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FINANCING CANADIAN UNIVERSITIES:

MAJOR CHANGES SINCE 1802[1]

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Universities began operating in the present borders of Canada in 1802. As annual enrolments grew to 1,147,233 in 2012, so too did university expenditures. Government contributions to university revenues fluctuated from 62% in 1920 to 46% in 1935, reaching a high of 81% in the mid- to late 1970s, then falling to 48% in 2014. Annual university revenues increased about 275 times between 1920 and 2014 (in constant 2014 dollars), from $129.3 million to $35.5 billion. In the two centuries between 1813 and 2013, undergraduate fees (in constant 2013 dollars) increased by a factor of 24, from $236 to $5,720.

"Follow the money!" This was the suggestion of an anonymous informant in the movie "All the President's Men," after one journalist lamented that "All we've got is pieces. We can't seem to figure out what the puzzle is supposed to look like." Similarly, anyone researching the financing of Canadian universities will find a difficult puzzle to solve, with each province being a different piece of the financial puzzle. Of course, the general features are well known. For instance, in 2009, 6.6% of Canada's gross domestic product (GDP) was spent on all educational institutions, slightly more than the average of 6.3% for OECD countries, with 2.7% flowing to all tertiary education institutions (universities and community colleges combined), more than the 2.1% spent in 1995 or the 2.3% in 2000 (OECD, 2013). Of 83 degree-granting universities in Canada, 20 were medical/doctoral, 23 were comprehensive, and most of the remaining 40 were primarily undergraduate (Fisher & Rubenson, 2010). In 2014, 106 universities in Canada were

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members of the Canadian Association of University Business Officers (CAUBO), 55 of which had enrolments of more than 4,000 full-time equivalent (FTE) students (CAUBO, 2015a).

Initially, my interest in this topic was sparked by the large increase in student fees since 1971, when I began undergraduate studies at Carleton University. Fees by themselves are only part of the story, however, and so I have attempted to understand the other major changes in the financing of Canadian universities. Initially, I found some financial aspects on Canadian universities for the period 1802 to 1995 in the comprehensive books on Canadian universities by Harris (1976), Cameron (1991) and Jones (1997a). Additional information for the period 1980 to 2010 for British Columbia, Ontario, and Quebec was obtained from Fisher, Rubenson, Shanahan, and Trottier (2014).

Since 1802, when the first university was established within the present borders of Canada, the percentages of university revenues from governments changed during three different economic systems (Tables 1, 2 and 3). In a general sense, mercantilism dominated until about 1840, free-markets until the 1930s, Keynsian mixed-markets until 1984, and, thereafter, free-markets once again (Norrie & Owram, 1991; Yergin & Stanislaw, 1998; Cran, 2003; Hayling, Whitecross, & Winterbottom, 2009). It is important to realize that the boundaries between these periods—1840, 1930, and 1984—mark the initial year after which the economic transitions took place, and that some of these changes were gradual over several years.

In about 1868, annual government grants to universities were about $67,000 (~$1.56 million in 2014), allocated as follows: $24,000 for Ontario; $22,000 for Quebec; $13,000 for New Brunswick; and $8,000 for Nova Scotia (Murray, 1928). Because total enrolments were 1,561 in 1871, according to Harris (1976, p. 623), annual government spending per student was then about $43 (~$1,000 in 2014). During the Great Depression of the 1930s, the Canadian

government transitioned slowly to a Keynsian mixed-market economy, characterized initially by more regulations, and, after 1938, by increased public spending (Kerr & Holdsworth, 1990). This was followed by a return to a free market system beginning in 1984, the first 9 years of which were characterized by Conservative administrations, during which, according to Fisher and Rubenson (1998), ". . . federal policy agenda was grounded in a neo-liberal ideology, with an emphasis on shrinking the Keynesian welfare state and freeing the market" (p. 79). Government support for social programs in Canada, including education, decreased during this period, as it did in many other countries, including Chile, Argentina, Brazil, Uruguay, Bolivia, South Africa, Russia, Poland, Indonesia, the United Kingdom, the United States, South African, China, Iraq, and Sri Lanka (Klein, 2007). Neoliberal policies were adopted by many governments to promote privatization and to reduce state subsidies and regulations, which resulted in an increase in inequality, a reduction of incomes, and an undermining of health and education (MacEwan, 1999; Peters, 1999; Chomsky, 1999).

In Canada, the neoliberal policies of the federal Conservative government were continued by the Liberals after they gained power in 1993. For example, in 1997 they made the National Centres of Excellence (NCEs) permanent and introduced the Canadian Foundation for Innovation (Fisher & Rubenson, 2010). In 1995, the federal Liberals responded to a large deficit by significantly reducing transfers to the provinces for health, education, and welfare, which universities in some provinces responded to by increasing tuition fees in professional programs and by reducing expenditures (Bercuson, Bothwell, & Granatstein, 1997; Shanahan & Jones, 2007). In the case of post-secondary education, these decreases, as a percentage of GDP, were large: from 4.1% in 1992 to 1.8% in 1997, reaching a low of 1.5% between 2004 and 2007, and finally, rebounding to 2.1% between 2009 and 2014 (CAUT, 2015, Fig. 1.1). It is not surprising,

therefore, that universities in some provinces opted to increase student fees in some programs to make up for the percentage losses of total revenues from governments (Tables 2 and 3; Kirby, 2007).

Milton Friedman, a staunch proponent of free-market capitalism, maintained that universities supported by governments should compete on an equal level with private universities by charging enough fees to cover their education-related costs, and, in the case of professional programs, that all of the educational costs should be borne by students through repayable government loans (Freidman, 1962). In Canada, this very model of repayable loans was introduced to help veterans of World War 1attend universities (Table 1). Friedman's prescription applied to Canada would require tuition fees to at least cover the costs of general operating income. Because Canadian student fees in 2014 were 40.5% of this, according to CAUBO (2015a, p. 7), 100% of operating costs would require increasing student fees by a factor of 2.5. However, this factor is an underestimate, because it excludes capital costs such as new infrastructure. In Ontario and British Columbia, student fees for professional programs did increase by a factor exceeding 2.5.

In terms of total university revenues, the proportion provided by student fees increased from 9.0% in 1980 to 25.5% in 2014 (Tables 2 and 3; Statistics Canada, 2003). However, percentages in terms of operating funds rather than percentages of total revenues are more meaningful because income for sponsored research does not contribute to general operating income, and student fees do not sponsor research. When only operating revenues are considered, the percentage changes are more informative. For instance, in Canada between 1981 and 2011, which includes most of the post-1984 free-market period, the portion of university operating revenues supplied by governments decreased from 84% to 55%, made up mainly by increasing

the percentage obtained from student fees, from 13% to 37%, an increase manifesting in average undergraduate tuition fees of $5,772 in 2013 (CAUT, 2015; Statistics Canada, 2013; see Figure 1). While the percentage of operating grants from governments decreased, however, in dollar terms, these operating grants from governments increased from $5.18 billion in 1999 (6.93 billion in 2014 dollars) to $11.22 billion in 2014 (CAUBO, 2000, 2015a).

Since 1981, with few exceptions, average student fees in Canada increased gradually. The period since the mid-1990s is especially noteworthy, because, irrespective of the government in power, university administrations and governments were of the opinion that university students should, and could, pay more (Clark, Moran, Skolnik, & Trick, 2009). In the United Kingdom, student fees did not increase gradually, as in Canada, but in a step-like fashion. Surprisingly, no tuition fees were charged in the UK at all for the first 19 years following the election of the Thatcher Conservatives in 1979, but in 1998 these fees were increased to £1,000 (equivalent to $2,459 in 2015) ("Tuition Fees Timeline," 2009). Then, in 2004, the cap on UK fees was raised to £3,000 (equivalent to $7,153 in 2015), and in 2012 to £9,000 (14,256 Canadian dollars in 2015) (Barr, 2005; Coughlan, 2015).

In 2009, the percentage of tertiary education revenues from Canadian governments was 56.6%, less than the 70.4% average supplied by OECD governments (OECD, 2013). In terms of private expenditures for tertiary education, Canada in 2005 ranked seventh at 44.9%, less than Israel (51.3%), Australia (52.2%), the United States (65.3%), Japan (66.3%), Korea (75.7%), and Chile (84.1%), but much higher than the 26.9% OECD country average (OECD, 2008). In 2010, private expenditures for Canadian tertiary education decreased slightly to 42.6%, which was still higher than the 30.8% OECD average (OECD, 2014). By 2013, at Canadian universities, private expenditures had increased to more than 50%.

Method

The present work began as a term paper while I was a master's student in the Higher Education program at the University of Toronto (U of T). It benefitted from the literature accessed from the U of T's many electronic databases and libraries, from my Ontario College of Teachers electronic databases, and from libraries at Carleton University, the University of Ottawa, and the Ottawa Public Library. Because this study extends back in time before Confederation in 1867, the universities considered here, to simplify matters, are all those that operated or continue to operate within the present borders of Canada. Excluded from analysis, however, are the few universities based outside of the present borders of Canada, but which are providing online-based programs in Canada.

To be meaningful for 21st century readers, original values in pounds sterling or dollars, obtained from the literature for the 1800s, 1900s, and early 2000s, are accompanied by equivalent 2014 Canadian dollar values (in parentheses). The conversions were based on Canadian Consumer Price Index (CPI) values from Statistics Canada (2016) for 1914 to 2015, supplemented by CPI estimates for 1870 to 1914, based on a GDP deflator model in Powell (2005). Because some of the early values were in both dollars and pounds, or because the exchange rate was specified directly in the institutional histories, the $4 to £1 sterling (Halifax rating) is known to have been in effect at the University of King's College in Nova Scotia in 1821, at King's College in Toronto in 1850, at Queen's University in Kingston in 1860, and at Wesleyan College in New Brunswick in 1861 (Hind, 1890, p. 21; Calvin, 1941, p. 82; Mouré, 1906, p. 75; Reid, 1984a, p. 73).

Unofficially, the U. S. silver dollar and the Canadian dollar in the early 1800s had the same value, an equivalency made official in 1841, and reaffirmed in 1854; the U.S. and

Canadian dollar remained at par until 1914, except between 1862 and 1878, when the Canadian dollar was worth more than the U.S. dollar (Powell, 2005). Because of this longstanding equivalency, the 2014 Canadian CPI values for the period before 1870 were approximated here by U.S. CPI values, as reported in McCusker (1991, pp. 323–332), updated by more recent U.S. CPI values given in Crawford, Church and Akin (2015, p. 89), thereby providing a U.S. CPI value of 2,831.5 for 2014. With the updated U.S. values, an 1870 U.S. dollar multiplied by 20.97 gives an equivalent 2014 U.S. dollar value, whereas an 1870 Canadian dollar multiplied by 16.43 gives an equivalent 2014 Canadian dollar value. Because these two multipliers are similar, U.S. CPI values have been used here for the period before 1870, though corrections have been made for the period from 1862 to 1870. To indicate that the 2014 Canadian dollar equivalents are only approximate before 1870, based on U.S. CPI values, they are preceded by a ~ symbol. If the GDP deflator model for Canada in Powell (2005) is accurate, then the pre-1870 values based on U.S. CPI values would be 20.97/16.43, or 128% of their actual values. Because these values are in excess of the those based on Canadian CPI values, corrections were not made to account for the higher value of the U.S. dollar in 2014 relative to the Canadian dollar, which according to the Bank of Canada (2015), was $1 U.S. to 1.10447 dollar Canadian. Bank of Canada (2015) tables were consulted to obtain average annual multipliers to convert pounds sterling to U.S. dollars after 1998.

General aggregate financial data for Canadian universities from Statistics Canada are unavailable before 1920, but detailed data after 1998 are readily available from the comprehensive annual reports of the Canadian Association of Business Officers (CAUBO) (Tables 2, 3, and 4). In addition, institutional histories of several universities provided information back to the early 1800s for government grants, individual tuition fees, and the

salaries of faculty members and university presidents. Average student fees from Statistics Canada are only available after 1966 (Table 1; Stager, 1989). However, individual student fees have been obtained here from university calendars. To avoid confusion, student fees are considered here as the sum of tuition fees and mandatory ancillary fees for a normal academic year of two terms.

Few Canadian universities offered pensions before 1905, according to Neatby (1978), which should be kept in mind when considering the salaries of faculty members. Also, personal income taxes were not collected in Canada until 1917, according to Norrie and Owram (1991), which means that the annual salaries of faculty members prior to this time were essentially "take-home pay." By 1994, however, after-tax incomes were only about half of gross incomes of more than $100,000 (Lipsey, Ragan, & Courant, 1997).

Results

Significant changes to financing Canadian universities included increases to student fees and to the salaries of permanent tenured/tenure-track faculty, both of which were relatively low until the 1930s, but then increased significantly (Figures 1 and 2). After 1980, universities reduced expenditures by replacing a percentage of traditional permanent tenure-track/tenured faculty members with temporary and part-time non-tenure-track academics, including contract instructors and sessional lecturers. Packages promoting early retirements of faculty members during the 1990s, as reported by Beach, Boadway, and McInnis (2005), hastened these changes.

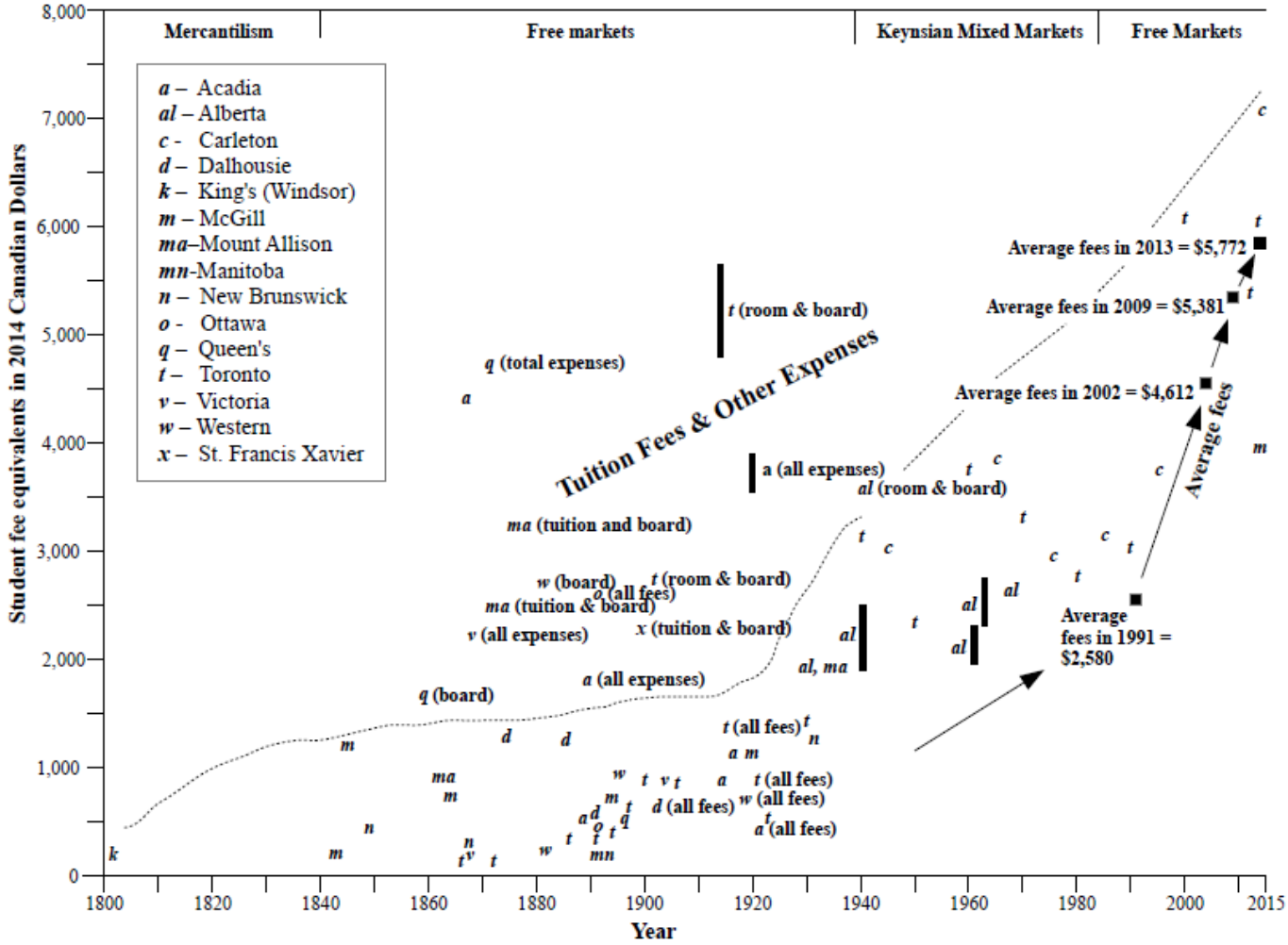

Figure 1. Annual undergraduate full-time tuition fees (recalculated to 2014 equivalent Canadian dollars) for several Canadian universities versus time. Some recent average annual undergraduate full-time tuition fees for arts are included, also recalculated in 2014 equivalent dollars. At McGill, student fees in the BA program in 2014 were $3,976 for Quebec residents (plotted), whereas Canadian residents from other provinces paid $8,344 (off the chart). The plotted data combines information from the text and from other sources given in the references (summarized in the Appendix).

