

## Financial Investment in Universities in 2008-2009: Comparison between Québec and the Other Canadian Provinces

### Introduction

How does Québec's financial investment in its universities compare with that of the other Canadian provinces? To answer this question, it is necessary to examine the problem from various perspectives. The revenues and expenditures of the universities must be taken into consideration, of course, along with the economic realities of the regions concerned. The level of collective wealth varies from one province to the next, as does the cost of living. The indicators selected in this document will make it possible to determine Québec's relative position and explain the differences observed in comparison with the rest of Canada<sup>1</sup>.

Section I covers total spending by universities relative to gross domestic product (GDP). Section II considers total per-student spending by universities and, in particular, the salary cost of teaching personnel and its two main components, namely the student-teacher ratio and the average salary of university professors. Section III examines university revenue sources for activities in general and research in particular. In section IV, the revenue and spending of universities are compared and the issue of Québec university deficits is discussed.

The data used in this study are taken mostly from Statistics Canada and the Canadian Association of University Business Officers (CAUBO). The data sources are the same as those used for the production of certain indicators in *Education Indicators*<sup>2</sup> (2011 edition, to be published).

### I. Total university spending as a percentage of GDP

One of the indicators used most often to measure financial investment in education is the ratio of total educational spending to GDP, which indicates the proportion of the collective wealth of a society that is devoted to education. In this context, it is relevant to ask what proportion of the GDP is represented by the total spending of Québec universities and how this compares with spending in the rest of Canada.

Total spending by universities includes the general operating fund, trust fund, sponsored research fund and capital fund. Table 1 shows the data on total spending by universities in relation to the GDP in Québec and in the other regions of Canada, in 2008-2009.

1 This document is an updated version of the *Education Statistics Bulletin* published by the Direction de la recherche, des statistiques et de l'information, Ministère de l'Éducation, du Loisir et du Sport (MELS): Demers, Marius. *Financial Investment in Universities in 2006-2007: Comparison between Québec and the Other Canadian Provinces*. No. 37, August 2008.

2 Québec, Ministère de l'Éducation, du Loisir et du Sport, Direction de la Recherche, des Statistiques et de l'Information. *Education Indicators*, annual publication. See indicators 1.12 to 1.15.

**Table 1 Total spending by universities as a percentage of GDP, in Québec and in the other regions of Canada, in 2008-2009 (%)**

	2008-2009
<b>Québec</b>	<b>1.94</b>
<b>Canada without Québec</b>	<b>1.58</b>
Atlantic provinces	2.03
Ontario	1.76
Western provinces	1.37
<b>Canada</b>	<b>1.65</b>

Source: DRSI, MELs. Calculations based on data from Statistics Canada and CAUBO.

In 2008-2009, total university spending was approximately 1.94% of the GDP in Québec<sup>3</sup>, compared with 2.03% in the Atlantic provinces, 1.76% in Ontario and 1.37% in the Western provinces.

The difference between Québec (1.94%) and the average for the other provinces (1.58%) is 0.36 percentage point. This gap is significant, and can be explained using an analysis model with four major explanatory factors: total per-student spending, collective wealth (defined as the per capita GDP), the participation rate and the demographic factor<sup>4</sup>. The participation rate is defined as the ratio of university enrollment expressed in full-time equivalents to the population 18 to 24 years of age, while the demographic factor is the ratio of the 18-to-24 age group to the total population.

Table 2 shows data on each of these factors and Table 3 indicates the contribution of these factors to differences between total university spending as a percentage of GDP, in Québec and in the rest of Canada in 2008-2009. The “positive” factors are those that are responsible for Québec’s higher level of financial investment, while the “negative” factors are those that reduce the difference.

**Table 2 Total per-student spending by universities, per-capita GDP, participation rate and demographic factor in Québec and in the rest of Canada, 2008-2009**

	Québec	Canada without Québec
Per-student spending (\$)	29 242	28 735
Per capita GDP (\$)	38 979	50 732
Participation rate (%)	29.2	28.4
Demographic factor (%)	8.8	9.8

Source: DRSI, MELs. Calculations based on data from Statistics Canada and CAUBO.

<sup>3</sup> In 2008-2009, total university spending in Québec was \$5.85 billion, while Québec’s GDP was \$302.23 billion.

<sup>4</sup> See Appendix 1.

**Table 3 Influence of various factors in the differences between total university spending as a percentage of GDP, in Québec and in the rest of Canada, 2008-2009**

Total university spending as a percentage of GDP in Québec (%)	1.94
Total university spending as a percentage of GDP in the rest of Canada (%)	1.58
Difference (Québec – rest of Canada), in percentage point	0.36
<b>Contribution of each factor to this difference, in percentage point:</b>	
Per-student spending higher in Québec	0.03
Per capita GDP lower in Québec	0.47
Participation rate higher in Québec	0.05
Demographic factor (fewer young people in Québec)	-0.19
<b>Total</b>	<b>0.36</b>

Source: DRSI, MELs. See Appendix 1.

