newfoundland citizen with a high school diploma to reach the breakeven point when compared with a Newfoundland citizen with a university degree. This also means that a high school level citizen in Newfoundland is expected to stay until he/she is 46 in the net recipients category, and only 21 years (from 46 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder Newfoundland resident spends 42 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Newfoundland will contribute, on average, \$260,150 more in income taxes throughout the working life of the citizen when compared with a Newfoundland citizen who has high school level education.

**Northwest Territories.** Figure 26 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Northwest Territories starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.

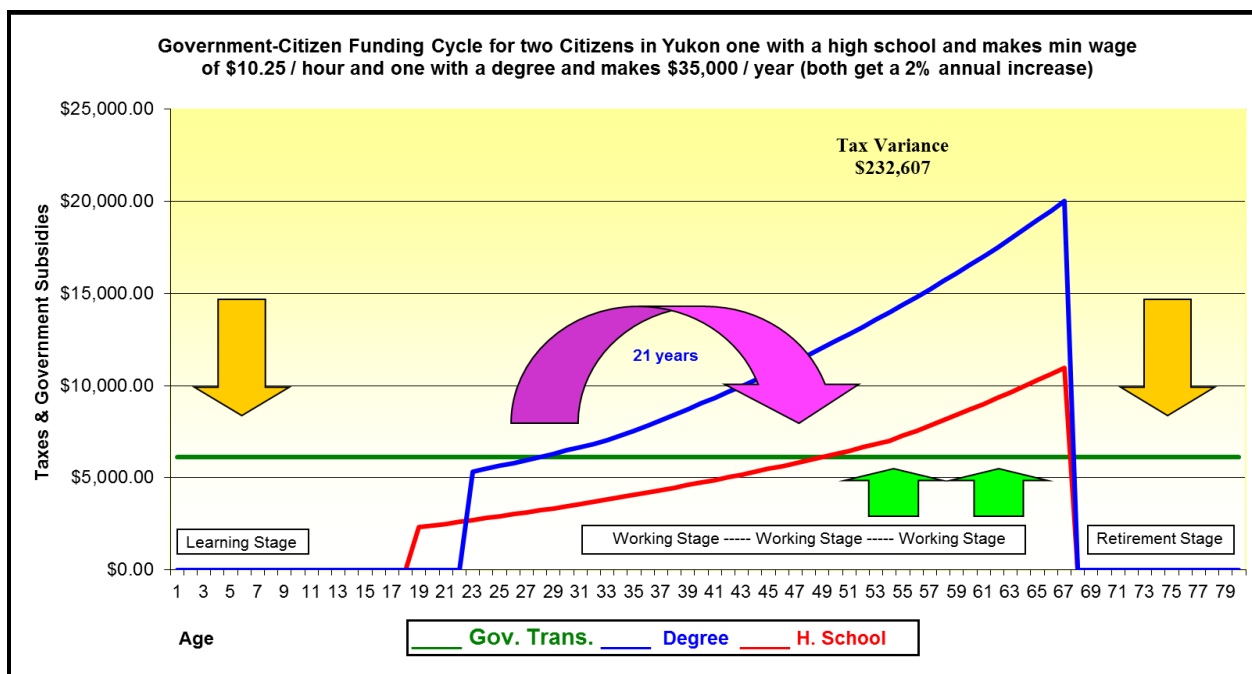


**Figure 26:** Government-citizen funding cycle for two hypothetical citizens in Northwest Territories, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 26 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Northwest Territories citizen with a high school diploma to reach the breakeven point when compared with a Northwest Territories citizen with a university degree. This also means that a high school level citizen in Northwest Territories is expected to stay until he/she is 52 in the net recipients category, and only 15 years (from 52 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder

Northwest Territories resident spends 36 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Northwest Territories will contribute, on average, \$227,084 more in income taxes throughout the working life of the citizen when compared with a Northwest Territories citizen who has high school level education.

**Yukon.** Figure 27 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Yukon starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.

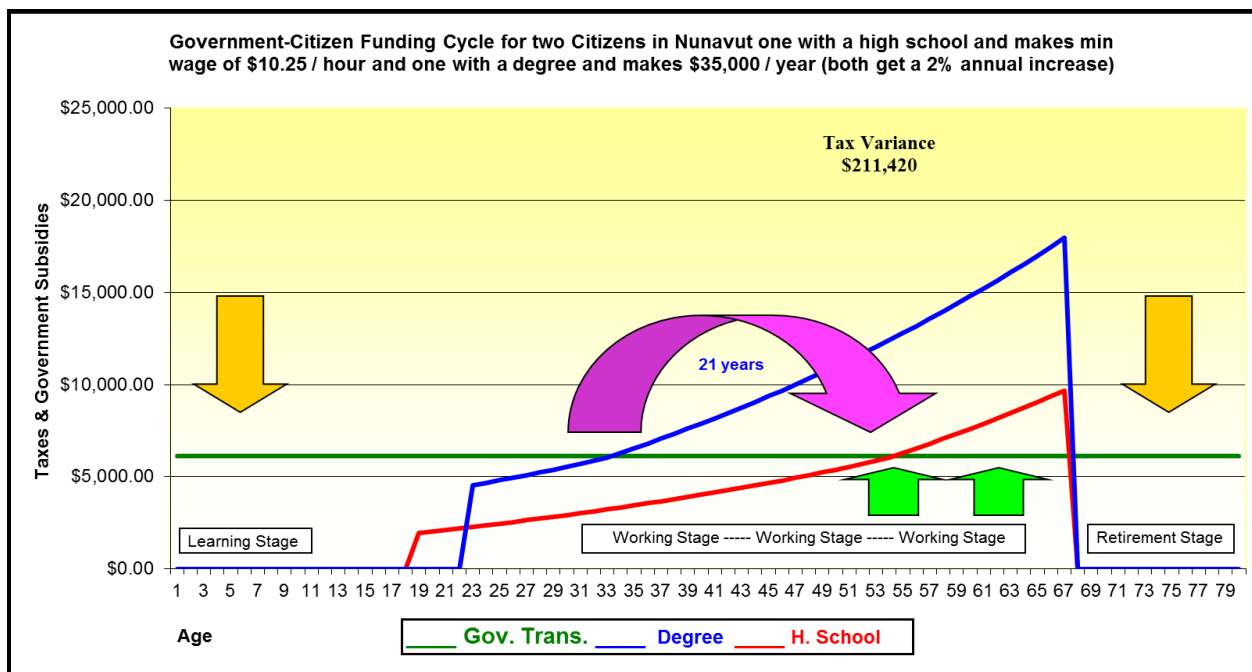


**Figure 27:** Government-citizen funding cycle for two hypothetical citizens in Yukon, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 27 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Yukon

citizen with a high school diploma to reach the breakeven point when compared with a Yukon citizen with a university degree. This also means that a high school level citizen in Yukon is expected to stay until he/she is 49 in the net recipients category, and only 18 years (from 49 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder Yukon resident spends 39 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Yukon will contribute, on average, \$232,607 more in income taxes throughout the working life of the citizen when compared with a Yukon citizen who has high school level education.

**Nunavut.** Figure 28 (below) shows the government-citizen funding cycle for a hypothetical citizen with a degree in Nunavut starting his/her working career making \$35,000 a year, and a hypothetical citizen with a high school education making \$10.25 / hour. The two hypothetical citizens receive a two percent annual wage increase.



**Figure 28:** Government-citizen funding cycle for two hypothetical citizens in Nunavut, one with a high school diploma making \$10.25 / hour and one with a university degree making \$35,000 / year.