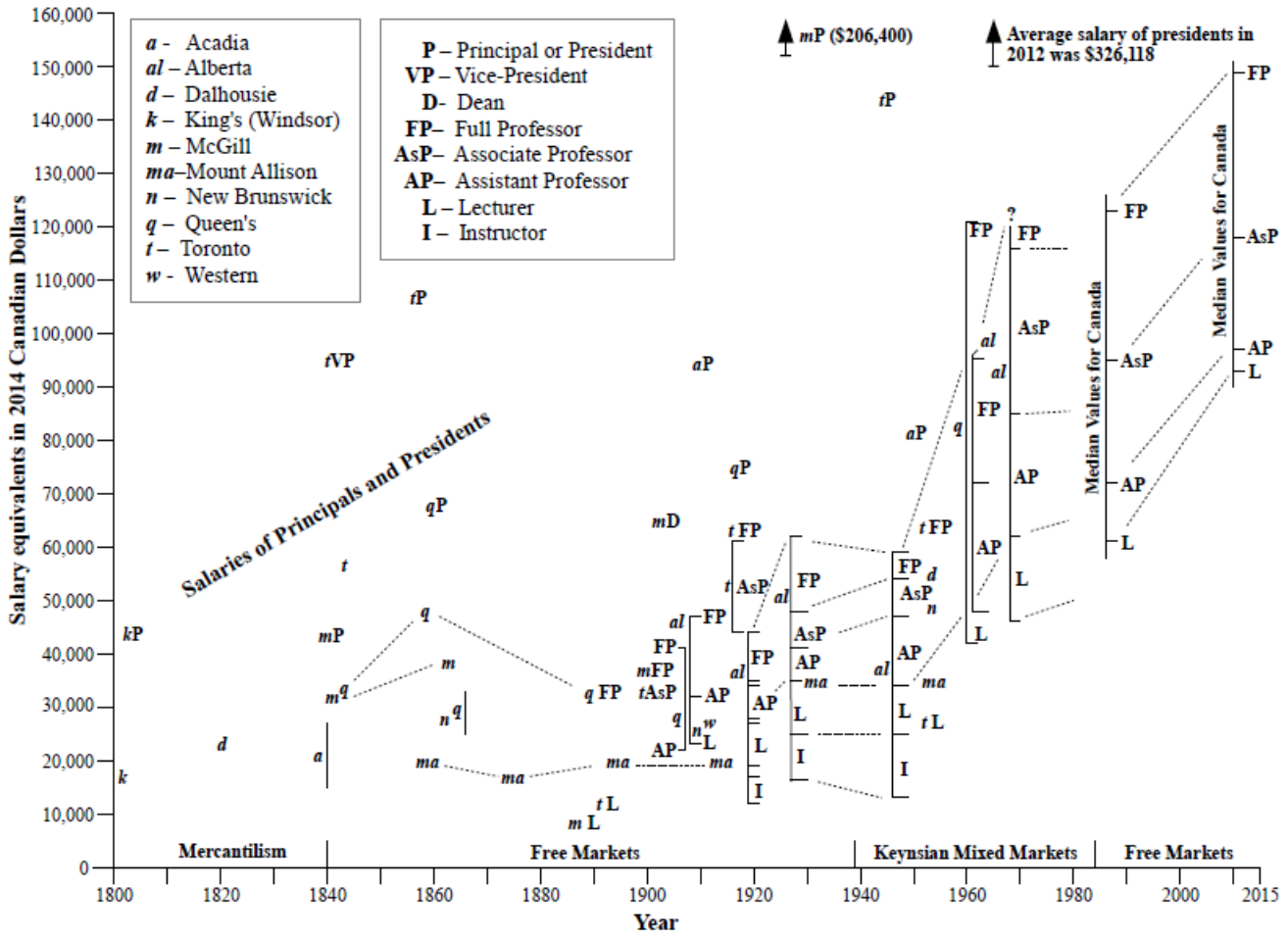

Figure 2. Annual salaries for professors (recalculated to 2014 equivalent Canadian dollars) for several Canadian universities versus time. The plotted data combines information from the text and from other sources given in the references (summarized in the Appendix).

Significant government savings were achieved by eliminating Grade 13, though this change was not without consequences. With the loss of Grade 13, Grade 12 graduates entering university were less prepared, obtained lower grades, and had lower retention rates (Sana & Fenesi, 2013). The elimination of Grade 13 could explain, at least partly, the observation by Côté and Allahar (2011) of less student engagement. Some universities responded to the reduction of a year of secondary school by adding a year to existing 3-year bachelor's programs, because giving degrees to people with only 15 years of education was not the norm in North America, and because some students felt a 4-year honours degree would provide greater opportunities ("Universities Add Fourth Year," 2004). Perhaps more importantly, the funding system encouraged universities to enroll students in 4-year undergraduate degree programs (Clark et al., 2009). A side effect of adding a 4th year was another year of student fees, and for students moving away from home to attend an out-of-town university, an added year of living expenses.

1800 to 1840 (Mercantilism)

Mercantilism emphasized the accumulation of wealth, especially gold and silver, according to Norrie and Owram (1991), a policy supported indirectly in Canada by several churches and their affiliated denominational universities (Table 1). In particular, the first universities in Canada were set up with a mandate to promote loyalty to the Crown in an effort to prevent the kind of revolution that had occurred in the United States (MacNutt, 1973). To help in this effort, the imperial government in Britain provided universities with land endowments and grants for buildings and upkeep (Murray, 1925).

Table 1

Chronology of the Main Policies and Events Relating to Canadian University Financing

1800–1840 (Mercantilist Economy)
In **1802**, King's College in Windsor, Nova Scotia, was given the power to grant degrees by the British colonial government, the first of which was awarded in **1807**.

1840–1930s (Free Market Economy)
Initially, annual enrolments grew slowly in Canada, reaching 1,066 male and 17 female non-theology students in **1860**. Education became a provincial responsibility when Canada became a country in **1867**, and a year later government grants, which had been provided since **1842** to support numerous denominational colleges, were terminated and re-directed to non-denominational institutions. Between **1871** and **1917**, Sir William MacDonald donated $11 million to McGill University ($197 million in 2014)[a]. By **1881**, the enrolment of non-theology students had risen to 2,555 males and 42 females. At Queen's University, annual fees for medical students in **1887** were $75 ($1,213 in 2014)[b]. By **1901**, enrolment (excluding theology students) had increased to 5,742 males and 798 females. At Queen's University in **1905**, annual fees for medical students had increased to $100 ($1,710 in 2014), while salaries varied from $1,000 for lecturers ($17,104 in 2014), to $2,500 for professors ($42,760 in 2014)[b]. By **1911**, total annual enrolments had reached 10,203 males and 2,612 females. The Honorary Advisory Council for Scientific and Industrial Research was established in **1916**, a precursor of NRC. In **1918** the federal government established Khaki University in England and made $500 repayable student loans ($7,034 in 2014) available to World War I veterans who had enrolled at Canadian universities. By **1919**, twenty Canadian universities were operating, with buildings valued at $28 million ($358 million in 2014) and with total endowments of $22 million ($281 million in 2014)[c]. By **1920**, total annual enrolments had reached 22,791 undergraduate and 423 graduate students[d]. Between **1920** and **1940** the Carnegie Corporation of New York donated $4,297,839 to Canadian universities, with a further $1,888,000 to professors and their widows, while the Rockefeller Foundation supplied $3 million for medicine and public health to McGill University and the University of Toronto. During these two decades, the University of Toronto also received annual grants of about $1.5 million from the Ontario government.

1930s–1984 (A Keynsian Mixed-Market Economy)
The Canadian Association of University Business Officers (CAUBO) was founded in **1937**, and in **1939** the federal government introduced a program to provide student grants and loans[e]. Two research granting agencies, the Social Science Research Council (SSRC) and the Humanities Research Council (HRC), were established in **1940** and **1943** respectively. In **1951** the Canadian Association of University Teachers (CAUT) was founded and in that same year Prime Minister St. Laurent announced $7.1 million in federal funds for universities and colleges ($64.4 million in 2014). In **1955** Prime Minister St. Laurent announced a doubling of federal grants for universities and the establishment of the Canada Council, with $100 million allocated for universities ($888 million in 2014). In **1961** the Medical Research Council (MRC) was established with a $3.3 million grant ($26.3 million in 2014). In **1964** the federal government introduced the Canada Student Loans program while the Ontario government created both Canada's first Department of University Affairs and its first science park (Sheridan Park). In **1965** the federal government introduced the "Federal Provincial Fiscal Provincial Arrangements and Established Programs Financing ACT (EPF)", in which federal funding was provided to the provinces for colleges and universities[f]. Formula financing was subsequently introduced to account for the different costs of different university programs. By **1967**, annual support from the federal government for scientific research was $71 million ($491 million in 2014). The report "The Role of the Federal Government in Support of Research in Canadian Universities, Special Study 7" was completed two years later. In **1972** the "Commission on Post-Secondary Education in Ontario (COPSE), the Learning Society" proposed a single provincial government department for postsecondary education, and in addition, recommended establishing an Ontario Council for University Affairs to plan and coordinate with universities. In **1976**, the Social Sciences and Humanities Research Council (SSHRC) was created and the Natural Sciences and Engineering Research Council (NSERC) took over the granting functions of the National Research Council. In **1977**, Ontario and Alberta, followed by Quebec and the Maritime provinces, began to charge higher fees for international students. The "Task Force On Labour Market Development" in **1981** recommended university-industry cooperative programs, higher student fees, decreased funding for general arts, education and public administration, and increased funding for science, engineering and business administration. In **1983**, the Corporate-

Higher Education Forum, composed of an equal number of university and corporate presidents, was formed to promote university-corporate research[g].

1984–2015 (Free Market Economy)

A transition from a Keynsian economic system back to free markets began in **1984**. In that year, the "Commission on the Future Development of the Universities of Ontario" recommended higher student fees, and universities in British Columbia began to charge higher fees for international students. In Quebec, funding was increased in "priority"disciplines, a practice referred to as earmarked or targeted funding, and international student fees were increased ten-fold compared to those of domestic students. Higher student fees in Nova Scotia were also recommended by the **1985** Royal Commission on Post-Secondary Education. In **1986**, the matching grants program for research was introduced by the federal government for its granting councils in which funds from the private sector supplemented those from governments. The Ontario government established private sector participation with multi-university "Centres of Excellence". In **1988** the federal government established its own "Centres of Excellence" program. In **1987** female undergraduate students became more numerous than their male counterparts for the first time[h]. In Quebec, annual fees for domestic students increased to $890 in **1990** ($1,420 in 2014), after having been frozen at $540 since **1968**. In **1994**, student loan limits were increased in a revised Canada Student Financial Assistance Act. In **1995** the federal government decreased transfers to the provinces for health, education and welfare by $14 billion ($20 billion in 2014), and Ontario's Progressive Conservative government allowed tuition fees to rise in some programs[i]. A year later, the federal government set up the Canada Health and Social Transfer, and introduced the Canada Research Chairs (CRC) program, with the goal of hiring 2,000 professors over five years. In **1997** the federal government set up the Canada Foundation for Innovation (CFI), with several billion dollars allocated for research infrastructure, mainly for applied and cooperative research with industry. A year later it introduced the Canada Millennium Scholarship Foundation, a $2.5 billion program for need-based bursaries (95%) and scholarships (5%)[j]. In **1999**, the Medical Research Council was absorbed into a newly formed Canadian Institute of Health Research (CIHR). By this time research was concentrated at only a few universities, with 60% of funding from the three research granting councils going to only 7% of the universities[g]. In **2003**, the federal government agreed to pay $225 million annually to cover a portion of the indirect costs of research. By **2008**, intellectual property management and Technology Transfer Offices had become commonplace, with total income from intellectual property at Canadian universities, together with affiliated teaching hospitals, reaching $53 million[k]. By **2010**, average undergraduate fees in Ontario had reached $6,307, much higher than the $2,415 charged in Quebec[k]. Because 35.5% of full-time students received student loans in 2011-12[l], many students were accumulating large debts. For instance, in **2011** the average debt for a four-year degree among students who borrowed had increased to $37,000[m]. In **2012**, the Ontario government introduced a 30% tuition rebate for undergraduate students, while in Quebec, the provincial government proposed increasing undergraduate tuition from $2,200 to $3,800 over a five year period, a plan which precipitated student protests[n].

Note: The main references for Table 1 are Harris (1976) for 1802-1962, Cameron (1991) for 1964-1990, and Shanahan and Jones (2007) for 1994-2012. Other references are identified by footnotes.

[a]Collard, 1946, pp. 126, 129.
[b]Report of the Royal Commission on the University of Toronto, 1906.
[c]McKillop, 1994, p. 296.
[d]Wisenthal, 2014; Table 2.
[e]CAUBO, 2002.
[f]Lang, 2005.
[g]Woodhouse, 2011.
[h]AUCC, 2011
[i]Fisher, Rubenson, Jones, & Shanahan, 2009.
[j]Cameron, 2004.
[k]Statistics Canada, 2010; Trosow et al. 2012.
[l]CAUT, 2015.
[m]Students Call on Political Parties, 2011.
[n]$42 million in research grants axed?, 2012; Rakobowchuk, 2012.