In 2008-2009, per-student spending in Québec universities (\$29 242) was 2% higher than the average for universities in the rest of Canada (\$28 735). This factor contributed 0.03 percentage point to the difference between total university spending in relation to the GDP, in Québec and in the rest of Canada.

In addition, the fact that Québec's per capita GDP (\$38 979) was 23% lower than the average for the other Canadian provinces (\$50 732) contributed 0.47 percentage point to the difference between Québec's total university spending (as a percentage of GDP) and that of the rest of Canada. This is the most significant factor explaining the higher spending level in Québec as compared to the level in the rest of Canada.

The slightly higher participation rate in Québec contributed 0.05 percentage point to the difference, while the demographic factor (fewer young people in Québec, comparatively speaking) reduced the difference by 0.19 percentage point.

To sum up, three of these four factors contributed to the higher level of spending by universities in Québec: per-student spending, which is higher in Québec than in the rest of Canada; the participation rate, which is slightly higher in Québec; and the level of collective wealth, which is lower in Québec than in the other provinces. Only the demographic factor (fewer young people in Québec) had an opposite effect.

## II. Total per-student spending by universities

This indicator is used to compare the level of financial resources devoted to students. The concept of total spending used in this section is the same as in the previous section. It would have been desirable to present separate data for operating expenses (excluding research and capital expenditures), but the available data does not permit this<sup>5</sup>.

<sup>5</sup> In 2004, CAUBO formed a task force to identify the factors underlying inter-university differences in financial reporting. Experts have indicated that one of the main factors contributing to data comparability problems is the fact that universities record their expenses differently in the various funds. For example, some expenses are entered in the capital fund and others in the general operating fund (e.g. the purchase of furniture and equipment). The task force report also notes problems related to the distribution of certain expenses between the general operating fund and the research fund (e.g. teaching and research expenses in university hospitals), as well as between the general operating fund and the trust fund. (Source: CAUBO, *Report of the Task Force on the Review of CAUBO Financial Reporting*, November 2004).

There are also structural differences between the education systems (e.g. differences related to college education), which have an impact on the relative level of per-student spending by universities. While they are difficult to measure, it is possible to estimate the impact of the structural differences on variations between per-student spending in the provinces.

Another problem to be considered is the difference in the cost of living. In 2008-2009, the cost of living was approximately 7.5% lower in Québec than in the rest of Canada<sup>6</sup>. It is important to take this into account in comparisons of financial data, since for the same number of dollars, purchasing power is not the same from one province to the next. To illustrate the importance of this factor, we can consider the case of professors' salaries. The average salary of a full-time professor in a Québec university was \$102 925 in 2008-2009, some 7% less than the average salary of a colleague in the rest of Canada, which was \$110 629. If, however, we take into account the difference in the cost of living, we can conclude that the purchasing power of a full-time professor in a Québec university in 2008-2009 was actually the same as that of a professor in another province. In other words, their real salaries were equivalent.

### Comparison of per-student spending

In 2008-2009, per-student spending by Québec universities was \$29 242. By comparison, it was \$26 831 for universities in the Atlantic provinces, \$26 383 for universities in Ontario and \$32 976 for universities in the Western provinces (Table 4). The second column of the table shows data on per-student spending in current dollars, in the form of indices (Québec = 100). **Per-student spending in Québec was 2% higher than it was in the rest of Canada.**

It is also important to note that, in recent years, per-student spending by universities (in current dollars) rose at a faster rate in Québec than in the rest of Canada. From 1998-1999 to 2008-2009, there was an increase of 70% in per-student spending in Québec, compared to 63% in the rest of Canada.

**Table 4 Per-student spending by universities<sup>7</sup> in 2008-2009, in Québec and in the other regions of Canada**

	Per-student spending (in current \$)	Per-student spending (in current \$)	Weighted per-student spending (in current \$)	Weighted per-student spending (in PPP-converted \$)
	(1)	Québec = 100 (2)	Québec = 100 (3)	Québec = 100 (4)
<b>Québec</b>	<b>29 242</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Canada without Québec</b>	<b>28 735</b>	<b>98.3</b>	<b>104.0</b>	<b>96.8</b>
Atlantic provinces	26 831	91.8	101.2	99.0
Ontario	26 383	90.2	95.0	85.9
Western provinces	32 976	112.8	119.0	113.4
<b>Canada</b>	<b>28 846</b>	<b>98.6</b>	<b>103.1</b>	<b>97.3</b>

Source: DRSI, MELS. Calculations based on data from Statistics Canada, CAUBO and the Ministère des Finances du Québec (calculation of PPPs).

<sup>6</sup> See Appendix 2.

<sup>7</sup> When calculating total per-student spending, a standardized accounting of student enrollment was used for all the provinces, based on the following convention: part-time enrollments are converted into full-time equivalents by dividing them by 3.5, and they are then added to the full-time enrollments.