Figure 28 (above) shows that there is a breakeven gap of 21 years between the two hypothetical citizens. This means that it will take *21 more years* for the hypothetical Nunavut citizen with a high school diploma to reach the breakeven point when compared with a Nunavut citizen with a university degree. This also means that a high school level citizen in Nunavut is expected to stay until he/she is 55 in the net recipients category, and only 12 years (from 55 to 67) of the high school citizen's working life would be spent in the net contributors category. On the other hand, a hypothetical degree holder Nunavut resident spends 33 years of his/her working life in the net contributors category. Analysis also shows that a degree holder in Nunavut will contribute, on average, \$211,420 more in income taxes throughout the working life of the citizen when compared with a Nunavut citizen who has high school level education.

## Appendix D

### Government Transfer Payments by Category.

#### Annual government transfer payments to persons (dollars x 1,000,000)

Geography	Government transfer payments to persons	2005	2006	2007	2008	2009
Canada	Total government transfer payments to persons	136247	145754	154609	165101	176630
Canada	Total federal	67903	70547	76578	81119	88051
Canada	Family and youth allowances	165	187	205	210	211
Canada	Child tax benefit or credit	9174	9470	9495	9468	9716
Canada	Universal child care benefit		1175	2451	2518	2590
Canada	Pensions, World Wars I and II	1584	1693	1694	1696	1686
Canada	War veterans' allowances	289	331	464	588	639
Canada	Grants to aboriginal persons and organizations	5752	5823	6179	7534	6532
Canada	Goods and Services Tax credit	3472	3566	3599	3692	3942
Canada	Employment insurance benefits	12937	12498	12561	13275	18755
Canada	Old age security payments	29085	30468	31929	33538	34973
Canada	Scholarships and research grants	789	858	883	922	880
Canada	Miscellaneous and other transfers	4656	4478	7118	7678	8127
Canada	Total provincial	33297	38570	39446	42922	45030
Canada	Social insurance benefits, workers' compensation	5229	5316	5500	5797	5970
Canada	Social insurance benefits, other		830	1452	1561	1649
Canada	Grants to benevolent associations	9581	10593	11280	12153	12877
Canada	Social assistance, income maintenance	6918	7123	7480	7784	8232
Canada	Social assistance, other	3445	3791	3989	4354	4986
Canada	Miscellaneous transfers	8124	10917	9745	11273	11316
Canada	Total local	3026	2976	3305	3827	4268
Canada	Canada Pension Plan (CPP)	24225	25417	26624	28089	29611
Canada	Quebec Pension Plan (CPP)	7796	8244	8656	9144	9670

**Source:** Statistics Canada. Table 384-0009 - Government transfer payments to persons, provincial economic accounts, annual (dollars) (accessed: May 21, 2013)

## Appendix E

### Federal Income Tax Rates in Canada (2012)

<b>Federal tax on taxable income manual calculation chart</b>				
	Use this column if your taxable income is <b>\$42,707 or less</b>	Use this column if your taxable income is <b>more than \$42,707, but not more than \$85,414</b>	Use this column if your taxable income is <b>more than \$85,414, but not more than \$132,406</b>	
Enter your taxable income from line 260 of your return				<b>1</b>
Base amount	- 0	- 42,707	- 85,414	<b>2</b>
Line 1 minus line 2 (this amount cannot be negative)	=	=	=	<b>3</b>
Federal tax rate	× 15%	× 22%	× 26%	<b>4</b>
Multiply the amount on line 3 by the tax rate on line 4	=	=	=	<b>5</b>
Tax on the amount from line 2	+ 0	+ 6,406	+ 15,802	<b>6</b>
Add lines 5 and 6	=	=	=	<b>7</b>

**Note.** Under the current tax on income method, tax for all provinces (except Quebec) and territories is calculated the same way as federal tax. Form 428 is used to calculate this provincial or territorial tax. Provincial or territorial specific non-refundable tax credits are also calculated on Form 428. For complete details, see the provincial or territorial information and forms in your 2012 tax package.

**Source:** Canada Revenue Agency

Date modified: 1/03/13

## Appendix F

### Provincial Income Tax Rates (2012)

<b>Provincial/territorial tax rates (combined chart)</b>	
<b>Provinces/territories</b>	<b>Rate(s)</b>
Newfoundland and Labrador	7.7% on the first \$32,893 of taxable income, + 12.5% on the next \$32,892, + 13.3% on the amount over \$65,785
Prince Edward Island	9.8% on the first \$31,984 of taxable income, + 13.8% on the next \$31,985, + 16.7% on the amount over \$63,969
Nova Scotia	8.79% on the first \$29,590 of taxable income, + 14.95% on the next \$29,590, + 16.67% on the next \$33,820, + 17.5% on the next \$57,000, + 21% on the amount over \$150,000
New Brunswick	9.1% on the first \$38,190 of taxable income, + 12.1% on the next \$38,190, + 12.4% on the next \$47,798, + 14.3% on the amount over \$124,178
Quebec	<a href="#">See Income tax rates (Revenu Québec Web site).</a>
Ontario	5.05% on the first \$39,020 of taxable income, + 9.15% on the next \$39,023, + 11.16% on the next \$421,957, + 12.16% on the amount over \$500,000
Manitoba	10.8% on the first \$31,000 of taxable income, + 12.75% on the next \$36,000, + 17.4% on the amount over \$67,000
Saskatchewan	11% on the first \$42,065 of taxable income, + 13% on the next \$78,120, + 15% on the amount over \$120,185
Alberta	10% of taxable income
British Columbia	5.06% on the first \$37,013 of taxable income, + 7.7% on the next \$37,015, + 10.5% on the next \$10,965, + 12.29% on the next \$18,212, + 14.7% on the amount over \$103,205
Yukon	7.04% on the first \$42,707 of taxable income, + 9.68% on the next \$42,707, + 11.44% on the next \$46,992, + 12.76% on the amount over \$132,406
Northwest Territories	5.9% on the first \$38,679 of taxable income, + 8.6% on the next \$38,681, + 12.2% on the next \$48,411, + 14.05% on the amount over \$125,771
Nunavut	4% on the first \$40,721 of taxable income, + 7% on the next \$40,721, + 9% on the next \$50,964, + 11.5% on the amount over \$132,406

Source: Canada Revenue Agency  
Date modified: 1/03/13

## Appendix G

Median 2005 earnings for full-year, full-time earners by education, both sexes, total - age group  
25 to 64, for Canada, provinces and territories - 20% sample data

Median 2005 earnings for full-year, full-time earners by education, both sexes, total - age group 25  
to 64, for Canada, provinces and territories - 20% sample data