The first university within the present borders of Canada, King's College in Windsor, Nova Scotia, a Church of England institution, received its royal charter in 1802 and graduated 71 students between 1807 and 1820, and another 69 by 1830 (Hind, 1890). In 1802, the president of this university received a salary of £500 sterling ($2,000, equivalent to ~$43,900 in 2014), while professors received £200 ($800, ~$17,560 in 2014), though this was supplemented by £150 for their work as missionaries ($600, ~$13,200 in 2014), and further enhanced by a portion of annual student fees, which in 1813 were £4 ($16, ~$236 in 2014) (Akins, 1865). At Dalhousie College in Halifax in 1820, 6 years before it became a university, a professor received a base salary of £300 ($1,200, ~$24,100 in 2014), supplemented by class fees received from students directly, and rent provided by any boarders which the professor might take on (Patterson, 1887, p. 11). Other universities established in the early 1800s were King's in New Brunswick, which conferred its first degree in 1828, and McGill in Quebec, which awarded its first degree in 1833 (Harris, 1976, pp. 607–609).

1840 to the 1930s (A Free Market Economy)

Between 1840 and 1854, eight additional universities were established, listed here by the year in which they conferred their first degree (in parentheses): Acadia in Nova Scotia (1843); King's in Toronto (1844); Queen's (1845); Victoria in Toronto (1846); Toronto (1850); Trinity in Toronto (1854); Bishops and Laval in Quebec (1854) (Harris, 1976, pp. 607–609). At Acadia College in 1840, 3 years before becoming a university, the salary of a professor ranged from £100 ($400, ~$10,900 in 2014) to £250 ($1000, ~$27,200 in 2014) (Coldwell, 1881). By contrast, salaries in 1843 at King's in Toronto were much higher, at £450 ($1,800) for professors (~$57,300 in 2014), £500 ($2,000) for department chairs (~$63,300 in 2014), and £750 ($3,000)

for the Vice-President (~$95,400 in 2014) (Wright & Alexander, 1906). In 1844 at Queen's University, one professor was appointed at a salary of £275, but was guaranteed another £150 from class fees, for a total of £425 ($1,700, ~$48,600 in 2014) (Neatby, 1978, p. 71). At University College in Toronto, students paid lecture fees directly to faculty members until 1866, after which students paid the bursar these fees (Mouré, 1906).

The following additional universities began granting degrees, again listed by the year in which they conferred their first degree: New Brunswick (1861); Mount Allison in New Brunswick (1863); Dalhousie (1866); Albert (1867) in Ontario; Ottawa (1872); Halifax (1879); Manitoba (1880); Western (1883) in Ontario; St. Joseph's (1888) in New Brunswick; and St. Francis Xavier (1890) (Harris, 1976, pp. 609–11; Prévost, 2008). In 1862 at Mount Allison University, maximum tuition fees were $36 (~$880 in 2014), while a professor's salary ranged from $700 to $900 (~$17,000 to ~$21,900 in 2014), but, even supplemented by student fees of about $100, the total annual remuneration of a professor was only about $1,000 (~$24,400 in 2014) (Reid, 1984a, p. 91). In that same year of 1862, salaries at universities in nearby provinces were somewhat higher: for example, at New Brunswick, a professor received $1,200 (~$29,000 in 2014), about $4,600 (in 2014 dollars) more than at Mount Allison (Reid, 1984a, p. 91). After 1874 at Mount Allison, the practice of students paying professors directly was discontinued (Reid, 1984a, p. 135).

At Victoria College in Cobourg, Ontario, student expenses in 1867 were as follows (University of Victoria College, 1868):

> Rooms provided with stove, mattrass [*sic*], bedstead and table may be had in the College at a trifling rent. Fuel supplied at cost.
>
> Students who lodge in the College may make convenient arrangements in private families for their board.

> Where it is preferred, board, with lodging, may be had in private families, at prices varying from $2 to $3 a week [~$45 to ~$67 a week in 2014].
>
> Tuition, $10 per annum, and no extras [~$224 in 2014].
>
> Incidentals, $5 per annum, and no extras [~$112 in 2014]; or $3 for one term, in advance [~$67 in 2014].
>
> The total expense for tuition, board, incidentals, &c., &c., need not exceed $100 per annum [~$2,240 in 2014] (p. 16).

In 1881 at Western University in Ontario, when tuition fees there were $15 ($250 in 2014) and board was $165 ($2,690 in 2014), professors were paid only from student fees ($6 per student, $98 in 2014), and, because professors had to contribute $5 ($82 in 2014) for school expenses, one professor who had only one student was paid a grand total of $1 for the entire year ($18 in 2014) (Talman & Talman, 1953). In 1885 at Dalhousie University, student fees in the first undergraduate year in arts were $34.25 ($537 in 2014), made up as follows: registration—$2; gymnasium fee—$1.50; fees for classes paid directly to professors—$27; fee for BA—$10 ($2.50/yr.); graduation fee—$5.00 ($1.25/year) (Dalhousie College, 1885, p. 47). At Queen's in 1889, a professor's maximum salary was $2,000 ($32,600 in 2014), but this relatively "high" salary was reserved only for professors hired from Scotland (Neatby, 1978).

Between 1891 and 1920, seven additional universities were established, again listed by the year in which they conferred their first degree: McMaster in Ontario (1894); College St. Anne in Nova Scotia (1902); Sacré Coeur in New Brunswick (1904); Alberta (1911), Saskatchewan (1912); British Columbia (1916); St. Mary's in Halifax (1918) (Harris, 1976, pp. 612–621). In 1892 at the University of Ottawa, Prévost (2008) pointed out that

> tuition fees had been established at thirty dollars per year [$485 in 2014], but students in residence had to pay an additional one hundred and ten dollars for board, twenty dollars for laundry and bedding, two dollars for medical fees,

> and one dollar for the library, for a total of one hundred and sixty-three dollars per year [$2,637 in 2014]. . . . (p. 37)

Tuition fees in the general arts program at Toronto were as follows: 1866—$10 (~$210 in 2014); 1883—$20 ($340 in 2014); 1893—$25 ($392 in 2014); 1895—$30 ($438 in 2014); 1898 to 1906—$36 ($548 to $637 in 2014) (Mouré, 1906). However, tuition fees at that time represented only a small part of a student's compulsory fees. In 1891, for instance, while tuition fees were $20 in the arts program, as noted above, an additional $30 in mandatory ancillary fees were charged for supplies, use of the library, and examinations, such that student fees were actually $50 ($815 in 2014) (Stager, 1989). These mandatory ancillary fees did not just apply in 1891, because a year later student fees at the University of Toronto in the BA program, excluding residence fees, were $39.50 ($639 in 2014), paid to the registrar as follows: registration—$5; enrolment—$25; final examinations—$5; degree fee—$10 ($2.50/year); library—$2; board and rent—$3.50 to $4.25/week for 40 weeks ($140 to $170 a year), ($2,265 to $2,750 a year in 2014) (University of Toronto, 1892). Even after including mandatory ancillary fees, however, student fees at the University of Toronto in 1891, when corrected for CPI, were $815 in 2014 dollars, only 13.9% of undergraduate fees in Arts and Science at the University of Toronto in 2014 (at $6,010) and very similar to average Canadian undergraduate fees (University of Toronto, 2015a; Figure 1). Even when inflation is corrected for, student fees at the University of Toronto were 7.4 times higher in 2014 than in 1891 ($50, $815 in 2014). Relatively high mandatory ancillary fees were also charged at Queen's in 1896, such that when tuition fees in the Faculty of Arts were $25 ($367 in 2014), and $40 in the Faculty of Applied Science ($588 in 2014), $10 ($147 in 2014) in mandatory ancillary fees were charged for registration, library use, apparatus, and athletics, $3 for examinations ($44 in 2014), and $20 for graduation ($5 per year), totaling $43

per year in the BA program ($632 in 2014) and $58 per year in the BSc program ($852 in 2014) (Queen's College and University, 1896).

At McGill, Henry Marshall Tory, who later became the president of the University of Alberta and then the president of Carleton College, received a lecturer's salary of $600 in 1891 ($9,780 in 2014), and a professor's salary of $2,250 in 1904 ($37,862 in 2014) (Corbett, 1992). Ernest Rutherford, the chair of McGill's physics department and winner of the 1908 Nobel Prize in Chemistry, was paid only £500 ($2,433) in 1898 ($37,060 in 2014) (Collard, 1946). These salaries for Tory and Rutherford would be considered small relative to current salaries of tenured/tenure-track professors, though not so different from present-day non-tenure stream positions.

Salary discrimination on the basis of gender was also practiced. For example, a male associate professor at the University of Toronto in 1906 received $2,200 ($38,900 in 2014), while a similarly ranked female received only $1,575 ($27,851 in 2014) (McKillop, 1994). This discrimination continued at the University of Toronto for several years, such that in 1915, a male associate professor received $2,500 to $3,000 ($51,311 to $61,574 in 2014), while an equivalently ranked female received $2,200 ($45,154 in 2014) (McKillop, 1994, p. 279). In 1922, a male arts student at the University of Toronto paid tuition fees (referred to as registration fees), of $40 ($544 in 2014), but total expenses, including books, room and board, laundry, five collars and ties, pants pressing, etc., combined for a total of $595 ($8,097 in 2014); total expenses were $810 in the medical program ($10,348 in 2014) and $900 in dentistry ($11,498 in 2014) (McKillop, 1994, p 416).

1930s to 1984 (Transition to Keynsian Mixed-Markets)

During the Great Depression of the 1930s, governments in Canada began to regulate markets, but they did not increase spending significantly until 1939 (Norrie & Owram, 1991). Universities during this time, and during World War 2, responded to limited government support by increasing tuition fees (Table 2; Savage & Bellaire, 1981). For instance, before the depression in 1920, compulsory student fees at the University of Alberta ranged from $41.25 in Arts ($453 in 2014) to $72.50 in Applied science ($796 in 2014), with a break-down as follows: undergraduates in Arts (including pharmacy and household economics)—$30; Applied Science in 1st and 2nd year—$60; degree fees of $5 for BA and BSc degrees in Arts ($1.25 per year); $10 for a BSc in Applied Science ($2.50 per year); students union—$7; medical service—$3; monthly room charges—$12; board—$28, for combined room and board of $280 per academic year ($3,075 in 2014) (University of Alberta, 1920). Total student fees and expenses at the University of Alberta were therefore equivalent to $3,528 to $3,871 in constant 2014 dollars. By 1932 at the University of Alberta, undergraduate tuition fees had increased to $116 in the 1st and 2nd years ($1,940 in 2014), and $110 in subsequent years ($1,840 in 2014), while monthly room and board costs were $27 ($189 per academic year, equivalent to $3,155 in 2014) (Johns, 1981, p. 123). In 1953, the salary of a full professor was $4,000 at Mount Allison University ($35,770 in 2014), $5,500 at the University of New Brunswick ($49,190 in 2014), and $5,700 at Dalhousie University ($50,970 in 2014) (Reid, 1984b, p. 243).

Table 2

University Education Expenditures, by Direct Source of Funds and Type (Dollars)

Year	Total all direct source of funds (dollars x 1,000)	Direct source of funds, all govern-ments (dollars x 1000)	% of total funds, all govern-ments	Direct source of funds, student fees (dollars x 1000)	% of total funds, student fees	Direct source of funds, other sources (dollars x 1000)	% of total funds, other sources	Consumer price index, all items, 2002=100	Full-time university enrolment (undergrad uate & graduate)
1920-21	11,775	7,322	62.2	1,826	15.5	2,627	22.3	11.4	23,214
1925-26	15,337	9,514	62.0	2,380	15.5	3,443	22.5	9.1	25,698
1930-31	21,975	14,466	65.8	3,323	15.1	4,186	19.0	9.1	32,926
1935-36	15,425	7,045	45.7	4,457	28.9	3,923	25.4	7.3	35,108
1940-41	18,151	8,800	48.5	5,143	28.3	4,208	23.2	8.0	26,386
1945-46	31,493	16,621	52.8	9,779	31.1	5,093	16.2	9.2	64,731
1950-51	55,247	33,189	60.1	14,024	25.4	8,034	14.5	12.5	68,595
1955-56	104,443	69,217	66.3	21,600	20.7	13,626	13.0	14.1	72,737
1960-61	272,940	172,828	63.3	45,991	16.9	54,121	19.8	15.5	113,729
1965-66	736,583	480,334	65.2	110,624	15.0	145,625	19.8	16.8	204,245
1970-71	1,790,812	1,402,394	78.3	190,456	10.6	197,962	11.1	20.3	309,469
1975-76	2,786,899	2,263,973	81.2	272,655	9.8	250,271	9.0	29.0	371,062
1980-81	4,438,290	3,602,549	81.2	400,519	9.0	435,222	9.8	44.0	382,617
1985-86	7,000,606	5,545,812	79.2	729,766	10.4	725,028	10.4	63.0	467,282
1990-91	10,410,445	8,098,418	77.8	1,178,549	11.3	1,133,478	10.9	78.4	532,131
1995-96	11,801,984	8,277,682	70.1	1,942,057	16.5	1,582,245	13.4	87.6	761,496

Note. Data from Statistics Canada (2003), with consumer price index (CPI) values from Statistics Canada (2015a). The CPI value for 2014 is 125.2 (Statistics Canada, 2015a). Full-time enrolment data are from Statistics Canada (1975, 2008), supplemented by Table 9 in Cameron (1991), and Easton (2002) for the 1990-91 entry.

1984 to 2015 (Free Markets)

Tuition fees at the University of Toronto increased from $1,906 in 1990 ($3,044 in 2014), to $4,670 in 2000 ($6,129 in 2014), and to $6,010 in 2014 (CAUT, 2002, p. 3; 2012, University of Toronto, 2015a). By 2003, mandatory ancillary fees had become a much smaller percentage of total student fees, such that when average Canadian undergraduate tuition fees were $4,025, average mandatory ancillary fees were only $623 (Collins & Davies, 2005). In Ontario between 1987 and 2007, however, universities increased mandatory ancillary fees by a factor of about three (Clark et al., 2009).

Government funding per FTE student decreased in constant dollars from about $18,000 in 1980 to $10,000 in 2007, a result of an increase in the student-to-faculty ratio (AUCC, 2008, 2011). One study showed that in constant dollars, average full-time student fees in 2000 had more than doubled since 1986 (Robertson, 2003). Between 1991 and 2013, another study showed that the increase in average undergraduate tuition fees in Canada was 227%, while in Ontario it was 295% (CAUT, 2014, p. 49). In Quebec, fees increased 215%, from $540 in 1989 to $1,700 in 1994 (Trottier, Bernatchez, Fisher, & Rubenson, 2014). With 1971 as a reference, average tuition fees in constant dollars had doubled by 1993, and almost tripled by 2002 (Snowdon, 2005). The most detailed graph of inflation-corrected data (CAUT, 2015, Fig. 3.4), however, shows average undergraduate fees decreasing between 1972 and 1978, leveling off between 1979 and 1989, and then increasing, with fees in 2014 being about double those of the 1980s in constant dollars.

After the federal funding cuts in 1995, universities were allowed by provincial governments to increase tuition fees in certain programs, which they did in Ontario in 1995, in British Columbia in 2001, and in Quebec in 2003 (Fisher, Rubenson, Jones, & Shanahan, 2009). Between 1996 and 1998, universities in some provinces, with the notable exception of Quebec, introduced much higher fees in professional programs (dentistry, law, and medicine) (Boggs, 2009; CAUT, 2000, 2015). Among these programs, the highest fee increases were in dentistry, from $2,500 in 1989 ($4,184 in 2014) to $16,433 in 2011 ($17,159 in 2014) (CAUT, 2014, p. 43). Fees had always differed somewhat between different programs, but never to this extent.