## Impact of structural differences

As indicated in the introduction to this section, the differences in per-student spending by the provinces can also be explained, in part, by the structural differences in their education systems. For example, differences in college education have an impact on the duration and cost of university education.

In Québec, a Diploma of College Studies in pre-university education is the usual requirement for admission to a university, whereas in the other provinces, a secondary school diploma is generally sufficient. Furthermore, in some provinces in Western Canada (especially Alberta and British Columbia), students can do their first two years of university studies in a college, and then finish their program at a university. College-level education is less costly, but at the same time, per-student spending in the universities is higher (since the last years of university education are more costly).

Another structural difference concerns the composition of the student body, in terms of level and field of study in the universities. As a result, the fact that Québec universities have a higher proportion of students in costlier fields of study and at higher levels of education partly explains their higher per-student spending.

There is a methodology that takes these structural differences into account, at least in part. The basic idea underlying this methodology is to consider the weight of student enrollment. A weighting grid has therefore been developed to estimate a weighted enrollment for each province<sup>8</sup>.

Column 3 of Table 4 contains data on weighted per-student spending, in the form of indices (Québec = 100). **When the data is adjusted to take into account structural differences, we obtain a level of per-student spending in Québec that was 4% lower in Québec than in the rest of Canada in 2008-2009.**

## Taking into account the cost of living

It is possible to make another adjustment to the data, to take into account differences in the cost of living between provinces (the cost of living was 7.5% lower in Québec than in the rest of Canada in 2008-2009). Column 4 of Table 4 contains data on the weighted per-student spending, in purchasing power parity (PPP) converted dollars. The data are presented in the form of indices (Québec = 100). **When we take into account both the structural differences and the cost of living, it appears that per-student spending in the universities in Québec is 3% higher than the average in the rest of Canada in 2008-2009.**

If we return to the comparison of per-student spending in current dollars, we see that Québec universities spent \$2 859 more per student than universities in Ontario<sup>9</sup>. The difference can be explained primarily by higher per-student spending in Québec on teaching personnel, administration<sup>10</sup>, activities relating to information systems and communications, research<sup>11</sup> and financing costs. Conversely, per-student spending on student services (including bursaries<sup>12</sup>), external relations and libraries was lower in Québec than in Ontario.

8 The weighted student enrollment can be used to take into account variations in the cost of educating students by subject area and level of education. For example, the cost of training a student in veterinary medicine is substantially higher than in business administration. Similarly, an MA student is more costly than an undergraduate student.

9 Appendix 3 shows the breakdown of per-student spending in Québec and Ontario universities, by type of expenditure, in 2008-2009.

10 In 2008-2009, per-student spending on administration and general services was \$2 117 in Québec, compared to \$1 717 in Ontario.

11 Section III, on university revenues, presents an inter-province comparison of university subsidies and research contracts.

12 Universities outside Québec award more bursaries because their tuition fees are higher than Québec's, but a portion of the fees collected are returned to the students in the form of bursaries.

### A substantial expense: the salary costs of university professors

Salary spending for all categories of university personnel (including employee benefits) accounts for more than half of all university spending in Québec and the rest of Canada. Professors' salaries are the largest component of payroll expenditure. The per-student cost of professors is obtained by dividing the total payroll for teaching staff by the number of students expressed in full-time equivalents<sup>13</sup>.

In 2008-2009, in Québec, this cost (\$7 666) was substantially the same as in the Atlantic provinces (\$7 694), but was higher than in Ontario (\$7 545) and lower than in the Western provinces (\$9 240). Because of the higher cost in the Western provinces, the per-student cost of professors in Québec is lower than the average for the rest of Canada (\$8 153). However, if we take into account the fact that the cost of living is lower in Québec than in the rest of Canada, the actual per-student cost of professors in Québec is slightly higher than the average for the rest of Canada.

Two of the factors that explain the differences in the salary costs of teachers are particularly significant, namely the number of students per teacher and the average salary of teachers. **Therefore, even though the average salary of teachers was lower in Québec than in Ontario, the per-student cost of teachers was still higher in Québec, essentially because the average number of students per teacher was lower in Québec than in Ontario.**

### The student-teacher ratio in the universities

In 2008-2009, the average number of students per full-time professor in Québec (21.2) was lower than in Ontario (25.2), but higher than in the Atlantic provinces (16.7) and similar to the figure for the Western provinces (21.1), as shown in Table 5.

**Table 5 Ratio of students to full-time professors in universities in Québec and in the other regions of Canada, in 2008-2009**

	2008-2009
<b>Québec</b>	<b>21.2</b>
<b>Canada without Québec</b>	<b>22.5</b>
Atlantic provinces	16.7
Ontario	25.2
Western provinces	21.1
<b>Canada</b>	<b>22.2</b>

Source: DRISI, MELIS. Calculations based on data from Statistics Canada.

<sup>13</sup> The total payroll considered in the calculation of per-student spending for professors includes deans, department heads, research professors and lecturers, as well as amounts paid to all other personnel employed in teaching positions (as defined by Statistics Canada). Employee benefits are not included in the total payroll used for this calculation.