Geographic name	Education						
	Less than high school	High school	Trades or apprenticeship	College	University below bachelor	Bachelor	Post-bachelor
<b>Canada !</b>	<b>\$32,029.00</b>	<b>\$37,403.00</b>	<b>\$39,996.00</b>	<b>\$42,937.00</b>	<b>\$47,253.00</b>	<b>\$56,048.00</b>	<b>\$66,535.00</b>
Newfoundland and Labrador	\$24,443.00	\$29,233.00	\$35,321.00	\$37,720.00	\$50,896.00	\$54,172.00	\$67,424.00
Prince Edward Island	\$27,107.00	\$29,398.00	\$33,681.00	\$35,226.00	\$43,898.00	\$48,111.00	\$58,334.00
Nova Scotia !	\$28,059.00	\$31,749.00	\$35,850.00	\$36,683.00	\$44,475.00	\$50,889.00	\$63,998.00
New Brunswick	\$27,819.00	\$31,021.00	\$34,911.00	\$35,925.00	\$45,204.00	\$53,133.00	\$62,837.00
Quebec !	\$28,472.00	\$33,849.00	\$33,968.00	\$40,043.00	\$46,471.00	\$52,684.00	\$63,589.00
Ontario !	\$35,387.00	\$39,932.00	\$45,054.00	\$45,448.00	\$48,522.00	\$59,175.00	\$69,644.00
Manitoba !	\$29,986.00	\$33,871.00	\$37,063.00	\$39,247.00	\$45,226.00	\$52,083.00	\$64,123.00
Saskatchewan !	\$28,668.00	\$33,060.00	\$37,226.00	\$39,166.00	\$45,655.00	\$55,531.00	\$65,806.00
Alberta !	\$35,442.00	\$39,196.00	\$50,509.00	\$46,064.00	\$52,253.00	\$61,495.00	\$73,607.00
British Columbia !	\$34,266.00	\$39,211.00	\$44,980.00	\$43,455.00	\$44,863.00	\$52,630.00	\$63,130.00
Yukon Territory !	\$41,599.00	\$45,236.00	\$49,998.00	\$50,170.00	\$51,132.00	\$65,011.00	\$69,738.00
Northwest Territories	\$45,014.00	\$54,819.00	\$64,697.00	\$62,665.00	\$63,379.00	\$75,822.00	\$89,128.00
Nunavut !	\$37,760.00	\$60,036.00	\$59,936.00	\$64,852.00	F	\$84,999.00	\$89,849.00

**Source:** Statistics Canada, Census of Population.  
Date Modified: 2010-10-06

## Appendix H

### Unemployment rates of population aged 15 and over, by educational attainment, Canada, 1990 to 2011

#### Unemployment rates of population aged 15 and over, by educational attainment, Canada, 1990 to 2011

Year	All levels	Less than high school 1	High school 2	College or trade 3	University 4
<b>Unemployment Percent</b>					
1990	8.1	12.4	7.8	6.3	3.8
1991	10.3	15.4	10.2	8.2	4.9
1992	11.2	17	10.9	9.3	5.5
1993	11.4	17	11.6	9.6	5.8
1994	10.4	16.1	10.2	9	5.4
1995	9.5	15.1	9.6	7.9	5
1996	9.6	15.4	9.8	8.1	5.2
1997	9.1	15.6r	9.2	7.4	4.8
1998	8.3	14.5	8.6	6.5	4.3
1999	7.6	13.5	7.8	5.9	4.2
2000	6.8	12.6r	7	5.2	3.8r
2001	7.2	13.1	7.2	5.8	4.6
2002	7.7	13.9	7.8	5.9	5
2003	7.6	13.8	7.7r	5.8	5.4
2004	7.2	13.2	7.4r	5.6	4.9
2005	6.8	12.6	7.1	5.3	4.6
2006	6.3	12.4r	6.5	5.1	4
2007	6	12.1	6.4	4.9	3.7
2008	6.1	12	6.6	4.8r	4.1
2009	8.3	15.9	9.3r	6.8r	5
2010	8	15.9	9	6.5	5.2
2011	7.5	15.4	8.4	5.9	4.9

r revised

1. Includes no education or education below high school graduation.

2. Includes high school graduation or some postsecondary education (not completed).

3. Includes trade certificate or diploma from a vocational school or apprenticeship training; non-university certificate or diploma from a community college, CEGEP, school of nursing and similar programs at this level; and university certificate below bachelor's level.

4. Includes bachelor's degree and university degree or certificate above bachelor's degree.

**Notes:** The unemployment rate is based on a monthly average from January to December. Labour Force Survey (LFS) estimates for Canada are derived using LFS results from the provinces; the territories are excluded.

**Source:** Statistics Canada, Labour Force Survey.

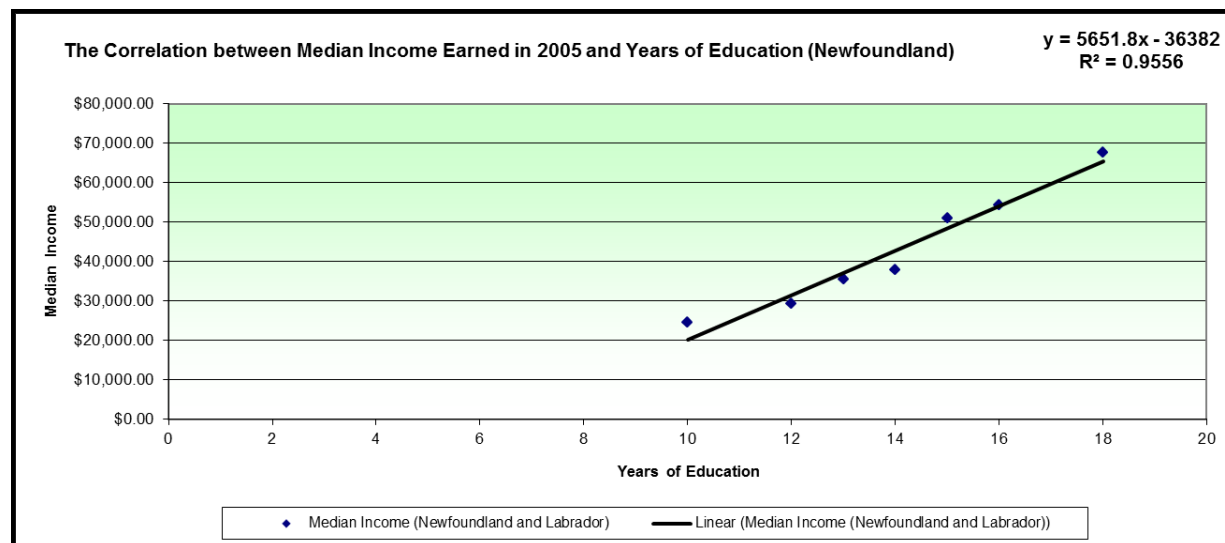
## Appendix I

A summary table and a scatter diagram for each province and territory are presented below to show the correlation between median income earned in 2005 and years of education at both the provincial and territorial levels.

**Table 10.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Newfoundland and Labrador*

Education Level	Years of Education	Median Income (Newfoundland and Labrador)
Less than high school	10	\$24,443.00
High school	12	\$29,233.00
Trades or apprenticeship	13	\$35,321.00
College	14	\$37,720.00
University below bachelor	15	\$50,896.00
Bachelor	16	\$54,172.00
Post-bachelor	18	\$67,424.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 29:** The correlation between median income earned in 2005 and years of education in Newfoundland.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Newfoundland is shown in the above scatter diagram. Results show that income does increase with years of education in Newfoundland and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Newfoundland resident. This strong positive correlation ( $R^2 = 0.95$ ) means that 95 percent of changes in income of a Newfoundland resident can be explained by changes in the resident's years of education. The generated prediction equation can be used to predict the median income of a resident in Newfoundland:  $Y = 5651.8 X - 36382$ . What can be noticed in the Newfoundland prediction equation when compared with the national equation is that those with fewer years of education in Newfoundland might suffer more than their national counterparts. This can be seen through the higher negative value of the Y intercept of the Newfoundland equation ( $- 36382$ ). To predict the annual median income of a Newfoundland resident with 20 years of education using the above equation, the resident's median income is estimated to be:

$$Y = 5651.8 X - 36382$$

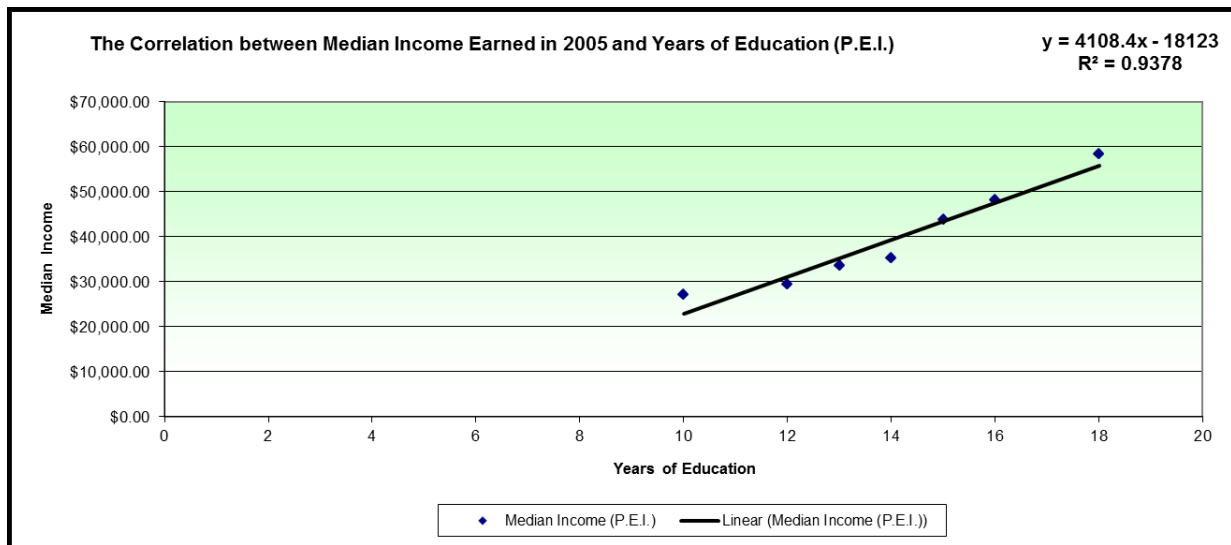
$$\text{Median Income} = 5651.8 (20 \text{ years}) - 36382$$

$$\text{Median Income} = \$76,654$$

**Table 11.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for P.E.I.*

Education Level	Years of Education	Median Income (P.E.I.)
Less than high school	10	\$27,107.00
High school	12	\$29,398.00
Trades or apprenticeship	13	\$33,681.00
College	14	\$35,226.00
University below bachelor	15	\$43,898.00
Bachelor	16	\$48,111.00
Post-bachelor	18	\$58,334.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 30:** The correlation between median income earned in 2005 and years of education in P.E.I.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in P.E.I. is shown in the above scatter diagram. Results show that income does increase with years of education in P.E.I. and the higher the years of education, the higher the income, and the lower

the years of education, the lower the income of a P.E.I. resident. This strong positive correlation ( $R^2 = 0.93$ ) means that 93 percent of changes in income of a P.E.I. resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a P.E.I. resident:  $Y = 4108.4 X - 18123$ . To predict the annual median income of a P.E.I. resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4108.4 X - 18123$$

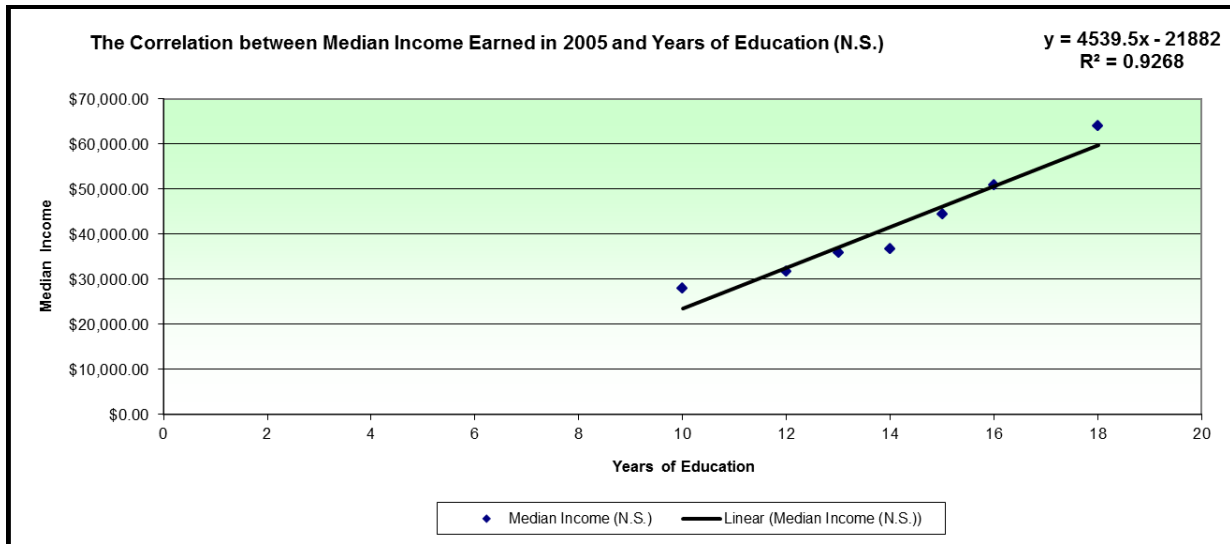
$$\text{Median Income} = 4108.4 (20 \text{ years}) - 18123$$

$$\text{Median Income} = \$64,045$$

**Table 12.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Nova Scotia*

Education Level	Years of Education	Median Income (N.S.)
Less than high school	10	\$28,059.00
High school	12	\$31,749.00
Trades or apprenticeship	13	\$35,850.00
College	14	\$36,683.00
University below bachelor	15	\$44,475.00
Bachelor	16	\$50,889.00
Post-bachelor	18	\$63,998.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 31:** The correlation between median income earned in 2005 and years of education in Nova Scotia.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Nova Scotia is shown in the above scatter diagram. Results show that income does increase with years of education in Nova Scotia and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Nova Scotia resident. This strong positive correlation ( $R^2 = 0.92$ ) means that 92 percent of changes in income of a Nova Scotia resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a Nova Scotia resident:  $Y = 4539.5 X - 21882$ . To predict the annual median income of a Nova Scotia resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4539.5 X - 21882$$

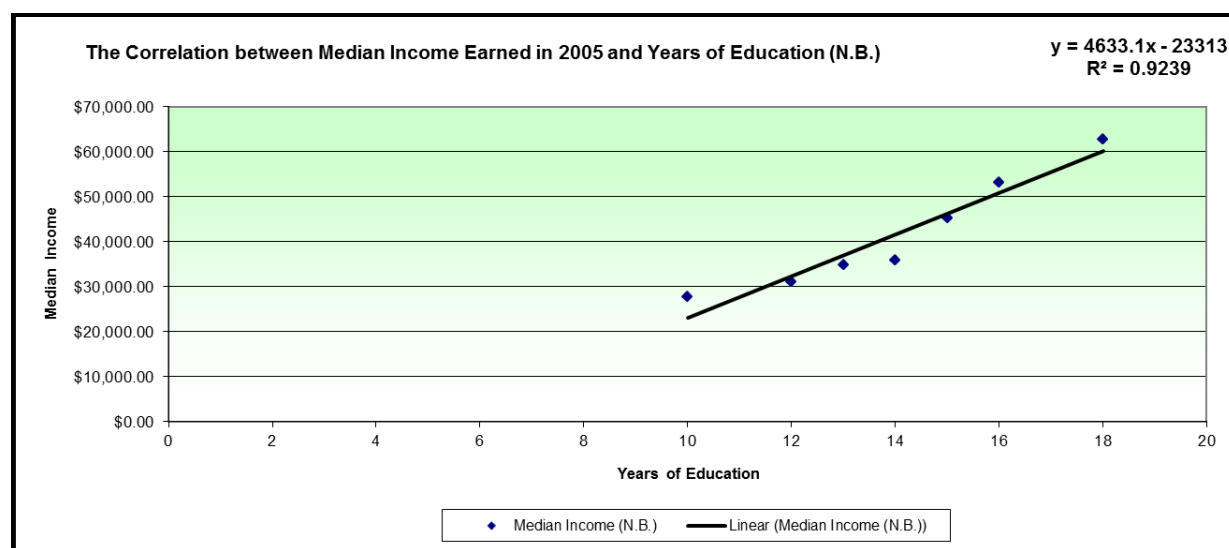
$$\text{Median Income} = 4539.5 (20 \text{ years}) - 21882$$