Why did Canadian universities make these changes? In a general sense, Rizvi (2007) pointed out that “market considerations have become relevant to the importance attached to the disciplines . . . with disciplines considered commercially useful, like applied sciences,

information technology and business studies, sidelining the humanities and the social sciences" (p. ix). Among graduates with bachelor's degrees in Canada, the relationships between different fees for different programs, as related to estimates of their salary potentials, was considered by Rathje and Emery (2002), who calculated that students could achieve a 4.25% private rate of return with tuition fees of $27,900 for engineering ($34,931 in 2014) and $5,085 for the humanities ($6,366 in 2014). However, fee differences of this magnitude for different programs based on different salary expectations have consequences, such as the need to match tuition fees to changing employment conditions, and preferential enrolment in the more affordable university programs (Smith, 2002). As for the latter, it is known that ". . . Ontario students from middle-class backgrounds saw a large decline in the probability of pursuing a professional degree following the large and sudden tuition fee deregulation in these programs in Ontario universities . . ." (Frenette, 2008). Another major problem with calculations of tuition fees based on expected private returns is that the wider societal benefits obtained from an educated workforce, which admittedly would be difficult or impossible to calculate, are excluded from the analysis.

In Quebec, the recession of the early 1990s influenced the Quebec government to increase tuition fees in 2011 from $1,668 to $2,168, and to accordingly increase loans and bursaries (Trottier et al., 2014). Unlike Ontario and British Columbia, however, tuition fees in Quebec for professional programs remained relatively unchanged (Fisher & Rubenson, 2014). In 2001, average undergraduate fees ranged from a low of $1,910 in Quebec (frozen since 1994), to a high of $4,730 in Nova Scotia, while in 2005 they ranged from $2,003 in Quebec to $4,269 in Ontario, and $4,613 in British Columbia (AUCC, 2002; Fisher et al., 2009). In 2012, when tuition fees in Quebec were $2,168 (Ayotte-Thompson & Freeman, 2012), the Quebec

government proposed increasing fees $325 each year until 2017, a plan which precipitated an 11-week student boycott of classes (Rakobowchuk, 2012). Between 2010 and 2013, average Canadian undergraduate tuition fees increased from $5,138 to $5,720 (CAUT, 2012, 2015). It should be pointed out, however, that Quebec universities differed from those of other provinces by charging three sets of fees, the lowest for Quebec residents, higher ones for Canadian but non-Quebec residents, and still higher ones for international students. In 2014, according to this policy, student fees in the BA program at McGill University were $3,976 for Quebec residents, $8,344 for non-Quebec Canadian residents, and $17,780 for international students (McGill University, 2015). The McGill fees are noteworthy because the mandatory ancillary fees applied to Quebec and non-Quebec Canadian residents made up a relatively high (43%) of total student fees.

A solution to the problem of decreased provincial support was proposed by Laidler (2002), who recommended higher fees coupled with adequate student loans. Similarly, Fallis (2007) proposed higher fees combined with income-contingent loans and grants. Student loans sufficient to cover student fees and living expenses, especially for the most expensive programs, would ensure continued access, and, in this regard, the maximum loan level was increased in the mid-1990s under the Canada Student Loan Program (Corak, Lipps, & Zhao, 2005). However, one consequence of increased loan limits, as pointed out by McMillan (2002), is that they could be used to increase tuition fees still further. In this regard, undergraduate tuition fees for students entering the pharmacy program at the University of Toronto in 2015 were $17,350 for domestic students and $33,480 for international students (University of Toronto, 2015b, 2015c). At the high end for domestic Canadian and international students in 2015, annual undergraduate fees of $32,500 were charged by Quest University, a private, not-for-profit secular university in British

Columbia (Quest University, 2016). In the case of Canadian graduate students in 2013, the average tuition fee was $6,053, with the highest fee, at $35,889, charged for the executive MBA program (Statistics Canada, 2013). Although some of these tuition fees are high relative to most other Canadian universities, a few universities in the United States charge even higher fees. For example, Dartmouth College charged the most of all the Ivy League universities, with undergraduate tuition fees of US $46,763 in 2014 ($51,648 Canadian in 2014) ("Dartmouth Announces," 2014).

A student's high school grades, parental education, and household income have the highest impact on university participation rates (Clark et al., 2009; AUCC, 2011). This is not especially surprising, but it is also not surprising that even though overall enrolments have increased in Canada, higher student fees have discouraged university participation among some students. In the 1990s, for instance, every $1,000 increase in university tuition fees corresponded to a decrease of 1% to 3% in participation, especially among younger students (Johnson & Rahman, 2005). Another study showed that young people from higher income families were two and a half times more likely than those from low-income families to attend university (Statistics Canada, 2001). Between 1993 and 1998, university participation among 18- to 21-year-olds was only 18.8% from families with incomes in the lowest quartile, compared to 38.7% from families with incomes in the highest quartile (Conlon, 2006). Furthermore, students with income levels in the bottom quartile were half as likely to attend than those from the top quartile (Barr-Telford, Cartwright, Prasil, & Shimmons, 2003). By 2004, average tuition fees as a proportion of after-tax income among families in the lowest income quintile was 46%, versus 7% for those in the highest quintile, with average debt per student in most provinces at more than $20,000 ($23,916 in 2014) (CAUT, 2006). By 2006, 59 percent of university graduates had debts averaging

$24,047 (Tandem Social Research Consulting, 2007). It is important to realize also that the Canada Student Loan program does not cover the cost of the most expensive university programs, thereby requiring some students to take out additional loans, and, because banks require collateral, this can manifest as an effective barrier to those expensive programs. On the positive side, the Canadian tax system between 2003 and 2014 did address student costs by providing claims for the following on personal income tax returns: an education amount of $400 per month ($3,200 per eight month academic year); a textbook amount of $65 per month in 2014 ($520 per eight month academic year); a tuition fee amount; and an amount for interest on a Canada Student Loan (Collins & Davies, 2005; Canada Revenue Agency, 2014).

Ideally, cost and benefit analyses of different levels of student fees should consider the lifetime earnings of university graduates. For instance, AUCC (2011) reported that workers with a bachelor's degree earned an average of $1.32 million more over a career than those with only a high school diploma. Because university graduates in 2010 made up 24% of the Canadian population, but according to AUCC (2010) contributed 43% to the tax base, and because the Government of Canada (2011) reported personal income tax revenues totaling $116 billion in 2009, it follows that about $50 billion of this was from university graduates. From a financial perspective, these large revenues could be considered as part of the "public good" contributed by universities. It also follows that these public revenues would decrease if university participation rates decreased as a consequence of students' aversion (or inability) to pay or to accumulate large debts. In this regard, it is significant that total average tuition fees for a 4-year degree, at $23,088 comprises only 1.75% of the $1.32 million dollars cited by AUCC (2010) in increased lifetime earnings.

Canadian university revenues from international students have been disproportionately large because provinces increased fees for international students beginning in 1977 (Table 1). International tuition fees in Alberta were doubled in 1991, while Ontario universities, as of 1995, were allowed to set their own international fees (Andrews, Holdaway, & Mowat, 1997; Jones, 1997b). International students in Canada in 2013 paid average fees of $19,514, which added up to about a quarter of all student fees, given that there were 104,726 FTE international students in 2011 (AUCC, 2007, 2011; Statistics Canada, 2013; CAUT, 2015).

Research

Prior to 1884, Canadian professors concentrated on instruction, but in 1897 the president of the University of Toronto proposed that universities should conduct more original research (Harris, 1976; Gingras, 1989). Research in Canada had been done in the 1800s by professors, but it was not until the early 1900s that funding for research became significant. In particular, between 1912 and 1915, government departments in Canada spent a total of $277,000 on university research ($5.78 million in 2014) (Thistle, 1966). Gradually, financial support increased and in 1958 the National Research Council of Canada (NRC) provided universities with annual research grants of $4.9 million ($40.4 million in 2014) and $1 million for 400 postgraduate scholarships ($8.2 million in 2014) (Gibson, 1983). Between 1990 and 2004, Higher Education Expenditures of Research and Development (HERD) in Canada varied between 13% and 16% of Canada's Gross Expenditures of Research and Development (GERD), after which HERD increased to 18.8% in 2007 (Fisher & Rubenson, 2010; AUCC, 2008).

Research can be classified along a continuum with basic or pure research at one end of the spectrum and applied research at the other end, and, with regard to the relative merits of the

two, "there will continue to be debate in all advanced countries about the balance between fundamental and applied research in universities and the appropriate degree of funding for each" (Davenport, 2002, p. 49). In Canada in the early 1900s, basic science was emphasized, as revealed in the following quote from the *Report of Royal Commission on University Finances* (1921):

> It is generally recognized that industrial development rests upon investigations in pure science. If scientific principles are to be successfully applied to the solution of industrial problems, there must be a group of men thoroughly trained in these principles; and if progress is to be looked for, a group of men mainly devoted to original investigation in all branches of science (p. 16).

However, this view began to change in the 1960s when the federal government introduced the Industrial Research Assistance Program (IRAP) to promote university-industry collaboration (Fisher & Rubenson, 2010). Then, in response to decreased government funding of university research, closer ties were forged in 1983 between corporations and universities with the creation of the Corporate Higher Education Forum, a group of Canadian university and corporate presidents (Newson & Buchbinder, 1988). After 1986, the federal government introduced several policies such as the InnovAction strategy to emphasize public–private linkages, the production of practical and useful knowledge, the transfer of knowledge to the private sector, and the commercial exploitation of this knowledge in an increasingly knowledge-based economy (Fisher & Rubenson, 2010). Academic capitalism in Canada was considered to have gained importance, according to Metcalfe (2010), with the establishment of (1) the Canada Foundation for Innovation (CFI) in 1997, a group dedicated to establishing government, university, and industry linkages, (2) higher tuition fees, (3) an expansion in research

management with the creation of the "Alliance for Commercialization of Canadian Technology," and (4) an increase in the commercialization of university research.

In spite of all these changes, however, private investment in university research remained relatively small, such that of $10.433 billion spent on Canadian university research in 2007, only $881 million (8.4% of the total) was from the private sector (AUCC, 2008).

The change in emphasis toward applied university research was criticized by Paul Berg, who pointed out (in Turk, 2000) that

> the biotech revolution itself would not have happened had the whole thing been left up to industry. Venture-capital people steered clear of anything that didn't have obvious commercial value or short-term impact. They didn't fund the basic research that made biotechnology possible. (p. 11)

In spite of such criticism, however, funding of basic research at Canadian universities between 2008 and 2013 from the Natural Sciences and Engineering Research Council (NSERC) decreased (in constant 2010 dollars), from $389 million to $321 million, while the amount for university–industry–government partnerships, and commercialization increased from $268 to $360 million (CAUT, 2013a). On the topic of commercialization, John Polanyi, according to Turk (2000),

> . . . decried the Canadian government's "commercialization" of science, saying that it is ruining Canada's universities . . ." and that "At a certain point . . . we don't have universities any more, but outlying branches of industry. Then all the things industry turns to universities for—breadth of knowledge, far time horizons and independent voice—are lost. (p. 11)

Government strategy became focused on the following: maintaining a high HERD to GDP ratio; reducing research conducted by government departments; increasing Business Expenditures on Research and Development (BERD); introducing the Scientific Research and Experimental tax credit; increasing the number of university commercialization centres and

technology transfer offices; and supporting business-led non-governmental Networks of Centres of Excellence (NCEs) (Government of Canada, 2007; Fisher & Rubenson, 2010; Trosow, S., McNally, M. B., Briggs, L. E., Hoffman, C., Ball, C. D., Jacobs, A., & Moran, B., 2012).

Between 1981 and 2009, federal expenditures, as a percentage of GDP for research and development (R&D) changed significantly, as follows: government R&D decreased from 0.3 to 0.2%; HERD increased from 0.3 to 0.7%; and BERD increased from 0.6 to 1% (enhanced by annual federal contributions of $6.44 billion in 2010) (Jenkins et al., 2011). To put this $6.44 billion annual contribution to BERD in perspective, total federal funds provided to Canadian universities by all the granting councils, the Canada Foundation for Innovation (CFI), the Canada Research Chairs (CRC) program, and from other federal grants and contracts totaled $3.83 billion in 2010 (CAUBO, 2011). By comparison, the $6.44 billion public contribution to BERD in 2010 was almost as large as the income from student fees of $6.83 billion reported by CAUBO (2011) in that same year. Assuming that BERD research is more applied than basic, then it follows that the vast majority of funding for Canadian research is applied rather than basic. Moreover, since 2011, applied research was promoted further by changing NRCs mandate to focus on industry-relevant R&D (Economic Action Plan, 2013). Given all this emphasis on applied research at so many institutions in the last few years, a case could be made for increasing funds for basic research.

Canadian University Income

Since 1999, detailed financial information for every CAUBO member university, with aggregate information for every province and for Canada as a whole (Tables 3 and 4), has been made available in the annual CAUBO reports.

Table 3

Canadian University Incomes (by Fund and Type) for Selected Years

Types of Income Sources	1999-2000		2002-2003		2005-2006	
	$'000	%	$'000	%	$'000	%
1. SSHRC	96,292	0.6	135,158	0.7	221,457	0.9
2. Health Canada	40,617	0.3	43,599	0.2	37,168	0.2
3. NSERC	460,737	3.0	510,305	2.8	629,723	2.6
4. CIHR (MRC in 1999-2000)	296,848	2.0	508,327	2.8	694,182	2.9
5. CFI	127,967	0.8	371,589	2.0	400,354	1.6
6. CRC	0	0.0	109,219	0.6	226,181	0.9
7. Other federal	278,903	1.8	519,564	2.9	618,968	2.5
Total Federal Government grants & contracts (lines 1 - 7)	1,301,364	8.6	2,197,761	12.1	2,828,033	11.6
8. Provincial	6,658,782	44.0	7,936,063	43.6	9,915,631	40.8
9. Municipal	10,580	0.1	20,882	0.1	27,181	0.1
10. Other provinces	32,857	0.2	27,035	0.1	37,372	0.2
11. Foreign	65,175	0.4	111,262	0.6	127,921	0.5
Total Other Government grants & contracts (lines 8-11)	6,767,394	44.7	8,095,242	44.5	10,108,105	41.6
Total Government grants & contracts (lines 1-11)	8,068,758	53.3	10,293,003	56.6	12,936,138	53.3
12. Credit course tuition	2,360,691	15.6	3,137,750	17.3	4,028,303	16.6
13. Non-credit tuition	184,764	1.2	250,348	1.4	277,528	1.1
14. Other fees	258,537	1.7	337,055	1.9	510,640	2.1
Total Tuition & other fees (lines 12-14)	2,803,992	18.5	3,725,153	20.5	4,816,471	19.8
15. Individuals	281,955	1.9	274,300	1.5	411,376	1.7
16. Business enterprises	306,643	2.0	281,007	1.5	351,066	1.4
17. Foundations	184,830	1.2	111,774	0.6	170,954	0.7
18. Not-for-profit organizations	91,171	0.6	84,065	0.5	110,821	0.5
Total Donations, including bequests (lines 15-18)	864,599	5.7	751,146	4.1	1,044,217	4.3
19. Individuals	12,453	0.1	18,103	0.1	46,726	0.2
20. Business enterprises	404,162	2.7	525,478	2.9	667,588	2.7
21. Foundations	156,492	1.0	262,000	1.4	303,487	1.3
22. Not-for-profit organizations	197,865	1.3	375,508	2.1	441,030	1.8
Total Non-government grants and contracts (lines 19-22)	770,972	5.1	1,181,089	6.5	1,458,831	6.0
23. Endowment	562,577	3.7	-217,195	-1.2	800,879	3.3
24. Other investment	235,012	1.6	101,486	0.6	370,962	1.5
Total Investment (lines 23-24)	797,589	5.3	-115,709	-0.6	1,171,841	4.8
25. Sale of services & products	1,310,527	8.7	1,681,632	9.2	2,120,882	8.7
26. Miscellaneous	514,465	3.4	670,821	3.7	729,777	3.0
Total Other Income (lines 25-26)	1,824,992	12.1	2,352,453	12.9	2,850,659	11.7
Total Non-Government Income (lines 12-26)	7,062,144	46.7	7,894,132	43.4	11,342,019	46.7
Total (lines 1-26)	15,130,902	100.0	18,187,135	100.0	24,278,157	100.0

Note. Data are from Report 1.1 in the annual reports of the Canadian Association of University Business Officers (CAUBO 1999-2015), with values in Canadian dollars. Line entries by type of income source are as follows: 1. SSHRC – Social Sciences and Humanities Research Council (federal funding); 2. Health Canada (federal funding); 3. NSERC – Natural Sciences and Engineering Research Council (federal funding); 4. CIHR – Canadian Institutes of Health Research (federal funding), MRC – Medical Research Council in 1999-2000 (federal funding); 5. CFI – Canada Foundation for Innovation (federal funding); 6. CRC – Canada Research Chairs (federal funding); 7. Other federal – income from all other federal government departments and agencies, including indirect costs of research; 8. Provincial – income from provincial government departments and agencies, including CFI matching grants; 9. Municipal – income from municipal governments; 10. Other provinces – income as grants and contracts with provinces other than the province with jurisdiction; 11. Foreign – income from foreign sources such as the National Endowment for Humanities, National Institutes of Health and the National Science Foundation; 12. Credit course tuition – revenues from courses within a degree program; 13. Non-credit tuition – revenues from courses that are not credit courses, usually given through continuing education; 14. Other fees – all compulsory and non-compulsory student fees such as health services, library use, but excluding fees for activities such as student councils or federations.