However, it is important to note that the average number of students per professor is obtained by dividing the number of students in full-time equivalents (FTE) by the number of regular full-time professors in the universities. Lecturers and part-time teachers are not included in the calculation, even though lecturers take on a significant percentage of the total teaching load in the universities (roughly 40% in Québec<sup>14</sup>). This is because we do not have comparable data for lecturers and part-time teachers.

The large number of lecturers in Québec is explained partly by the fact that professors are often released from teaching duties in order to perform other tasks (research, academic management positions, internal tasks, etc.). However, very few data are available on this aspect.

### The average salary of university professors

The average salary of a professor includes a basic salary as well as additional fees paid for administrative duties. The first column in Table 6 shows the average salary of professors, in current dollars, in Québec and in the other provinces in 2008-2009. The average salary of professors in Québec (\$102 925) was 6% higher than that of their counterparts in the Atlantic provinces (\$96 705), but 9% lower than that of professors in Ontario (\$113 656) and 8% lower than that of professors in the Western provinces (\$111 846). The second column of the table presents data on salaries, in current dollars, in the form of indices (Québec = 100).

**Table 6 Average salary of university professors in 2008-2009, in Québec and in the other regions of Canada**

	Average salary (in current \$ (1))	Average salary (in current \$) Québec = 100 (2)	Average salary (in PPP- converted \$) Québec = 100 (3)
<b>Québec</b>	<b>102 925</b>	<b>100</b>	<b>100</b>
<b>Canada without Québec</b>	<b>110 629</b>	<b>107</b>	<b>100</b>
Atlantic provinces	96 705	94	92
Ontario	113 656	110	100
Western provinces	111 846	109	104
<b>Canada</b>	<b>108 863</b>	<b>106</b>	<b>100</b>

Source: DRSI, MELS. Calculations based on data from Statistics Canada (*University and College Academic Staff Survey*) and from the Ministère des Finances du Québec (PPP calculation).

The salary data do not take into account differences in the cost of living. In the third column of Table 6, the salary data are converted into PPP, in the form of indices (Québec = 100). **If we take the cost of living into account, the average university professor's salary in Québec appears to be identical to that for the rest of Canada.**

<sup>14</sup> Source: DERU and DRSI, MELS. Compiled from the *Indicateurs de suivi des affaires universitaires* submitted by the universities to the National Assembly's Committee on Culture and Education, September, 2010.

### III. Per-student revenues of universities

What are the sources of funding for Québec's universities, and how do they compare with those of other provinces? This section attempts to answer this question, and will also examine sources of revenue for research.

#### Comparison of per-student revenues

As for overall spending, the overall revenues of universities include the general operating fund, the trust fund, the sponsored research fund and the capital fund<sup>15</sup>. Table 7 presents data on the per-student revenues of universities in Québec and in the other Canadian provinces in 2008-2009.

In 2008-2009, Québec's universities had a per-student revenue of \$27 628, compared to \$25 744 for universities in the Atlantic provinces, \$ 25 587 for universities in Ontario and \$33 243 for universities in the Western provinces (Table 7).

**Table 7 Per-student revenues of universities<sup>16</sup> in 2008-2009, in Québec and in the other regions of Canada**

	Per-student revenues (in current \$)  (1)	Per-student revenues (in current \$)  Québec = 100 (2)	Weighted per-student revenues (in current \$)  Québec = 100 (3)	Weighted per-student revenues (in PPP-converted \$) Québec = 100 (4)
<b>Québec</b>	<b>27 628</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Canada without Québec</b>	<b>28 282</b>	<b>102.4</b>	<b>108.3</b>	<b>100.8</b>
Atlantic provinces	25 744	93.2	102.7	100.5
Ontario	25 587	92.6	97.5	88.2
Western provinces	33 243	120.3	127.0	121.0
<b>Canada</b>	<b>28 137</b>	<b>101.8</b>	<b>106.4</b>	<b>100.5</b>

Source: DRSI, MELS. Calculations based on data from Statistics Canada, CAUBO and the Ministère des Finances du Québec (PPP calculations).

The second column of Table 7 presents per-student revenues in current dollars, in the form of indices (Québec = 100). Per-student revenues in Québec were 2% lower than those for the rest of Canada.

#### The impact of structural differences

As for the comparison of per-student expenditures, a further calculation was performed to take certain structural differences into account.

The third column of Table 7 shows weighted per-student revenues, in the form of indices (Québec = 100). Accordingly, when the data are adjusted to reflect structural differences, the per-student revenue in Québec was 8% lower in Québec than in the rest of Canada in 2008-2009.

<sup>15</sup> Endowed funds and ancillary services are excluded.

<sup>16</sup> When calculating total per-student revenues, a standardized accounting of student enrollment was used for all the provinces, based on the following convention: part-time enrollments are converted into full-time equivalents by dividing them by 3.5, and they are then added to the full-time enrollments.