$$\text{Median Income} = \$68,908$$

**Table 13.** Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for New Brunswick

Education Level	Years of Education	Median Income (N.B.)
Less than high school	10	\$27,819.00
High school	12	\$31,021.00
Trades or apprenticeship	13	\$34,911.00
College	14	\$35,925.00
University below bachelor	15	\$45,204.00
Bachelor	16	\$53,133.00
Post-bachelor	18	\$62,837.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 32:** The correlation between median income earned in 2005 and years of education in New Brunswick.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in New Brunswick is shown in the above scatter diagram. Results show that income does increase with years of education in New Brunswick and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a New Brunswick resident. This strong positive correlation ( $R^2 = 0.92$ ) means that 92 percent of changes in income of a New Brunswick resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a New Brunswick resident:  $Y = 4633.1 X - 23313$ . To predict the annual median income of a New Brunswick resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4633.1 X - 23313$$

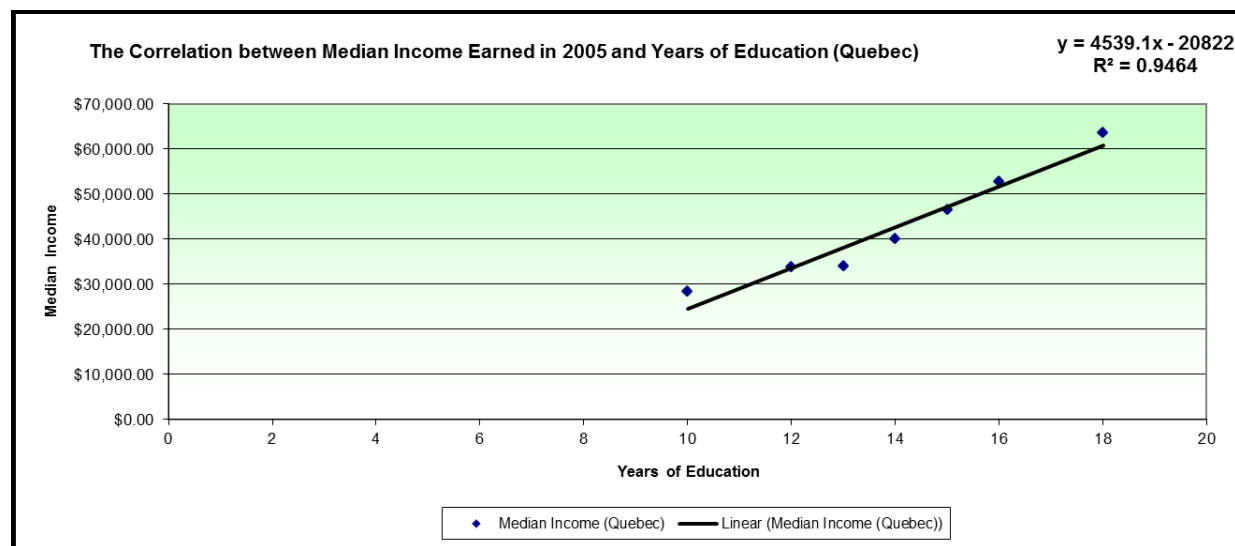
$$\text{Median Income} = 4633.1 (20 \text{ years}) - 23313$$

$$\text{Median Income} = \$69,349$$

**Table 14.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Quebec*

Education Level	Years of Education	Median Income (Quebec)
Less than high school	10	\$28,472.00
High school	12	\$33,849.00
Trades or apprenticeship	13	\$33,968.00
College	14	\$40,043.00
University below bachelor	15	\$46,471.00
Bachelor	16	\$52,684.00
Post-bachelor	18	\$63,589.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 33:** The correlation between median income earned in 2005 and years of education in Quebec.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Quebec is shown in the above scatter diagram. Results show that income does increase with years of

education in Quebec and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Quebec resident. This positive correlation ( $R^2 = 0.94$ ) means that 94 percent of changes in income of a Quebec resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a Quebec resident:  $Y = 4539.1 X - 20822$ . To predict the annual median income of a Quebec resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4539.1 X - 20822$$

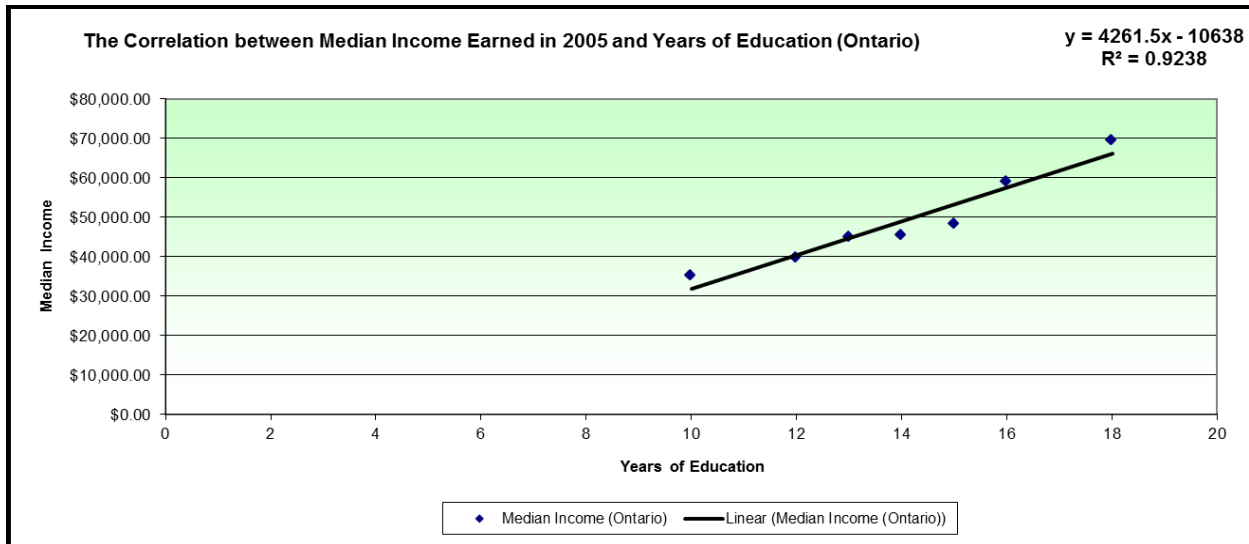
$$\text{Median Income} = 4539.1 (20 \text{ years}) - 20822$$

$$\text{Median Income} = \$69,960$$

**Table 15.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Ontario*

Education Level	Years of Education	Median Income (Ontario)
Less than high school	10	\$35,387.00
High school	12	\$39,932.00
Trades or apprenticeship	13	\$45,054.00
College	14	\$45,448.00
University below bachelor	15	\$48,522.00
Bachelor	16	\$59,175.00
Post-bachelor	18	\$69,644.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 34:** The correlation between median income earned in 2005 and years of education in Ontario.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Ontario is shown in the above scatter diagram. Results show that income does increase with years of education in Ontario and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of an Ontario resident. This positive correlation ( $R^2 = 0.92$ ) means that 92 percent of changes in income of an Ontario resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of an Ontario resident:  $Y = 4261.5 X - 10638$ . To predict the annual median income of an Ontario resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4261.5 X - 10638$$