Table 3 (continued)

Types of Income Sources	2008-2009		2011-2012		2014-2015	
	$'000	%	$'000	%	$'000	%
1. SSHRC	235,996	0.9	233,039	0.7	247,054	0.7
2. Health Canada	36,454	0.1	26,269	0.1	27,803	0.1
3. NSERC	745,260	2.9	757,545	2.4	784,872	2.2
4. CIHR (MRC in 1999-2000)	795,806	3.1	832,112	2.6	831,231	2.3
5. CFI	288,544	1.1	377,243	1.2	328,266	0.9
6. CRC	237,625	0.9	280,090	0.9	273,573	0.8
7. Other federal	733,198	2.8	938,756	3.0	716,682	2.0
Total Federal Government grants & contracts (lines 1 - 7)	3,072,883	11.8	3,445,054	10.9	3,209,481	9.0
8. Provincial	12,639,996	48.5	13,240,918	42.0	13,518,371	38.0
9. Municipal	35,134	0.1	80,208	0.3	24,340	0.1
10. Other provinces	41,204	0.2	73,060	0.2	65,620	0.2
11. Foreign	139,598	0.5	162,516	0.5	148,726	0.4
Total Other Government grants & contracts (lines 8-11)	12,855,932	49.3	13,556,702	43.0	13,757,057	38.7
Total Government grants & contracts (lines 1-11)	15,928,815	61.1	17,001,756	53.9	16,966,538	47.7
12. Credit course tuition	4,716,680	18.1	6,068,081	19.3	7,523,114	21.2
13. Non-credit tuition	349,241	1.3	426,204	1.4	475,018	1.3
14. Other fees	693,169	2.7	877,553	2.8	1,051,450	3.0
Total Tuition & other fees (lines 12-14)	5,759,090	22.1	7,371,838	23.4	9,049,582	25.5
15. Individuals	409,827	1.6	448,896	1.4	517,291	1.5
16. Business enterprises	367,540	1.4	382,796	1.2	341,281	1.0
17. Foundations 18. Not-for-profit organizations	382,647	1.5	327,689	1.0	468,741	1.3
Total Donations, including bequests (lines 15-18)	1,160,014	4.4	1,159,381	3.7	1,327,313	3.7
19. Individuals	36,351	0.1	17,745	0.1	44,763	0.1
20. Business enterprises	733,526	2.8	824,251	2.6	853,175	2.4
21. Foundations 22. Not-for-profit organizations	907,744	3.5	1,080,355	3.4	1,226,752	3.5
Total Non-government grants and contracts (lines 19-22)	1,677,621	6.4	1,922,351	6.1	2,124,690	6.0
23. Endowment	-1,671,932	-6.4	112,131	0.4	1,570,451	4.4
24. Other investment	-97,243	-0.4	386,239	1.2	762,132	2.1
Total Investment (lines 23-24)	-1,769,175	-6.8	498,370	1.6	2,332,583	6.6
25. Sale of services & products	2,411,801	9.2	2,608,722	8.3	2,839,818	8.0
26. Miscellaneous	917,384	3.5	958,614	3.0	897,271	2.5
Total Other Income (lines 25-26)	3,329,185	12.8	3,567,336	11.3	3,737,089	10.5
Total Non-Government Income (lines 12-26)	10,156,735	38.9	14,519,276	43.4	18,571,257	52.3
Total (lines 1-26)	26,085,550	100.0	31,521,032	100.0	35,537,795	100.0

Note. 15. Individuals – donations from individuals, including families; 16. Business enterprises – donations from unincorporated, privately or publicly incorporated businesses operated for profit; 17. Not-for-profit organizations – includes foundations (reported separately from 1999 to 2006) and other not-for-profit organizations, including associations and societies; 19. Individuals – grants and contracts from individuals and families; 20. Business enterprises – grants and contracts from business enterprises operated for profit. 21. Foundations – grants and contracts from foundations (1999-2006); 22. Not-for-profit organizations (includes foundations after 2006); 23. Endowment – income earned from investment of endowment funds; 24. Other investment – income from all funds other than endowment funds, including charges for unpaid tuition and other fees; 25. Sale of services and products – includes sales and rental income from residences and parking; 26. Miscellaneous – includes commissions, royalties and fees from rights and properties owned by the institution, as well as library and other fines (CAUBO, 2015b). Total income from Intellectual Property in 2008 was about $53 million from Canadian universities and affiliated teaching hospitals, according to Statistics Canada (2010), a relatively small proportion of total income. In 2014-15, federal sponsored research funding of the SSHRC, NSERC, CIHR and Indirect Costs of Research had all decreased in constant dollars from the 2011-12 values (CAUT, 2015).

Total income from federal government sources. In 2013, the federal government provided $3.29 billion for university research in Canada (Table 3), though in 2012 only 19 Canadian universities received more than $100 million each (CAUT, 2015; Research Infosource, 2013). The federal government increased funding for university R&D by creating the following: NCEs (in 1989); the CFI (in 1997); the Canada Research Chairs (CRC) program (in 1999); the Indirect Costs program (in 2001); the Canadian Graduate Scholarships program (in 2003); and the Canadian Council on Learning (in 2004) (Fisher & Rubenson, 2010).

Funding for the CRC program increased from $19.8 million in 2000 to $273.6 million in 2014, resulting in a total of 1,831 chairs being established by February of 2009 (Table 3; CAUBO, 2001; Grant & Drakich, 2010). However, this program has been criticized because private economic interests were perceived as unduly influencing the direction of the research and because most of the chairs were awarded to only a few universities (CAUT, 2000). In Ontario by the end of 2008, for example, 80% of CRCs had been awarded to the six largest research universities (Clark et al., 2009). The CRC program was further criticized because only a quarter of the appointments were women, and because NSERC and CIHR received 80% of CRCs, even though 60% of Canadian professors are in Social Sciences and Humanities disciplines (Grant & Drakich, 2010).

Total other (non-federal) government departments and agencies. Total annual grants and contracts from provincial, municipal, and foreign governments increased from $6.8 billion in 1999 to $13.8 billion in 2014 (Table 3), most of which went to university operating expenses such as salaries and matching CFI funds from the provinces (CAUBO, 2015b).

Tuition fees. This proportion of university funding changed more than any other since 1920 (Figure 1; Tables 2 and 3).

Total donations, including bequests. This category consists of donations from individuals, business enterprises, foundations, and not-for-profit organizations (CAUBO, 2015b). Between 1901 and 1926, for example, the University of Toronto received $6 million in donations ($100 million in 2014) (Wallace, 1927, pp. 299–302).

Total non-government grants and contracts. This category includes grants and contracts from individuals, business enterprises, foundations, and not-for profit organizations (CAUBO, 2015b).

Total investment income. This category is made up of "endowment" and "other investment," defined as follows: an endowment ". . . is a restricted fund that accounts for capitalization of externally or internally restricted amounts, primarily donations, which cannot be spent", whereas "other investment" includes investment income earned on all funds other than endowment (CAUBO, 2015b, p. 5, 13). Losses occurred in 2002–03 and in 2007–09 (Table 3; CAUBO, 2007, 2008). Endowments have a long history, for example, the Royal Charter in 1802 provided the University of King's College an annual endowment of £1000 pounds sterling ($4,000, ~$87,800 in 2014) (Hind, 1890, p. 31). Another example is McGill's endowment, which increased from $1.5 million in 1895 ($21.9 million in 2014) to $12 million in 1919 ($153 million in 2014) (MacMillan, 1921).

Total other income (sale of services and products, and miscellaneous). Among these are the following miscellaneous items, as described in CAUBO (2015b):

> . . . commissions, royalties and fees from the use of institution owned rights or properties, or fees for services rendered . . . library fines, other fines, rentals, net gain or loss of sale of fixed assets and any type of income not identified in the other categories. (p. 13).

Canadian University Expenditures

Total annual university expenditures have been divided into 23 categories by CAUBO (Table 4), which are discussed below.

Table 4

Canadian University Expenditures (by Fund and Type) for Selected Years

Types of Income Expenditures	1999-2000		2002-2003		2005-2006	
	$'000	%	$'000	%	$'000	%
Salaries & Benefits						
1. Academic ranks	3,054,650	22.4	3,734,104	19.9	4,424,056	18.9
2. Other instruction & research	867,417	6.4	1,198,081	6.4	1,689,366	7.2
3. Other salaries & wages	3,125,011	22.9	3,972,503	21.2	4,862,687	20.7
4. Benefits	996,412	7.3	1,384,162	7.4	1,904,801	8.1
Total Salaries & Benefits (lines 1 - 4)	8,043,490	59.0	10,288,850	54.9	12,880,910	55.0
5. Travel	331,265	2.4	450,891	2.4	560,543	2.4
6. Library acquisitions	225,394	1.7	288,371	1.5	286,930	12
7. Printing & Duplicating	92,174	0.7	114,911	0.6	117,274	0.5
8. Materials & Supplies	735,389	5.4	1,091,883	5.8	1,219,818	5.2
9. Communications	99,105	0.7	116,621	0.6	122,271	0.5
10. Other operational expenditures	627,758	4.6	973,530	5.2	1,148,345	4.9
11. Utilities	305,127	2.2	429,830	2.3	530,624	2.3
12. Renovations & alterations	255,876	1.9	387,920	2.1	533,949	2.3
13. Scholarships, bursaries & prizes	458,997	3.4	740,593	4.0	1,009,629	4.3
14. Externally contracted services	297,333	2.2	426,864	2.3	561,402	2.4
15. Professional fees	203,254	1.5	288,971	1.5	442,835	1.9
16. Cost of goods sold	371,554	2.7	457,238	2.4	503,664	2.1
17. Interest	272,151	2.0	326,315	1.7	470,074	2.0
18. Furniture & equipment purchase	779,436	5.7	1,110,088	5.9	1,240,385	5.3
19. Equipment rental & maintenance	156,975	1.2	202,780	1.1	247,544	1.1
20. Internal sales & cost recoveries	-72,417	-0.5	-259,200	-1.4	-129,918	-0.6
21. Sub-total (lines 5-20)	5,139,371	37.7	7,147,606	38.2	8,865,369	37.8
22. Buildings, land & land improvements	419,592	3.1	1,285,107	6.9	1,664,382	7.1
23. Lump sum payments	33,080	0.2	12,043	0.1	26,661	0.1
Sub-Total (lines 22-23)	452,672	3.3	1,297,150	6.9	1,691,043	7.2
24. Total (lines 1-23)	13,635,533	100.0	18,733,606	100.0	23,437,322	100.0
Consumer price index, 2002=100	92.9 for 1999		100.0 for 2002		107.0 for 2005	
Total student enrolment	770,040		830,250		944,976	

Note. Data are from Report 1.2 in the annual reports of the Canadian Association of University Business Officers (CAUBO 1999-2015), with expenditures in Canadian dollars. Consumer price index values are from Statistics Canada and it should be noted as well that the CPI index for 2014 is 125.2 (Statistics Canada, 2015a). Student enrolment numbers (totals for postsecondary 1st, 2nd and 3rd cycle education or equivalent) are from Statistics Canada (2014). Line entries are as follows: 1. Academic ranks – payments to full- and part-time staff holding an academic rank, including deans, professors (full, associate and assistant), and lecturers; 2. Other instruction and research – payments to full-time and part-time staff and non-staff members without academic rank, including instructors, tutors, markers, laboratory demonstrators, teaching assistants, research assistants, supervisors at examinations, clinical assistants, post-doctoral fellows, and others; 3. Other salaries and wages – includes payments not in line 2, to the president and vice-presidents, librarians, computer center personnel, technicians, teaching and research laboratory technicians, clerical and secretarial, professional and managerial, janitorial, trades and maintenance personnel; 4. Benefits – includes early and post-retirement benefits and other employee benefits such as dental plans, etc.; 5. Travel – payments for recruiting and moving expenses of staff, field trips and other types of necessary travel; 6. Library acquisitions – payments for electronic access and purchase of various print media; 7. Printing and Duplicating – expenditures for photocopying, reproductions, publishing and related supplies.