## Consideration of the cost of living

It should be remembered that, in 2008-2009, the cost of living in Québec was roughly 7.5% lower than in the rest of Canada. Column 4 of Table 7 presents the weighted per-student revenue in purchasing power parity (PPP)-converted dollars. The data are presented in the form of indices (Québec = 100). If both structural differences and the cost of living are taken into account, the per-student revenues of universities in Québec are roughly the same as the average for the rest of Canada.

## The universities' sources of revenue

Tables 8 and 9 show the breakdown of per-student revenues for universities by source of funds (in current dollars and as percentages), in 2008-2009. Sources of revenues are broken down into public sources (federal government, provincial government and other governments) and private sources (tuition fees, non-government subsidies and contracts, donations and bequests, investment revenues and various other revenues)<sup>17</sup>.

In Québec, in 2008-2009, 54.0% of all university funding came from the provincial government<sup>18</sup>, compared with 47.5% in the rest of Canada. The federal government provided 14.0% of total funding in Québec and 11.4% in the rest of Canada. The federal government's significant contribution to university funding can be explained primarily by research grants (e.g. from the research councils).

Tuition and other fees<sup>19</sup> accounted for 12.7% of university funding in Québec and 25.0% in the rest of Canada. In 2008-2009, the average tuition fee for a Canadian full-time undergraduate student was 2.4 times higher in the rest of Canada (\$5 329) than in Québec (\$2 180)<sup>20</sup>. Other compulsory school fees were slightly lower in Québec (\$602) than in the rest of Canada (\$726)<sup>21</sup>.

University funding from non-government subsidies and contracts was slightly lower in Québec than in the rest of Canada (6.1% compared to 6.6%), as was funding from donations and bequests (3.1% compared to 3.2%). Because of the financial crisis, revenues from donations and bequests were lower than in previous years<sup>22</sup>.

Also because of the financial crisis, investment revenues were responsible for only 1.3% of university funding in Québec in 2008-2009. Their contribution was negative in the rest of Canada (-0.1%)<sup>23</sup>.

17 It should be remembered that ancillary services are excluded from the comparison (this means revenues from cafeterias, student residences, etc.).

18 In 2008-2009, the Québec Government paid \$3.0 billion to the universities.

19 "Other fees include all compulsory and non-compulsory fees charged to students such as health services, athletics, library, applications, late registrations, lockers and transcripts." (Source: CAUBO, *Guidelines: Financial Information of Universities and Colleges, 2008-2009*, p. 12.)

20 In 2009-2010, tuition fees for full-time Canadian undergraduate students were \$2 272 in Québec and \$5 535 in the rest of Canada.

21 In 2009-2010, other fees for full-time Canadian undergraduate students were \$625 in Québec and \$783 in the rest of Canada.

22 In 2007-2008, donations and bequests accounted for 4.5% of university funding in Québec and 5.3% in the rest of Canada. In 2006-2007, the corresponding figures were 3.7% and 4.8% respectively.

23 In 2007-2008, investment income accounted for 5.1% of university funding in Québec and 2.5% in the rest of Canada. In 2006-2007, the corresponding figures were 4.0% and 6.2% respectively.

The other sources of revenue accounted for 8.2% of funding in Québec and 5.5% in the rest of Canada. They included rental income, the sale of services (e.g. laboratory testing) and income from the sale of licences and patents.

Overall, public funding played a more important role in Québec (68.6%) than in the rest of Canada (59.8%), and private funding played a less important role (31.4% compared to 40.2%).

**Table 8 Per-student revenues of universities in 2008-2009, by source of funds, in Québec and in the other regions of Canada<sup>24</sup> (in current dollars)**

	Québec	Canada without Québec	Atlantic provinces	Ontario	Western provinces	Canada
<b>Public funds</b>	<b>18 944</b>	<b>16 916</b>	<b>15 114</b>	<b>13 813</b>	<b>22 300</b>	<b>17 359</b>
Provincial government	14 927	13 445	12 182	10 686	18 134	13 769
Federal government	3 860	3 219	2 827	2 940	3 770	3 359
Other <sup>25</sup>	157	252	105	187	396	231
<b>Private funds</b>	<b>8 684</b>	<b>11 366</b>	<b>10 630</b>	<b>11 774</b>	<b>10 943</b>	<b>10 778</b>
Tuition fees	3 504	7 077	6 656	7 617	6 358	6 296
Non-government subsidies and contracts	1 676	1 878	1 091	2 106	1 751	1 833
Donations and bequests	871	895	696	867	998	890
Investment income	368	-32	-125	12	-74	55
Various other income <sup>26</sup>	2 265	1 548	2 312	1 172	1 910	1 704
<b>Total</b>	<b>27 628</b>	<b>28 282</b>	<b>25 744</b>	<b>25 587</b>	<b>33 243</b>	<b>28 137</b>

Source: DRSI, MELs. Calculations based on data from Statistics Canada and CAUBO.