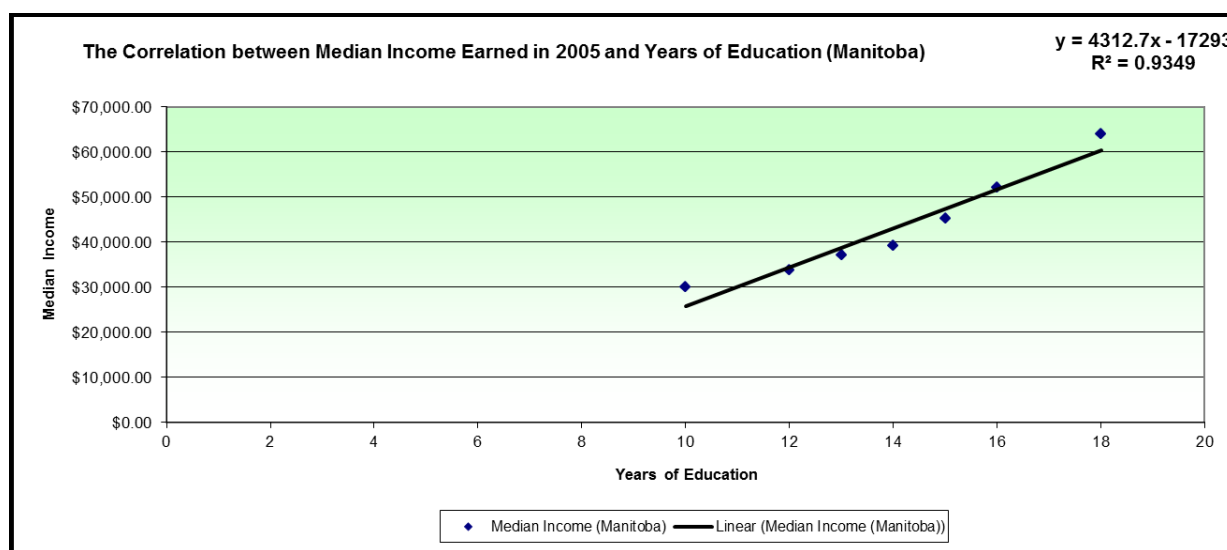
$$\text{Median Income} = 4261.5 (20 \text{ years}) - 10638$$

$$\text{Median Income} = \$74,592$$

**Table 16.** Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Manitoba

Education Level	Years of Education	Median Income (Manitoba)
Less than high school	10	\$29,986.00
High school	12	\$33,871.00
Trades or apprenticeship	13	\$37,063.00
College	14	\$39,247.00
University below bachelor	15	\$45,226.00
Bachelor	16	\$52,083.00
Post-bachelor	18	\$64,123.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 35:** The correlation between median income earned in 2005 and years of education in Manitoba.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Manitoba is shown in the above scatter diagram. Results show that income does increase with years of education in Manitoba and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Manitoba resident. This strong positive correlation ( $R^2 = 0.93$ ) means that 93 percent of changes in income of a Manitoba resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a Manitoba resident:  $Y = 4312.7 X - 17293$ . To predict the annual median income of a Manitoba resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4312.7 X - 17293$$

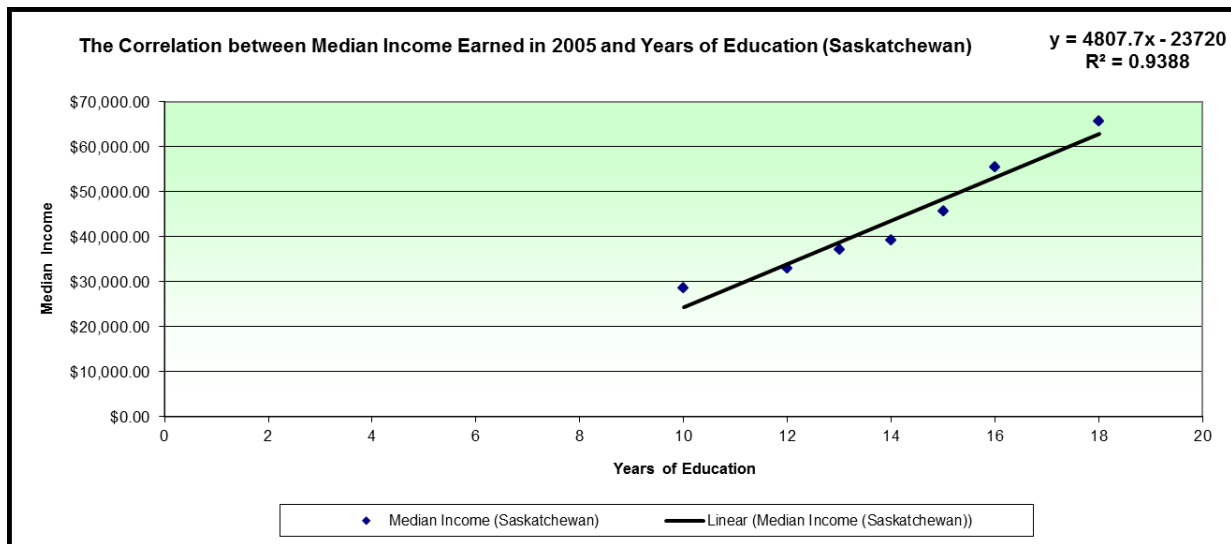
$$\text{Median Income} = 4312.7 (20 \text{ years}) - 17293$$

$$\text{Median Income} = \$68,961$$

**Table 17.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Saskatchewan*

Education Level	Years of Education	Median Income (Saskatchewan)
Less than high school	10	\$28,668.00
High school	12	\$33,060.00
Trades or apprenticeship	13	\$37,226.00
College	14	\$39,166.00
University below bachelor	15	\$45,655.00
Bachelor	16	\$55,531.00
Post-bachelor	18	\$65,806.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 36:** The correlation between median income earned in 2005 and years of education in Saskatchewan.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Saskatchewan is shown in the above scatter diagram. Results show that income does increase with years of education in Saskatchewan and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Saskatchewan resident. This strong positive correlation ( $R^2 = 0.93$ ) means that 93 percent of changes in income of a Saskatchewan resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a Saskatchewan resident:  $Y = 4807.7 X - 23720$ . To predict the annual median income of a Saskatchewan resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4807.7 X - 23720$$