Table 4 (continued)

Types of Income Expenditures	2008-2009		2011-2012		2014-2015	
	$'000	%	$'000	%	$'000	%
Salaries & Benefits						
1. Academic ranks	5,464,976	19.5	6,270,814	19.9	6,919,487	20.7
2. Other instruction & research	1,895,429	6.8	2,128,316	6.7	2,247,306	6.7
3. Other salaries & wages	5,954,624	21.2	6,731,871	21.3	7,623,605	22.8
4. Benefits	2,354,227	8.4	3,087,999	9.8	3,368,109	10.1
Total Salaries & Benefits (lines 1 - 4)	15,669,256	55.9	18,219,000	57.8	20,158,507	60.2
5. Travel	680,070	2.4	671,398	2.1	694,851	2.1
6. Library acquisitions	359,358	1.3	335,148	1.1	371,866	1.1
7. Printing & Duplicating	124,569	0.4	112,524	0.4	100,733	0.3
8. Materials & Supplies	1,251,368	4.5	1,336,884	4.2	1,341,243	4.0
9. Communications	135,855	0.5	130,390	0.4	128,416	0.4
10. Other operational expenditures	1,501,598	5.4	1,420,258	4.5	1,498,653	4.5
11. Utilities	583,435	2.1	594,433	1.9	670,604	2.0
12. Renovations & alterations	607,548	2.2	734,090	2.3	627,194	1.9
13. Scholarships, bursaries & prizes	1,334,898	4.8	1,645,347	5.2	1,876,890	5.6
14. Externally contracted services	688,935	2.5	836,756	2.7	982,543	2.9
15. Professional fees	508,400	1.8	543,227	1.7	603,193	1.8
16. Cost of goods sold	506,246	1.8	503,328	1.6	464,216	1.4
17. Interest	539,085	1.9	553,314	1.8	545,045	1.6
18. Furniture & equipment purchase	1,297,522	4.6	1,396,614	4.4	1,132,732	3.4
19. Equipment rental & maintenance	306,393	1.1	339,505	1.1	401,315	1.2
20. Internal sales & cost recoveries	19,964	0.1	-142	0.0	0	0.0
21. Sub-total (lines 5-20)	10,445,244	37.3	11,153,074	35.4	11,439,494	34.2
22. Buildings, land & land improvements	1,884,871	6.7	2,123,580	6.7	1,832,005	5.5
23. Lump sum payments	23,632	0.1	37,478	0.1	49,284	0.1
Sub-Total (lines 22-23)	1,908,503	6.8	2,161,058	6.9	1,881,289	5.6
24. Total (lines 1-23)	28,023,003	100.0	31,533,132	100.0	33,479,290	100.0
Consumer price index, 2002=100	114.1 for 2008		119.9 for 2011		125.2 for 2014	
Total student enrolment	986,787		1,120,029		1,147,233 (2012-13)	

Note. 8. Materials and supplies – office, teaching and laboratories materials and supplies, e.g., chemicals, instruments, animals, feed and seed; 9. Communications – expenditures for telephone, data communication and mail and courier costs; 10. Other operational expenditures – payments for such items as renting space, municipal property taxes, insurance, advertising and meals; 11. Utilities – expenditures for items including electricity, water, natural gas, fuel and sewer; 12. Renovations & alterations – expenditures internally performed or contracted externally; 13. Scholarships, bursaries and prizes – for which students are not required to work; 14. Externally contracted services – including payments for cleaning, security, snow removal and food services; 15. Professional fees – for auditors and various consultants; 16. Cost of goods sold – includes sales from bookstores and food services; 17. Interest – all payments to service debts, e.g., bank interest and mortgages; 18. Furniture & equipment purchase – includes administrative, copying, laboratory and computer equipment, software and furnishings; 19. Equipment rental and maintenance – payments for rentals of furniture and equipment, and maintenance costs of equipment; 20. Internal sales and cost recoveries – includes overhead recovery of administrative and some utility costs and from the indirect costs of research; 22. Building, land and land improvements – expenditures relating to construction, landscaping, sewers, tunnels and roads; 23. Lump sum payments – payments to former employees.

Salaries and benefits. The total number of full-time university teachers (excluding those with senior administrative duties), increased 138% between 2000 and 2010, from 30,399 to 41,934 (Table 5; CAUT, 2015). Because of this increase in the number of university teachers, and because of average salary increases, total academic rank salaries increased from $4.04 billion in 1999 to $6.92 billion in 2014 (Table 4). Here academic ranks are defined as ". . . full and part time staff members who . . . are engaged in instruction and research activities", including ". . . deans, professors, associate professors, assistant professors and lecturers" (CAUBO, 2015b, p. 14). However, considered as a proportion of total university expenditures, academic rank salaries actually decreased, from 32% in 1977 to 20% in 2012 (CAUT, 2014, 2015). This decrease is a result of an increase in expenditures in other categories, including an increase in salary expenditures of non-academic rank salaries. In this regard, the increase in the number of poorly compensated temporary, non-tenured and non-tenure-track faculty members at Canadian universities has correlated with a decrease in public funding (Eastman, 2007).

Between 1990 and 1998, the number of Canadian part-time university faculty members increased 9.9%, from 25,672 to 28,222 (Omiecinski, 2003). Then, from 1999 to 2013, the proportion of temporary part-time university professors increased from 6.8% to 12.9%, much more than the 4.7% to 5.3% increase for all Canadian occupations in this same temporary part-time category (Table 5); by combining the temporary and permanent categories, it is apparent that full-time professors declined from 89.2% to 81.1%, while part-time professors increased from 10.8% to 18.8% (Table 5).

Table 5
Labour Force Estimates of University Professors and all Occupations by Employment Status and Permanency (CAUT, 2012, 2015, based on Statistics Canada data)

Employed Workforce	University Professors		
	1999	2006	2013
Permanent full-time %	79.4	68.1	66.9
Temporary full-time %	9.8	13.6	14.2
Permanent part-time %	4.0	4.8	5.9
Temporary part-time %	6.8	13.5	12.9
Full-time %	89.2	81.7	81.1
Part-time%	10.8	18.3	18.8
	All Occupations		
Permanent full-time %	75.0	74.4	73.7
Temporary full-time %	7.3	7.9	8.1
Permanent part-time %	13.0	12.5	12.9
Temporary part-time %	4.7	5.2	5.3
Full-time %	82.3	82.3	81.8
Part-time %	17.7	17.7	18.2

Average Canadian academic rank salaries increased from $97,134 in 1998 to $112,578 in 2010 (CAUT, 2014). Nation-wide salaries for academic-ranks after 2010 are not available because of budget cuts at Statistics Canada, but average 2012 values for Ontario full-time university teachers were as follows: lecturer—$102,018; assistant professor—$103,394; associate professor—$128,120; full professor—$160,670 (CAUT, 2015). These Canadian salaries are relatively high, compared with those in many other countries. For instance, Altbach, Reisberg, and Pacheco (2012) found that, in their sample of 28 countries, tenure-track (or equivalent), full-time Canadian salaries for entry level, average, and top levels were the highest in terms of purchasing power parity. These relatively high Canadian salaries have been attributed to the costs of attracting leading researchers and salary anomalies between different disciplines, which drove up all salaries (Clark et al., 2009).

While there has been an emphasis on attracting leading researchers, there seems to have been no similar emphasis on attracting leading teachers. In this regard, tenured professors who teach and do research have repeatedly stated as a self-evident (and self-serving) truth that professors who conduct research also happen to be the best teachers. The notion that research somehow improves teaching was considered by Astin (1999), who found, on the contrary, that research orientation correlates negatively with teaching and advising students. Moreover, a 1996 meta-analysis of 58 studies discussed in Clark et al. (2009) found no correlation between research productivity and teaching effectiveness. In Canada, lower rankings of research-intensive universities in terms of student–faculty interaction, as reported by Clark et al. (2009) and Stappenbelt (2013), also support this conclusion. Moreover, the results of the 2013/2014 National Survey of Student Engagement (NSSE) for first and senior year undergraduates from 73 Canadian and 622 U.S. institutions showed that, according to the director of NSSE, Canadian universities did not perform as well as those in the United States, and that, overall, bigger universities performed less well on student–faculty interaction (Hutchins, 2015). The results for effective teaching practices, as assessed by senior undergraduate students in this same 2013/2014 study showed that only 13 Canadian universities, primarily undergraduate ones, ranked above the average for the combined 695 Canadian and U.S. higher education institutions.

Current university students and recent university graduates (within two years) ranked course instructors at the University of Toronto second last out of 15 medical/doctoral universities, and those from York University last among 15 comprehensive universities (*2016 University Rankings: Special 25th Anniversary Issue*, 2015). The reason for these relatively low student evaluations could be related, at least partly, to large undergraduate class sizes. At the University of Toronto between 2007 and 2014, for instance, more than half of first year

undergraduate students were enrolled in classes with more than 200 students (University of Toronto, 2015d).

It should not be inferred, however, that the teacher/researcher model is defective in principle. On the contrary, this model has proven to be crucial to research universities in Canada, not only in terms of the research mission of universities, but also for the teaching and supervision of graduate students and postdoctoral researchers. The teacher/researcher professor model at research universities is vital to teaching assistants, graduate students and postdoctoral researchers at various ages and levels of experience. Furthermore, this model is self-sustaining in the long term because it ensures a constant throughput of students and faculty members from one generation to the next. Neither a teaching-only university nor a university research institute would be able to maintain all these functions from one century to the next.

However, Newman (1852) long ago was of the opinion that "to discover and to teach are two distinct functions; they are also distinct gifts, and are not commonly found in the same person" (p. 6). Assuming that researchers do not necessarily make good teachers, one could argue that university teachers should earn some form of official teaching certification. Providing university teachers with a reference to a book such as *McKeachie's Teaching Tips* by Svinicki and McKeachie (2014) would be a good first step, of course, but given the importance of the teaching function, a compulsory ongoing professional development program for all university teachers would be beneficial. Such a requirement, written into faculty contracts, would at least ensure some minimum level of teaching proficiency to ensure an acceptable level of educational value. After all, it seems incongruous that a teaching certificate is required at the primary and secondary school level but not at the postsecondary level. Up to and including the secondary level, a BEd is required, in addition to a minimum of a BA or BSc, yet there is no similarly

rigorous requirement at the university level, a notable exception being departments of education which require a teaching certificate as a condition of employment. Typically, the BEd degree is now of two years duration in Canada. By contrast, graduate student instructors at the University of Toronto are required to receive only 6 hours of "paid training" on topics including course organization, teaching skills, supervision of teaching assistants, and the use of technology (Field, Jones, Stephenson, and Khoyetsyan, 2014). Although graduate student instructors may have experience as teaching assistants in addition to the 6 hours of "training," this is hardly adequate compared to a 2-year BEd degree. Inadequate pedagogical instruction could explain, along with the just-in-time teaching assignments, the less than stellar student evaluations. As one example, of the 15 medical/doctoral universities in Canada in 2015, the University of Toronto ranked first in reputation and first in research dollars per full time faculty member, but, by contrast, students ranked their satisfaction 13th, and course instructors 14th (2016 University Rankings: Special 25th Anniversary Issue, 2015). At the university level, a few universities, such as the University of Toronto, also offer graduate degree programs in higher education, which include many courses dealing with topics such as the history of universities, the student experience, research universities, university governance, and the role of faculty members.

In Quebec in 1989, there were about 7,800 sessional instructors, almost as many as the 8,000 regular faculty members (Cameron, 1991). By 2003, rough estimates in Jones and Weinrib (2012) for Canada (excluding Quebec) suggested that ". . . 55 percent of all Canadian faculty held full-time, tenure-stream appointments, while approximately 9 percent held full-time but non-tenure-stream appointments; and 36 percent held part-time appointments" (p. 85). Unfortunately, current expenditures (as percentages) for instructors are unknown because they are included in the "other instruction & research" category of Table 4, which consists of ". . .

full and part time staff and non-staff members without academic rank . . . but who are engaged in instruction and research activities, including instructors, tutors, markers, laboratory demonstrators, teaching assistants, post-doctoral fellows . . . graduate and undergraduate students undertaking instruction and research activities" (CAUBO, 2015b, p. 14). Between 1999 and 2014, salaries in this category, as shown in Table 4, but recalculated in constant 2014 dollars, almost doubled, from $1.15 billion to $2.25 billion. In Ontario, the number of FTE part-time faculty increased from 1,780 in 1987 to 2,153 in 2002, and then to more than 3,900 in 2005, the latter being a considerable underestimate because it did not include the numbers from five large universities (Clark et al. 2009).

The number of university teachers without academic rank, according to the CAUBO definition, is large, because as part-time employees, they may teach only a single course. These instructors are sometimes referred to as adjuncts, who may be permanent part-time, sessional, or term employees (Puplampu, 2004). Information on the relative number of university teachers with and without academic rank is available for only a few Canadian universities, but this limited information is nevertheless revealing.

Since 2006, the University of Toronto has released information for all active faculty members with teaching/research responsibilities in each of the professorial, teaching stream, term-limited, sessional and stipendiary, clinical, and other categories. This information has shown that although the number of full- and part-time tenured/tenure-track professors increased from 2,159 in 2006 to 2,283, in 2014, the total number of all active faculty members with teaching/research responsibilities, including the professoriate, the teaching stream, term-limited, sessional and stipendiary, clinical, and other, increased from 9,097 to 14,038 (University of Toronto, 2007, 2015e). Based on these data, the percentage of the number of tenured/tenure

stream faculty members relative to the number of all active faculty members with teaching/research responsibilities decreased from 23.7% in 2006 to 16.3% in 2014. A more meaningful calculation would make use of the FTE numbers, which in 2014 included 2,204.0 FTE tenure-stream professors, a subset of a total of 6,803.1 FTE faculty members with teaching/research responsibilities (University of Toronto, 2015e). Dividing 2,204.0 by 6,803.1 gives the proportion of the number of FTE tenure-stream professors as 32.4%, a rather low percentage compared to non-medical universities mainly because of the high percentage (40.3%) of clinical faculty. The University of Toronto (2015e, p. 73) also reported that all 1,329 term-limited, sessional, and stipendiary faculty members in 2014 were part-time, comprising 265.8 FTE faculty members. It would seem that these faculty members taught only a single course at the University of Toronto, because dividing 1,329 by 265.8 gives 5 exactly.

Different definitions of the same categories of university teachers has added confusion to the classification of university teachers. For instance, the definitions of an "academic" and "faculty" are essentially synonymous in North American, according to the Canadian Oxford Dictionary, which defines an academic as "a teacher or scholar in a university or institute of higher education," and "faculty" as "the teaching staff of a university or college" (Barber, 2004). One might naturally assume that these general definitions would apply throughout Canada, but the University of Toronto (2007), for instance, introduced a more restricted definition:

> Starting in July 2005 there was a reclassification of those previously reported under the teaching stream (Sr Lecturers/Lectures). Those on contracts of less than 12 months are now classified as non-academics, CUPE 3902 Unit 3, and are excluded from the faculty counts. (p. 69)

Since 2000 in Ontario, the number of courses taught by contract faculty increased an estimated 87% (Brown, 2015). It would therefore be desirable to access more information

pertaining to the percentages and numbers of university teachers/researchers, including FTE numbers, the number of courses taught per university teacher, and the average class size for each of the four categories (permanent full-time, temporary full-time, permanent part-time, temporary part-time). If each university released this information, much of which has been disclosed by the University of Toronto, trends over time could be identified, including any differences between medical/doctoral, comprehensive, and primarily undergraduate universities. About half of all undergraduate classes at some universities are increasingly taught by part-time teachers who are paid a small fraction of the salary of a full-time tenured/tenure-track faculty member (Clark et al., 2009). At York University between 2002 and 2012, for example, the number of tenure-stream faculty members increased only slightly from 1,154 to 1,382, while the number of sessional instructor assignments (recalculated as whole course equivalents) increased from 730 to 1715.9, and the number of graduate student instructor assignments increased from 49.4 to 61.3 (Field et al., 2014). It is also known that contract faculty taught 64% of all undergraduate courses at York University (Brown, 2015). In addition, Field et al. (2014) reported the following for some other universities: Carleton University in 2012 employed 664 sessional instructors, who taught 1,184 courses (28.2% of courses), while 752 tenure-stream faculty members taught about 3,008 courses; Nipissing University in 2013 employed 63 FTE sessional instructors and 191 full-time faculty members; and McMaster University in 2012 employed 265 sessional instructors and 1,394 tenure-stream faculty members. At Mount Allison University, according to Vose (2014, para. 5),

> Over the period 2007 to 2013, the number of courses taught through part-time teaching has increased 19.8% while the number of part-time teachers has increased by 14%. Part-time faculty are paid around $6000 to teach a single course [half course]; most receive no benefits or pension and have little or no job security.