**Table 9 Overall revenues of universities in 2008-2009, by source of funds, in Québec and in the other regions of Canada<sup>24</sup> (%)**

	Québec	Canada without Québec	Atlantic provinces	Ontario	Western provinces	Canada
<b>Public funds</b>	<b>68.6</b>	<b>59.8</b>	<b>58.7</b>	<b>54.0</b>	<b>67.1</b>	<b>61.6</b>
Provincial government	54.0	47.5	47.3	41.8	54.6	48.9
Federal government	14.0	11.4	11.0	11.5	11.3	11.9
Others <sup>25</sup>	0.6	0.9	0.4	0.7	1.2	0.8
<b>Private funds</b>	<b>31.4</b>	<b>40.2</b>	<b>41.3</b>	<b>46.0</b>	<b>32.9</b>	<b>38.4</b>
Tuition fees	12.7	25.0	25.9	29.8	19.1	22.4
Non-government subsidies and contracts	6.1	6.6	4.2	8.2	5.3	6.5
Donations and bequests	3.1	3.2	2.7	3.4	3.0	3.2
Investment income	1.3	-0.1	-0.5	0.0	-0.2	0.2
Various other income <sup>26</sup>	8.2	5.5	9.0	4.6	5.7	6.1
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: DRSI, MELs. Calculations based on data from Statistics Canada and CAUBO.

<sup>24</sup> Includes the general operating fund, the trust fund, the sponsored research fund and the capital fund. The endowment fund and ancillary services are excluded.

<sup>25</sup> Amounts from municipalities (e.g. subsidies and contracts granted by a public transit agency), or from other provincial or foreign governments.

<sup>26</sup> Includes rental income, income from the sale of services (e.g. laboratory testing) and income from the operation and sale of licences and patents.

## Sources of revenue for research

It is difficult to compare research spending in Québec's universities with that of universities in the rest of Canada because of the overlap of university activities (e.g. multiple tasks for professors), and also because the available data do not provide a sufficiently detailed account. As mentioned previously, the universities allocate their expenditures differently to the various funds (operating, trust, sponsored research and capital funds). It was for this reason that we used the concept of "overall expenditure". The data presented in this section compare the research grants and contracts allocated to the universities.

In 2008-2009, research grants and contracts in Québec's universities were valued at \$1.5 billion. If this amount is divided by the number of professors in Québec, we obtain an average amount per professor of \$163,546. The corresponding amount for universities in the rest of Canada was \$148,537. Table 10 presents a breakdown of these amounts, by source of funds.

**Table 10 Value of research grants and contracts, per professor, by source of funding, in Québec and in the other regions of Canada, in 2008-2009**

	Québec		Canada without Québec	
	(\$)	(%)	(\$)	(%)
Provincial government	26 528	16,2	28 916	19.5
Federal government	79 713	48,8	69 641	46.9
Other sources	57 305	35,0	49 980	33.6
<b>Total</b>	<b>163 546</b>	<b>100,0</b>	<b>148 537</b>	<b>100.0</b>

Source: DRSI, MELS. Calculations based on data from CAUBO and Statistics Canada.

In the case of funds from the federal government and other sources, the value of research grants and contracts per professor was higher in Québec than in the rest of Canada. However, it was lower in the case of funds from the provincial government.

In Québec, as in the rest of Canada, the federal government is the main provider of research funding in the universities (nearly 50%). In Québec, the main federal agencies that funded university research in 2008-2009 were, in order: Canadian Institutes of Health Research (\$239 million), Natural Sciences and Engineering Research Council (\$185 million), Canada Research Chairs Program (\$63 million), Social Sciences and Humanities Research Council (\$59 million) and the Canada Foundation for Innovation (\$51 million). Table 11 shows the amounts of federal grants per professor, by region, in 2008-2009.

**Table 11 Research grants and contracts awarded to universities by the federal government, by professor, in Québec and in the other regions of Canada, in 2008-2009 (in current dollars)**

	2008-2009
<b>Québec</b>	<b>79 713</b>
<b>Canada without Québec</b>	<b>69 641</b>
Atlantic provinces	42 670
Ontario	72 795
Western provinces	75 563
<b>Canada</b>	<b>71 949</b>

Source: DRSI, MELS. Calculations based on data from CAUBO and Statistics Canada.

Because the federal research funds award grants by merit, the performance of Québec's university researchers in obtaining federal research funds can be shown by comparing the percentage of research grants from federal funds obtained by university researchers in Québec (25.4% in 2008-2009) with the weight of the Québec population in Canada (23.3% in 2008). Québec therefore appears to have obtained more than its share of federal funding for university research.

#### IV. Comparison of revenues and expenses

How did university revenues and spending compare in 2008-2009?

In 2008-2009, per-student expenses were higher than per-student revenues, both in Québec and on average for the rest of Canada (see Tables 4 and 7).