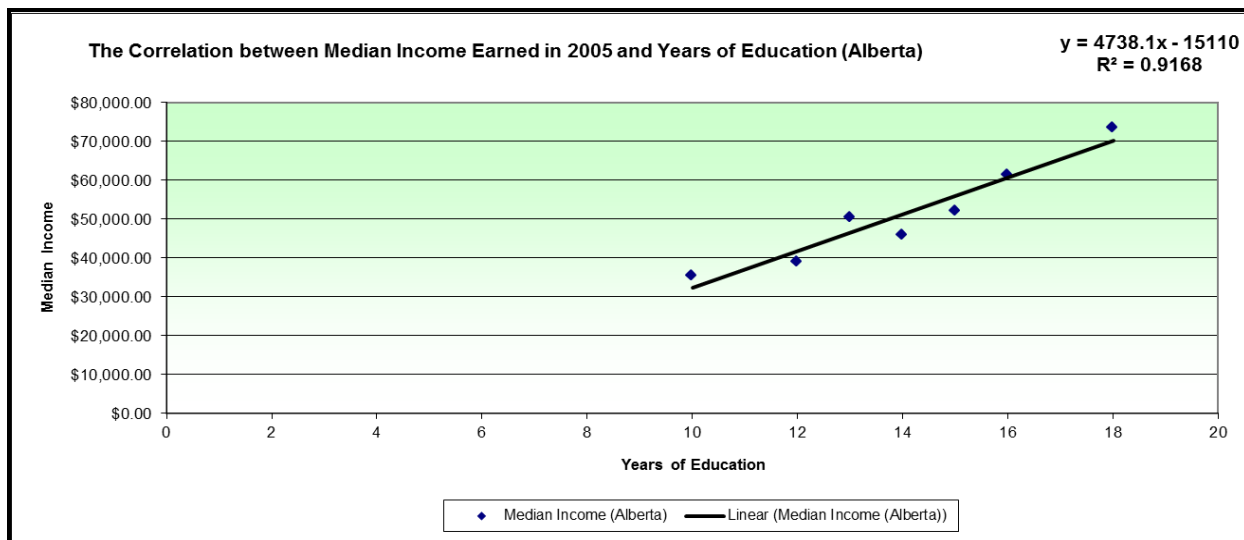
Median Income =  $4807.7(20 \text{ years}) - 23720$

Median Income = \$72,434

**Table 18.** Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Alberta

Education Level	Years of Education	Median Income (Alberta)
Less than high school	10	\$35,442.00
High school	12	\$39,196.00
Trades or apprenticeship	13	\$50,509.00
College	14	\$46,064.00
University below bachelor	15	\$52,253.00
Bachelor	16	\$61,495.00
Post-bachelor	18	\$73,607.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 37:** The correlation between median income earned in 2005 and years of education Alberta.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Alberta is shown in the above scatter diagram. Results show that income does increase with years of education in Alberta and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of an Alberta resident. This positive correlation ( $R^2 = 0.91$ ) means that 91 percent of changes in income of an Alberta resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of an Alberta resident:  $Y = 4738.1 X - 15110$ . To predict the annual median income of an Alberta resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 4738.1 X - 15110$$

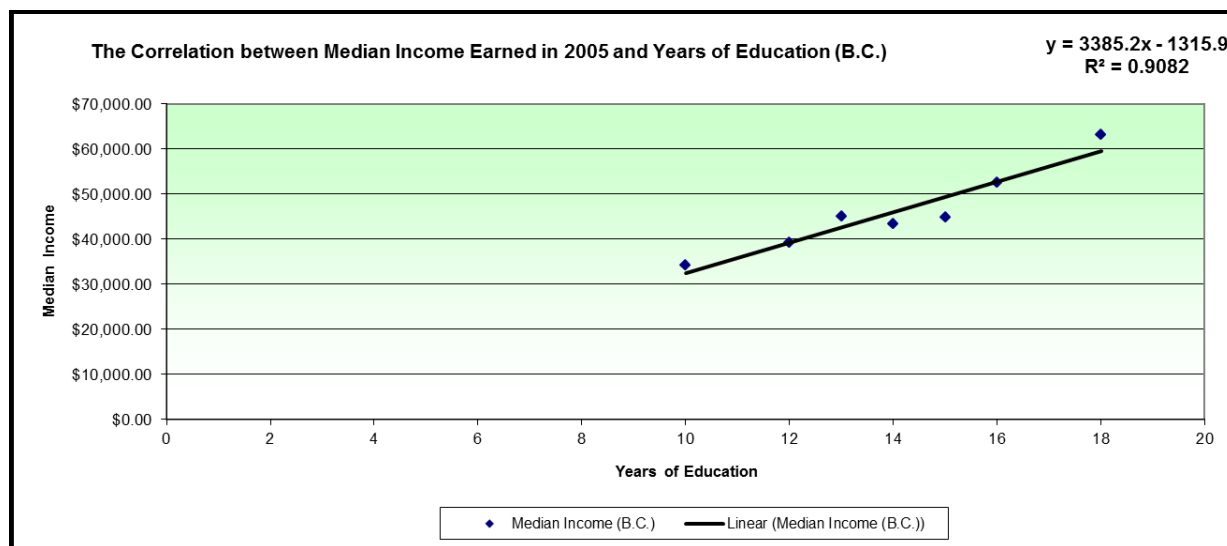
$$\text{Median Income} = 4738.1 (20 \text{ years}) - 15110$$

$$\text{Median Income} = \$79,652$$

**Table 19.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for British Columbia*

Education Level	Years of Education	Median Income (B.C.)
Less than high school	10	\$34,266.00
High school	12	\$39,211.00
Trades or apprenticeship	13	\$44,980.00
College	14	\$43,455.00
University below bachelor	15	\$44,863.00
Bachelor	16	\$52,630.00
Post-bachelor	18	\$63,130.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 38:** The correlation between median income earned in 2005 and years of education in British Columbia.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in British Columbia is shown in the above scatter diagram. Results show that income does increase with

years of education in British Columbia and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a British Columbia resident. This positive correlation ( $R^2 = 0.90$ ) means that 90 percent of changes in income of a British Columbia resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a British Columbia resident:  $Y = 3385.2 X - 1315.9$ . To predict the annual median income of a British Columbia resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 3385.2 X - 1315.9$$

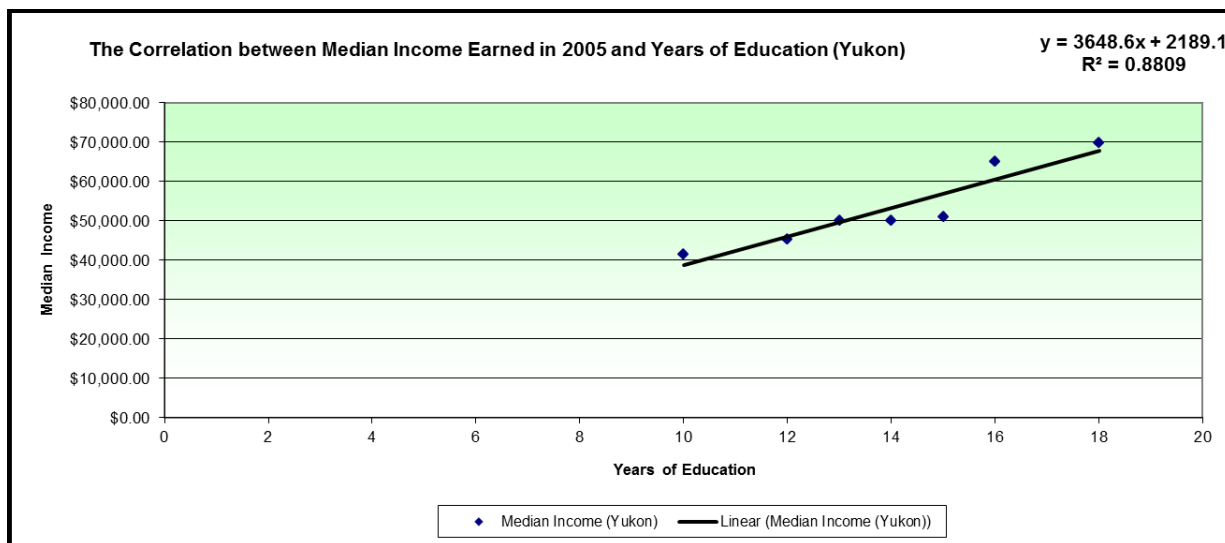
$$\text{Median Income} = 3385.2 (20 \text{ years}) - 1315.9$$

$$\text{Median Income} = \$66,388$$

**Table 20.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Yukon*

Education Level	Years of Education	Median Income (Yukon)
Less than high school	10	\$41,599.00
High school	12	\$45,236.00
Trades or apprenticeship	13	\$49,998.00
College	14	\$50,170.00
University below bachelor	15	\$51,132.00
Bachelor	16	\$65,011.00
Post-bachelor	18	\$69,738.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 39:** The correlation between median income earned in 2005 and years of education in Yukon.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Yukon is shown in the above scatter diagram. Results show that income does increase with years of education in Yukon and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Yukon resident. This positive correlation ( $R^2 = 0.88$ ) means that 88 percent of changes in income of a Yukon resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a Yukon resident:  $Y = 3648.6 X - 2189.1$ . To predict the annual median income of a Yukon resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 3648.6 X - 2189.1$$