In Canada, Muzzin (2008, 2009) considered the various ramifications of the increased use of non-tenured academics, including the negative effects of teaching-only status, low remunerations, lack of adequate benefits, and large class sizes. In the United States, according to Kirp (2003), ". . . more than three out of five new full-time academic jobs offer no prospect of tenure" (p. 114).

The "Other Salaries and Wages" category in Table 4 includes expenditures for administrators. This category is not subdivided, but the salaries of senior university administrators in Ontario between 1996 and 2006 increased 43%, while those of presidents and provosts increased 63% (Essaji & Horton, 2010). The average salary and benefits of presidents, based on a sample of 72 reporting Canadian universities in 2012 for this category, was $326,118 (CAUT, 2015).

Other expenditures. This category includes student aid (scholarships, bursaries, and prizes), as well as expenditures on buildings, land, and land improvements (CAUBO, 2015b). An unusual example of spending in this category was reported by Collard (1946), who pointed out that, because of poor maintenance and deterioration of existing buildings, "three McGill medical professors erected at their own expense a building" to which the Medical Faculty moved in 1851" (p. 41).

Funding Comparisons With Other OECD Countries

General remarks. Average public spending for tertiary education by OECD countries decreased from 77% in 1995 to 69.2% in 2010 (OECD, 2013, 2014). This decrease correlates with the implementation of neoliberal policies during this time and would have been greater had it not been that several countries charged either no (or low) tuition fees. In 2011, for instance, no

tuition fees were charged in Mexico, Finland, Denmark, Norway, or Sweden (OECD, 2014). Similarly, no tuition fees were charged in the Czech Republic, Greece, Iceland, and Luxembourg, or at public universities in Brazil and Panama, though Feinstein (2014) pointed out that "some universities have miscellaneous fees for registration, books and other incidentals" (para. 4). In 2014, Germany began to offer free tuition, even for international students (Salles, 2014).

In the United States, the high proportion of private university income may explain the finding of Slaughter and Rhoades (2004), who pointed out that tertiary education institutions have become integrated into the "new economy," "knowledge society," or "information society." Private funding in some cases, according to Bok (2003), have manifested in such titles for faculty members as "Yahoo Professor of Computer Science" or "K-Mart Professor of Marketing," which certainly indicate close ties with the private sector. This development is not surprising, however, given the strong relationship in the United States between industries and universities, which extends back into the 19th century (Barrow, 1990). Another effect in the U.S., as noted by Giroux (2002), is that

> as large amounts of corporate capital flow into the universities, those areas of study in the university that don't translate into substantial profits get either marginalized, underfunded, or eliminated. Hence, we are witnessing both a downsizing in the humanities and the increasing refusal on the part of universities to fund research in services such as public health that are largely used by people who can't pay for them. (p. 434)

Research and development in Canada compared with other OECD countries. Canada's "scientific wealth" production, in terms of citation intensity of publications (measured as a ratio of citations per unit of GDP), was less than for the UK, Denmark, Finland, Israel, Sweden, Switzerland, and the Netherlands (King, 2004), which is perhaps not surprising, given that those

other countries spent a larger proportion of their GDP on research. In 2006, GERD, as a percentage of GDP, was 1.94% in Canada, less than in Denmark (2.43%), Austria (2.45%), Germany (2.53%), the United States (2.62%), Iceland (2.78%), Switzerland (2.9%), South Korea (3.23%), Japan (3.39%), Finland (3.45%), or Sweden (3.73%), while HERD comprised 36% of GERD in Canada, much higher than the 14% in the United States or the 17% average for OECD countries (AUCC, 2008). The higher Canadian HERD percentage has been a consequence of relatively low levels of business expenditures on research and development (BERD).

In 2010, $6.52 billion was spent on research at Canadian universities, compared to only $40.4 million at community colleges (CAUT, 2013b). Because university research expenditures made up almost all of the tertiary education research spending in Canada, it can be equated with the research funding of "tertiary education institutions" of the OECD classification. In 2004, Canadian R&D expenditures at universities, as a percentage of GDP, was 0.41%, more than the OECD average at 0.37%, but less than the percentage spent by Israel (0.42%), Norway (0.47%), the United Kingdom (0.47%), Australia (0.48%), the Netherlands (0.48%), Switzerland (0.61%), Finland (0.66%), and Sweden (0.79%) (OECD, 2008). By 2010, Canadian R&D expenditures at tertiary education institutions rose to fourth highest at 0.68%, though this was still less than the percentage spent by Norway (0.70%), Finland (0.80%), and Sweden (0.94%) (OECD, 2013).

Discussion and Conclusions

In general, changes to Canadian universities have been minor and incremental from one year to the next, but over a span of 21 decades these changes have been cumulative and significant, especially the thousand-fold increase in student enrolments since 1860. During the period of mercantilism, church-affiliated universities supplied community and religious leaders,

including missionaries, who served to strengthen loyalties to the colonial government. During this early period, access to higher education and low student fees were emphasized. For example, the president of Mount Allison University expressed his conviction in 1823 that ". . . whether a student gets a university education or not should depend on his ability, ambition, and character, and not upon the family income" (Reid, 1984b, p. 60).

Close similarities might be expected for the two periods of free market economics, from 1840 to the 1930s and from 1984 to 2015. However, during the first of these periods, universities continued to emphasize low fees (Figure 1), and faculty salaries were relatively low, a state of affairs probably influenced by church doctrine. The salaries of faculty members did not increase appreciably until well into the Keynsian period in the 1970s, when universities expanded in response to a large increase in student enrolments. Between 1980 and 2014, the proportion of government funding for Canadian universities decreased from 81.2% to 47.7% (Tables 2 and 3), a level not seen since the 1940s (Table 2). It may come as a surprise to readers that Canada's universities in 2014 were supported more by private than by public funds. Between 1995 and 2011, government funding for Canadian universities decreased 16.2%, more than the 9% decrease in average public funding supporting tertiary education in the OECD countries. Canadian universities responded to decreasing public support by increasing tuition fees, and by decreasing the percentage of tenured/tenure-track positions relative to less expensive non-tenure-track ones.

There were brief times in Canada when tuition was free for some students, for example, the federal government in 1939 introduced a program of free tuition for World War II veterans, including a monthly living allowance of $60 for singles and $80 for married couples, with additional allowances for dependents (Friedland, 2002, p. 363). Free tuition for all Canadian

students was considered possible if income taxes were increased six percent (Crowley, 1973). In addition, Grade 13, which was the equivalent of qualifying year at the university level, was also free in Canada for many decades. At present, a small proportion of students have their fees and living expenses paid for by scholarships, bursaries, and from parental patronage. At the other extreme, arguments have been made for increasing tuition fees (Levin, 1990).

Between 1968 and the mid-1990s, universities charged different fees in different provinces, though within any one province universities charged similar fees for most programs. This meant that students could choose the program for which they had the most preference, without cost being a consideration. However, after significantly different fees had been introduced for different programs, especially for law, medicine, and dentistry, cost became an important factor. If one takes the OECD (2008) view of students as "human capital," formed mainly through educational attainment, with different fees for different disciplines related to expected earnings, it follows that students in certain disciplines acquire more "human capital," along with an expectation of increased future earnings, than those in other disciplines. However, the earnings of Canadian science and technology graduates, with the exception of those in the health and life sciences, did not increase between 1982 and 1995, according to Finnie (2002), which means that only a few university programs have higher earning potentials. Linking tuition fees to expected future earnings is not an exact science either, given the uncertainties in the long-term labour market.

How will Canadian universities be funded in the future? If the past is any guide, changes will continue to be small and incremental, but, since 1984, neoliberal policies have resulted in higher student fees, significantly different fees for different programs, higher student debts, more research, and a change in faculty composition, with a higher percentage of

temporary contract instructors and sessional lecturers relative to the traditional professoriate. While Canadian HERD increased as a percentage of GDP, with only three OECD countries spending more, research dollars have become concentrated at only a few of the more established comprehensive and medical/doctoral universities, and the research there has become more applied than basic.

One could ask, Were the large cuts in 1995 affecting postsecondary education justified? In a general sense, as noted by Chossudovsky (2003), "the accumulation of large public debts has provided financial and banking interests with 'political leverage' as well as the power to dictate government economic and social policy" (p. 301). With the benefit of hindsight, it seems obvious that these spending cuts could have been avoided if more tax revenues had been collected in the first place, and if a significant reserve fund had been available to safeguard against unanticipated financial emergencies. To an extent, the financial and credit crisis, beginning in 2008, resulted in a reassessment of neoliberal ideology by Harvey (2009), and with regard to education in the U.S., Giroux and Giroux (2009) envisioned a post-neoliberal era. Similarly, Peters (2013) noted that although neoliberal "new public management" theories have been very influential in Canada (p. 24), "now is the time to experiment with and institute new university models of open management that recognize the vital role of the *public* university and its role in the production of knowledge and citizens for knowledge democracies." However, while now may be the time, neoliberal policies are well established, and it may require a crisis of magnitude similar to the Great Depression before they are dismantled.

To conclude, financing Canadian universities was manageable in the early 1800s because of small enrolments and insignificant spending on research. Salary comparisons of faculty members and university administrators between then and now must consider the

introduction and increases in personal income taxes. For example, in 1802, the salary of the president of King's College in Nova Scotia was £500 sterling ($2,000, equivalent to ~$43,900 in 2014), but at that time this salary equated with "take-home pay" because there were no personal income taxes. In 2012, by contrast, the salary and benefits of the president of St. Francis Xavier University in Nova Scotia totaled $284,985, according to CAUT (2015), six and a half times that of the president of King's College in Nova Scotia 210 years earlier, though the after-tax income of the more recent salary would be less. Another comparison is possible for the compensation of the president of the University of Toronto, which in 1857 was $4,000 (~$107,900 in 2014), and in 2012 was $441,352, including benefits (McKillop, 1994; CAUT, 2015). The 2012 after-tax income would have been less, but it would nevertheless have been much more than the 1857 untaxed salary. The same kind of comparison for university teachers reveals low levels of compensation at the denominational universities, which did not receive government funding after 1868.

Between 1813 and 2013, undergraduate student fees in constant 2013 dollars increased by a factor of 24, from $236 to $5,720. Between 1986 and 2000, student fees more than doubled. In terms of percentages of total university revenues, Canadian student fees increased from 15.1% in 1930 to 31.1% in 1945, after which they decreased to 9.0% in 1980. After re-introduction of the most recent free market system in 1984, the proportion of total university revenues from student fees increased steadily from 11.3% in 1990, to 16.5% in 1995, to 25.5% in 2014.

Between 1999 and 2011, total government funding for Canadian universities increased, but as a proportion of total university revenues, the increase was slight, from 53.3% to 53.9% (Table 3), well below the OECD average. If the most recent free-market period in Canada extends for as long as the previous one, which lasted 90 years, then another 60 years of

neoliberal policies are in store for universities. If so, it is reasonable to expect that the percentage of tenured/tenure-track faculty members, relative to all university teachers, will continue to decrease, except at a few of the most research-intensive universities, where faculty will be divided, as is already the case at the University of Toronto, into teaching/research and teaching-only streams. Recently, McMaster University also introduced two such streams ("Contract University Lecturers Strike," 2015). Given the importance of research to the knowledge economy, another possibility would be to add a third stream of research-only employee. This model, as described by Regis (1987) for the Institute for Advanced Study at Princeton University, is based on professors who are engaged in basic research but have no teaching responsibilities. In Canada, applied research institutes might be more viable, given the current mandate. If such a third stream of research-only faculty were introduced to the other two, mobility between those in each of the three streams should be made possible, and those in each stream should have a say in university governance.

In the years to come, if the knowledge economy becomes as important as advertised, then adequate funding for research should materialize of its own accord without government intervention, with businesses sponsoring more academic positions, as in the United States. Students will continue to pay higher student fees and accumulate larger debts, until at some threshold, more students will opt for less expensive alternatives, such as online universities, universities in countries with lower fees, or career-oriented community colleges. To provide more university revenues, diverting government funds from other budgets should also be considered: for instance, the large research grants given to businesses. Instead of these grants, governments could provide loans to businesses for the same purpose, just as loans are provided to students. In addition, the salaries of Canadian professors could be reassessed, given that they

are already high compared to those in other countries. The salaries of university presidents should also be reviewed, given that some of them are higher than that of the prime minister of Canada.

It is hoped that this historical treatment of financing universities in Canada, along with comparisons with other countries, will spark new debates among the interested general public, government officials, secondary school students, their teachers and principals, university teachers and administrators, university students, parents, the employers of university graduates, and others. Many questions remain, such as the following: Should Grade 13 be reinstated, given that many undergraduate classes are large and taught by part-time sessional lecturers and graduate students? Is the salary difference between non-tenure stream and tenure-stream university teachers fair? Should the salaries of the traditional professoriate and those of university presidents stay the same, increase, or decrease? Should all university teachers be required to have certification to ensure a level of teaching effectiveness to ensure adequate educational value for money? Is total government funding of Canadian universities sufficient, and, if not, should more government funding be drawn from other budgets? Should student loan limits be increased? Is the distribution of research funding among the various granting agencies fair? Should universities be more transparent? Should the private sector play a more important role in research and sponsor more university positions? These are only some of the many questions that could be debated. Another important question is, Will those who control the purse strings listen?