Although Statistics Canada and CAUBO data cannot be used to determine the financial situation of universities (surplus or deficit) with precision, it has been established that Québec's universities had a deficit of \$28 million in 2009, for the operating fund alone<sup>27</sup>. Their deficit position can be explained by a number of factors, including the salary increases awarded by the universities to their employees, supplemental pension plan deficits, and insufficient funding for indirect research costs.

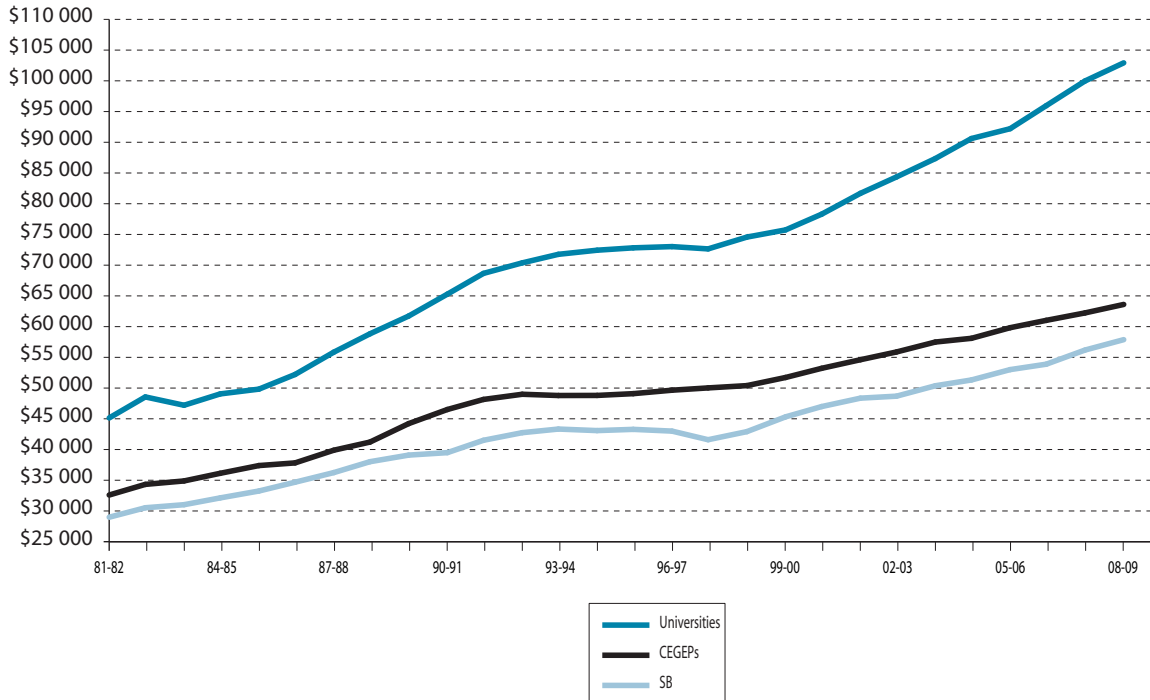
The first of these factors (salary increases) is especially important in explaining the deficit position of Québec's universities. In recent years, the salary indexation policy of Québec's universities has gone further than the salary policy of the Québec government. Grants to universities are based on the government's salary policy for public service employees, and the universities must use other revenue sources to fund any salary increases that go beyond the parameters set by the government. However, as already noted, other sources of university funding in Québec are relatively limited.

Complete data on indexation rates for the salaries of university personnel are not available, but it is possible to make a rough comparison between the rise in the average salaries of university professors and those of teachers in school boards and CEGEPs, who are subject to the Québec government's salary policy. Graph 1 shows this comparison for the period 1981 to 2006. It is clear that the gap between the average salary of university professors and that of teachers in school boards and CEGEPs has increased over the years.

<sup>27</sup> According to the Direction générale du financement et de l'équipement (DGFE), MELS. As of May 31, 2009, the accumulated operating fund deficits amounted to \$483 million.

In 1981-1982, the average salary of a university professor was 38% higher than that of a CEGEP teacher, and 56% higher than that of a school board teacher. In 2008-2009, the differences were 62% and 78% respectively.

**Graph 1 Average salary of teachers in school boards, CEGEPs and universities (in current dollars)**



Sources: DRSI, MELs. *Coût global de la rémunération* (average salary of teachers in school boards), financial reports of CEGEPs (average salary of CEGEP teachers) and Statistics Canada (average salary of Québec university professors from the *University and College Academic Staff Survey*).

The same logic also applies to other categories of university personnel (professionals, technicians, office staff, service staff and labourers), who obtained better salary conditions than their counterparts in comparable Québec government employment categories. According to a recent study by the Institut de la statistique du Québec, the overall salaries paid by the Québec government lagged behind the university sector by 10.2% in all the employment categories surveyed<sup>28</sup>.

Statistics Canada also produces data on average weekly salaries for a selection of industries, using the North American Industry Classification System (NAICS). Canadian universities are included in the survey, and data are available for all categories of university employees. In 2008, the average weekly salary in the universities was higher in Québec than in Ontario (in current dollars)<sup>29</sup>.