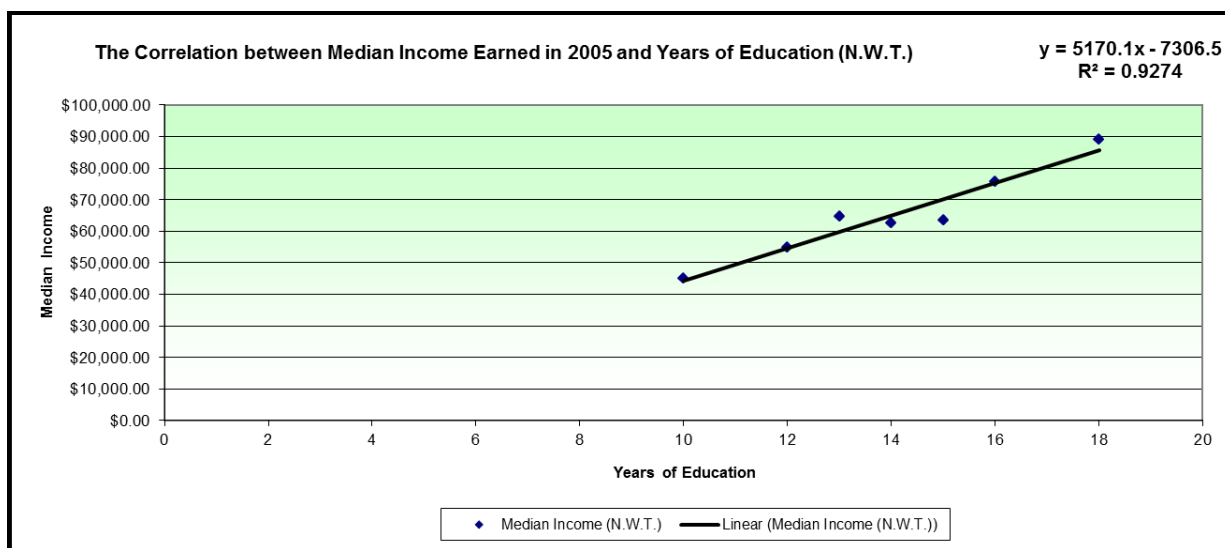
$$\text{Median Income} = 3648.6 (20 \text{ years}) - 2189.1$$

$$\text{Median Income} = \$70,782$$

**Table 21.** Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for N.W.T.

Education Level	Years of Education	Median Income (N.W.T.)
Less than high school	10	\$45,014.00
High school	12	\$54,819.00
Trades or apprenticeship	13	\$64,697.00
College	14	\$62,665.00
University below bachelor	15	\$63,379.00
Bachelor	16	\$75,822.00
Post-bachelor	18	\$89,128.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 40:** The correlation between median income earned in 2005 and years of education in Northwest Territories.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Northwest Territories is shown in the above scatter diagram. Results show that income does increase with years of education in Northwest Territories and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Northwest Territories resident. This positive correlation ( $R^2 = 0.92$ ) means that 92 percent of changes in income of a Northwest Territories resident can be explained by changes in the resident's years of education. The following generated prediction equation can be used to predict the median income of a Northwest Territories resident:  $Y = 5170.1 X - 7306.5$ . To predict the annual median income of a Northwest Territories resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 5170.1 X - 7306.5$$

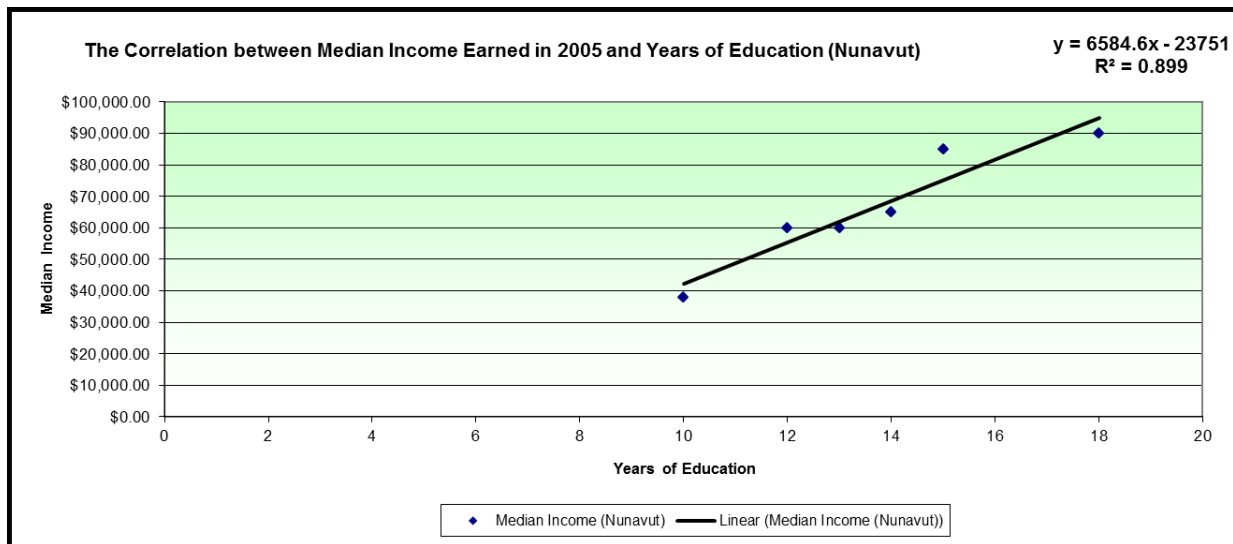
$$\text{Median Income} = 5170.1 (20 \text{ years}) - 7306.5$$

$$\text{Median Income} = \$96,095$$

**Table 22.** *Median 2005 earnings for full-year, full-time earners by level of education, for both genders, total - age group 25 to 64, for Nunavut*

Education Level	Years of Education	Median Income (Nunavut)
Less than high school	10	\$37,760.00
High school	12	\$60,036.00
Trades or apprenticeship	13	\$59,936.00
College	14	\$64,852.00
University below bachelor	15	\$84,999.00
Post-bachelor	18	\$89,849.00

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).



**Figure 41:** The correlation between median income earned in 2005 and years of education in Nunavut.

**Data Source:** Statistics Canada Census of Population (see Appendix G of details).

The correlation between median income earned in 2005 and years of education in Nunavut is shown in the above scatter diagram. Results show that income does increase with years of education in Nunavut and the higher the years of education, the higher the income, and the lower the years of education, the lower the income of a Nunavut resident. This positive correlation ( $R^2 = 0.89$ ) means that 89 percent of changes in income of a Nunavut resident can be explained by changes in the resident's years of education. The following generated equation can be used to predict the median income of a Nunavut resident:  $Y = 6584.6 X - 23751$ . To predict the annual median income of a Nunavut resident with 20 years of education using the above equation, the resident's income is estimated to be:

$$Y = 6584.6 X - 23751$$

$$\text{Median Income} = 6584.6 (20 \text{ years}) - 23751$$

Median Income = \$107,941