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Appendix:

Additional Information on Annual Student Fees and Faculty Salaries Used for Figures 1 and 2

At McGill in **1840**, a professor's salary was £300 ($1,200, ~$32,700 in 2014), while the principal received £400 ($1,600, ~$43,600 in 2014): Tuition fees in **1843** were £3 ($12, ~$380 in 2014), but were increased in **1845** to £10 ($40, ~$1,240 in 2014) (MacMillan, 1921). At Queen's in **1842**, a professor's salary was £300 ($1,200, ~$34,700 in 2014): Students paid £15 ($60) for board in **1859** (~$1,700 in 2014), and in **1860** the principal received £600 ($2,400, ~$68,000 in 2014) (Calvin, 1941). In **1857**, the salary of the president of the University of Toronto was $4,000 (~$107,900 in 2014) (McKillop, 1994). In **1859** at the University of New Brunswick, tuition fees were $16 (~$450 in 2014) (MacKirdy, 1950). In **1862**, the salary of a professor at McGill was £400 ($1,600, ~$39,000), and in **1866** at Queen's it ranged from $1,200 (~$25,060 in 2014) to $1,600 (~$33,410 in 2014) (Frost, 1980, p. 210; Neatby, 1978, p. 113). At McGill in **1864**, fees in the faculty of arts were $25.25 (~$714 in 2014), consisting of the following: session fees - $20; library use - $2; gymnasium - $2; graduation - $5 ($1.25/year) (McGill College, 1864, p 13). Tuition fees at University College in Toronto were $10 between **1860** and **1881** (equivalent to ~$164 in 2014), raised to $22 between **1882** and **1892** ($387 in 2014) (CAUT, 2002, p. 3). In **1867** at the University of New Brunswick, tuition fees were increased to $25 (~$560 in 2014) (MacKirdy, 1950). At Queen's in **1871**, total student tuition and living expenses were about $280 ($4,712 in 2014) (Neatby, 1978). In **1872** at Mount Allison, combined fees for tuition and board were raised to $135 ($2,400 in 2014), and in **1874** the salary of a professor was $1,000 ($17,100 in 2014) (Reid, 1984a, pp. 116, 135). In **1877**, tuition fees in the B.A. program at Mount Allison were $200 ($3,260 in 2014) (presumably including board as in **1871**), compared to $82 ($1,337 in 2014) at Dalhousie and $100 ($1,630 in 2014) at Acadia (Reid, 1984a, p. 141). Tuition fees at University College in Toronto, according to CAUT (2002, p. 3) were as follows: $22 between **1882** and **1892** ($387 in 2014), $32 between **1894** and **1896** ($477 in 2014), $52 in **1897** ($781 in 2014) and in **1908** ($978 in 2014). In **1890** at Dalhousie, fees in the undergraduate arts course in first and second year were about $34.25 ($558 in 2014) (Dalhousie College, 1890). At Mount Allison in **1891**, the salary of the president was $1,500 ($24,450 in 2014), and the board of governors decided that the salary of professors after seven years of service would be $1,250 ($20,380 in 2014) (Reid, 1984a, p. 198). At Acadia in **1891**, student fees added up to $31.25 ($509 in 2014) (excluding special fees for chemistry, which not all students paid) comprised of the following: tuition fees - $24 ($391 in 2014); incidental fees (library tax, janitor's services, fuel for classrooms and stationery for examinations) - $4; gymnasium and reading room - $2.25; Chemistry special fee - $1.50, Practical Chemistry special fee - $3; diploma fee for the B.A. degree - $4 ($1/year); an Honor Certificate - $1; an M.A. Diploma - $6; board - $2.60 per week (about $59.80 per 23 week academic year, $975 in 2014); rent - $6 to $18 per year depending on location ($98 to $293 per year in 2014): Total fees and living expenses, including board and rent were therefore about $109 ($1,777 in 2014) (Acadia University, 1891). At the University of Toronto, the salary of a lecturer in **1892** was $800 ($12,941 in 2014), and the initial salary of a professor in **1894** was $2,500 ($37, 262 in 2014) (Friedland, 2002, pp. 161, 164). At McGill in **1893**, total student fees were $44.13 ($692 in 2014), made up of the following: registration - $5; sessional fee - $36; graduation fee - $12.50 ($3.13/year) (McGill College, 1893, p. 132). At the University of Manitoba in **1893**, total fees were $13 ($204 in 2014), consisting of the following: final examinations - $12/year ($2/subject); a degree fee for a B.A. - $4 ($1/year) (University of Manitoba, 1893). At Western University in **1895**, total fees in the undergraduate general course were $67.50 ($985 in 2014) as follows: instruction for two terms - $30; examination fee - $35 ($5 for each of seven subjects; B.A. degree fee - $10 ($2.50/year) (Western University, 1895). At St. Francis Xavier in **1899**, total fees were $36.25 ($548 in 2014) as follows: degree and diploma fees for a B.A. - $5 ($1.25/yr); tuition for students not in residence - $35; board and tuition only - $150; tuition, degree and diploma fees with residence - $151.25 ($2,287 in 2014) (University of St. Francis Xavier's College, 1899). At the University of Toronto in **1899**, total fees in the B.A. program (excluding residence fees) were $59.50 ($900 in 2014), paid directly to the Registrar as follows: registration - $5; enrolment - $36; final examinations - $14; B.A. degree - $10 ($2.50/year); library - $2; board and rent of room - $150 to $180 a year ($2,268 to $2,722 in 2014) (University of Toronto, 1899). In **1902**, a dean's salary at McGill was $4,000 ($65,200 in 2014) (Frost, 1984, p. 56). In **1902** at Dalhousie, fees in first year arts were $40.25 ($656 in 2014), as follows: registration - $5; class fees - $30; gymnasium for male students - $1.50; diploma and graduation - $15 ($3.75/year) (Dalhousie College, 1902). In **1903** at Victoria University in Toronto, total fees in arts for those taking more than one honour course were $52.50 ($869 in 2014), as follows: enrolment - $36; final examinations - $14; B.A. degree fees - $10 ($2.50/year); library use - $2 (Victoria University, 1903). In **1907** at Dalhousie, fees in first year arts were $36.25 ($669 in 2014), as follows: registration - $5; class fees - $30 or more; diploma - $5 ($1.25/yr) (Dalhousie College, 1907). At Queen's in **1907**, salaries ranged from $1,200 for a junior professor ($22,200 in 2014)

to $2,250 for a senior professor ($41,600 in 2014), and $2,500 for a dean ($46,200 in 2014) (Neatby, 1978). In **1908** at the University of New Brunswick, the salary of a professor was $1,400 ($26,320 in 2014) (Videto, 1950). In **1908** at Western, the salary of a professor had increased to $1,400 ($26,320 in 2014) (Talman & Talman, 1953). In **1908** at the University of Alberta, salaries were as follows: the President (Henry Marshall Tory) - $5,000 ($94,000 in 2014); Lecturers - $1,200 ($22,600 in 2014); Assistant Professors - $1,800 ($33,800 in 2014); Professors - $2,500 ($47,000 in 2014) (Johns, 1981, p. 12). At Queen's in **1909**, fees for the general courses in Education, including library, gymnasium, examination, and diploma fees, were $17 ($325 in 2014) (Queen's University,1909). At the University of Toronto in **1914**, total fees in the B.A. program (excluding residence fees) were $65.50 ($1,367 in 2014), paid to the Registrar as follows: admission - $10; course registration - $40; final examinations - $10; B.A. degree - $10 ($2.50/year); library - $2; Council of the Undergraduates fee (males only) - $1; board and rent of room - $230 to $270 ($4,800 to $5,634 in 2014) (University of Toronto, 1914). In **1916**, at Acadia, Dalhousie, King's, Mount Allison, St. Francis Xavier, and St-Joseph, tuition fees were increased from about $45 to $60 ($840 to $1,120 in 2014) (Reid, 1984b, p. 12). In **1916** at Queen's, the salary of the principal was increased to $4,000 ($74,750 in 2014), and at Mount Allison in **1917**, the salary of the president was raised to $2,000 ($31,700 in 2014), and professors received $1,100 to $1,600 ($17,430 to $23,360 in 2014) (Calvin, 1941; Reid, 1984b, p. 14). At Western in **1918**, undergraduate fees were $52.50 ($739 in 2014) as follows: instruction - $45; final examinations - $5; B.A. degree fees - $10 ($2.50/year) (Western University, 1918). In **1919**, the salary scale at Queen's, according to McKillop (1994, p. 298), was as follows: Assistant Professor - $2,000 to $2,400 ($25,551 to $30,660 in 2014); Associate Professor - $2,500 to $2,900 ($31,939 to $37,049 in 2014); Full Professor - $3,000 to $3,500 ($38,327 to $44,714 in 2014). In about **1919** at the University of Toronto, the salary of a full professor was $5,000 ($63,878 in 2014), much less than $8,000 at Harvard, Yale, Columbia and Michigan (Friedland, 2002, p. 278). Also in **1919**, but at the University of Alberta, the salary scales, as approved by the Board of Governors and the government, were as follows: Instructors - $900 to $1,400 ($11,500 to $17,900 in 2014); Lecturers - $1,500 to $2,100 ($19,200 to $26,800 in 2014); Assistant Professors - $2,200 to $2,700 ($28,100 to $34,500); Professors - $2,800 to $3,500 ($35,800 to $44,700 in 2014); Department Heads – 2,800 to $3,800 ($35,800 to $48,500 in 2014) (Johns, 1981, p. 72). In **1920** at McGill, tuition fees in arts were raised to $100 ($1,100 in 2014) (Frost, 1984). In **1920** at McGill**, t**otal undergraduate fees in arts, including fees for the library, student's union, gymnasium and graduation, were $110 ($1,208 in 2014 (McGill University, 1920). In **1921** in the University of Toronto arts program, total compulsory fees were $61.63 to 66.63 ($772 to $834 in 2014), as follows: registration - $40; laboratory supplies (up to $5 in first year depending on the program); Hart House and Students Administrative Council - $11; examination fee - $10; degree fees - $2.50 ($0.63/year) (University of Toronto, 1921). In **1926** at Queen's, new salaries were approved, ranging from $1,500 for lecturers ($20,400 in 2014) to $4,000 for associate and full professors ($54,400 in 2014) (Gibson, 1983). In **1926** at Mount Allison, faculty salaries ranged from $2,400 to $2,800 ($32,700 to $38,104 in 2014) (Reid, 1984b, p. 91). In **1927**, salaries at the University of Alberta were as follows: Instructors - $1,200 to $1,800 ($16,500 to $24,800 in 2014); Lecturers - $1,800 to $2,500 ($24,800 to $34,400 in 2014); Assistant Professors - $2,500 to $3,000 ($34,400 to $41,300 in 2014); Associate Professors - $3,000 to $3,500 ($41,300 to $48,200 in 2014); Professors - $3,500 to $4,500 ($48,200 to $61,900 in 2014) (Johns, 1981, p. 108). In **1930** at McGill, salaries had increased such that the Principal received $15,000 ($206,400 in 2014), while professors were paid $4,500 ($61,900 in 2014) (Gibson, 1983; Frost, 1984). Tuition fees at the University of Toronto in **1930** were $107 ($1,472 in 2014) (CAUT, 2002, p. 3). In **1931** at Mount Allison, tuition fees in the basic arts program were increased to $130 ($1,985 in 2014), about the same as at Dalhousie and King's, but higher than the $84 at the University of New Brunswick ($1,280 in 2014) (Reid, 1984b, p. 96). In **1940** at the University of Alberta, room and board was $227 ($3,550 in 2014), with student fees as follows: $120 ($1,880 in 2014) for Household Economics, $145 ($2,270 in 2014) for Commerce, $160 ($2,500 in 2014) for Applied Science; $150 ($2,350 in 2014) for a master's degree program (Johns, 1981, p. 160). Tuition fees at the University of Toronto in **1940** were $199 ($3,114 in 2014) (CAUT, 2002, p. 3). In **1946** at the University of Alberta, the following salary scale was adopted (Johns, 1981): Instructor – $1,000 to $2,000 ($13,300 to $26,600 in 2014); Lecturer - $2,000 to $2,600 ($26,600 to 34,600 in 2014); Assistant Professor - $2,700 to $3,300 ($36,000 to $44,000 in 2014); Associate Professor - $3,400 to 4,000 ($45,300 to $53,300); Professor - $4,100 to $4,500 ($54,600 to $59,900 in 2014); Professor and administrative head - $4,100 to $5,000 ($54,600 to $66,600 in 2014) (pp. 210-211). At the University of Toronto, the starting salary of its new president in **1944** was $10,500 ($144,462), with an additional $1,500 ($20,640 in 2014) for expenses (Friedland, 2002, p. 366). In **1945** at Carleton College in Ottawa, tuition fees were $225 ($3,062 in 2014), and in **1948** the salary of an assistant professor was $3,000 ($31,800 in 2014), slightly less than at other Ontario Universities (Neatby & McEown, 2002). At the University of Alberta in **1950**, the base salary of the president was $8,000 ($80,100 in 2014) (Johns, 1981, p. 244, 280). Also by **1950**, salaries at Queen's ranged from $2,000 for lecturers ($20,000 in 2014) to $6,000 or more for department heads and professors of distinction ($60,100 or more

in 2014), while tuition fees were $237 ($2,374 in 2014) (Gibson, 1983; CAUT, 2002, p. 3). In **1952** at the University of Toronto, the base salary for lecturers was raised from $2,000 ($17,634 in 2014) to $3,100 ($27, 332 in 2014), while the base salary for full professors was increased from $5,500 ($48,493 in 2014) to $7,200 ($63,482 in 2014) (Friedland, 2002, p. 414). In **1958** at the University of Alberta, the starting (base) salaries for faculty had increased as follows: Assistant Professor - $6,000 ($49,400 in 2014); Associate Professor - $7,500 ($61,800 in 2014); Professor - $9,000 ($74,100 in 2014) (Johns, 1981, p. 280). In **1960** at Queen's, salaries ranged from $5,200 for a lecturer ($42,000 in 2014) to $15,000 for a professor ($121,200 in 2014) (Gibson, 1983). Tuition fees at the University of Toronto in **1960** were $466 ($3,764 in 2014) (CAUT, 2002, p. 3). At the University of Alberta in **1961**, starting salaries and tuition fees, according to Johns (1981, pp. 323, 325) were as follows: Assistant Professor - $6,000 ($47,800 in 2014); Associate Professor - $9,000 ($71,800 in 2014); Professor - $12,000 ($95,700 in 2014); tuition fees for the B.A. program - $250 ($1,990 in 2014), for the B.Sc. program - $290 ($2,300 in 2014), and for the Law program - $340 ($2,700 in 2014) . By **1963**, tuition fees in the bachelor's program at the University of Alberta had increased to $300 in arts ($2,300 in 2014), $350 in science ($2,700 in 2014), and $400 in engineering ($3,100 in 2014) (Johns, 1981, p. 340). In **1965** at Carleton University, compulsory fees in arts were $515 ($3,838 in 2014) (Carleton University, 1965). In **1968**, the following salaries were adopted at the University of Alberta: Lecturers - $7,000 to $9,450 ($46,600 to $62,900 in 2014); Assistant Professors - $9,500 to $12,950 ($63,300 to $86,200 in 2014); Associate Professors - $13,000 to $17,450 ($86,600 to $116,200 in 2014); Professors - $17,500 or more ($116,500 or more in 2014); tuition fees for most undergraduate programs - $400 ($2,660 in 2014); for engineering and graduate studies - $500 ($3,330 in 2014); for medicine and dentistry - $600 ($4,000 in 2014) (Johns, 1981, p. 468). Tuition fees at the University of Toronto changed from $533 in **1970** ($3,287 in 2014) to $961 in **1980** ($2,734 in 2014) (CAUT, 2002, p. 3, 2012). In 1975 at Carleton University, full-time undergraduate fees (with ancillary fees), were $682 for Arts, Journalism, Music, Commerce and Science ($2,944 in 2014), and $742 for Engineering, Architecture and Industrial Design (3,203 in 2014) (Carleton University, 1975). In **1985** at Carleton University, tuition and other compulsory fees in the arts program were $1,578 ($3,136 in 2014) (Carleton University, 1985). The median salaries of Canadian full-time university teachers in **1986** (excluding those in Quebec), were as follows: Lecturer - $31,900 ($60,882 in 2014); Assistant Professor - $38,000 ($72,524 in 2014); Associate Professor - $50,100 ($95,618 in 2014); Full Professor - $64,600 ($123,291 in 2014) (AUCC, 1987). The average cost of tuition increased from $1,706 in **1991** ($2,580 in 2014) to $3,684 in **2002** ($4,612 in 2014), and $4,917 in **2009** ($5,381 in 2014) (CAUT, 2003, 2010). In **1994** at Carleton University, composite tuition and compulsory miscellaneous fees in arts were $2,577 ($3,765 in 2014) (Carleton University, 1995). By **2010**, average salaries of full-time university teachers in Canada had increased as follows: Lecturer – $86,640 ($93,110 in 2014); Assistant Professor - $89,681 ($96,378 in 2014); Associate Professor - $110,263 ($118,497 in 2014); Full Professor - $138,853 ($149,222 in 2014) (CAUT, 2014). In **2015**, tuition and ancillary fees at Carleton University in the B.A. program were $7,190 (Carleton University, 2015).