To have an idea of the effect of the salary indexation policy for personnel in Québec's universities, we can estimate the additional cost for the universities of each 1% salary increase. In 2008-2009, according to CAUBO data, the total payroll of Québec's universities was \$2.7 billion. One percent of this amount is \$27 million, and 10% is \$270 million.

It is important to note that the additional percentage increases granted over the years are cumulative, and severely limit the universities' financial resources. This would largely explain the deficit position of Québec's universities at the present time.

28 ISQ, *Rémunération des salariés: État et évolution comparés*, 2010, p. 99.

29 Statistics Canada, *Survey of Employment, Payrolls and Hours (SEPH)*, Cansim, Table 281-0027.

## Conclusion

According to various indicators, Québec spends more on its universities than the average for the rest of Canada. In 2008-2009, total spending accounted for approximately 1.94% of GDP in Québec, and 1.58% in the rest of Canada.

The three factors that contributed to Québec's greater financial effort were: per-student spending, which was higher in Québec than in the rest of Canada; the participation rate which was slightly higher in Québec; and the level of collective wealth, which was lower in Québec than in the other provinces.

The fact that Québec spent more per student (\$29 242) than Ontario (\$26 383) can be explained primarily by Québec's higher per-student spending on teaching staff, administration, activities relating to information systems and communications, research and financing costs.

It should be noted that, although the average university professor's salary was lower in Québec than in Ontario, the per-student cost of professors was higher in Québec. This can be explained primarily by the fact that the average number of students per teacher is lower in Québec than in Ontario.

If the cost of living is taken into account, the average salary of a professor in Québec appears to be identical to that of a professor in the rest of Canada, despite the fact that the level of collective wealth is substantially lower in Québec.

The universities' overall per-student revenues were higher in Québec ((\$27 628) than in Ontario (\$25 587), but were slightly below the average for Canada without Québec (\$28 282) in 2008-2009. However, if both structural differences and cost of living are taken into account, per-student revenues in universities appear to be substantially the same in Québec and in the rest of Canada, on average.

A comparison of university revenue sources shows that public funding accounted for a higher percentage in Québec (68.6%) than in the rest of Canada (59.8%), and vice-versa for private funding (31.4% compared to 40.2%). Private funding included tuition fees, which accounted for a much smaller percentage in Québec (12.7%) than in the rest of Canada (25.0%).

The comparison of revenues and expenses (per student) shows that revenues were lower than expenses in Québec, and on average for the rest of Canada, in 2008-2009. The deficit position of Québec's universities can be explained, in large part, by salary policies that are more generous to their personnel than the government funding that the universities receive for that purpose. Québec government grants are based on the government's own salary policy for its employees, while the universities have awarded higher salary increases to their personnel.

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## APPENDIX 1

### Factors explaining the differences between the provinces with respect to total educational spending by universities in relation to the GDP

To explain the differences between the provinces with regard to total university spending in relation to the GDP, it is necessary to perform a comparative analysis of the main factors that determine the level of spending in each province. The factors considered are: per-student spending, collective wealth (defined as the per-capita GDP), the participation rate and the demographic factor. The participation rate is defined as the ratio of enrollment, expressed in full-time equivalents, to the population 18-24 years of age, while the demographic factor is the ratio of the 18-24 age group to the total population<sup>30</sup>.

The equation used is as follows:

$$\frac{\text{EXP}}{\text{GDP}} = \frac{\text{EXP}}{\text{FTE}} \times \frac{1}{\text{GDP/POP}} \times \frac{\text{FTE}}{\text{18-24}} \times \frac{\text{18-24}}{\text{POP}}$$

in which

<b>EXP:</b>	total spending by universities
<b>GDP:</b>	gross domestic product
<b>FTE:</b>	enrollments in full-time equivalents
<b>POP:</b>	total population
<b>EXP/GDP:</b>	portion of the GDP spent on universities
<b>EXP/FTE:</b>	spending per student
<b>GDP/POP:</b>	per capita GDP
<b>FTE/18-24:</b>	participation rate
<b>18-24/POP:</b>	demographic factor

<sup>30</sup> The formulas used to calculate the contribution of the factors to the difference between two provinces with regard to total educational spending in relation to the GDP are not provided in this document, but are available upon request.

### The purchasing power parity indices by province

When the Organisation for Economic Co-operation and Development (OECD) makes international comparisons of education spending, the amounts spent in the national currency of the countries considered are converted into American dollars using the purchasing power parity (PPP) indices of these countries. The PPP indices are used to convert spending into a common currency, and also to take into account differences in the cost of living in the countries considered: "Purchasing Power Parities (PPPs) are the rates of currency conversion that equalize the purchasing power of different currencies. This means that a given sum of money, when converted into different currencies at the PPP rates, will buy the same basket of goods and services in all countries. Thus, PPPs are the rates of currency conversion which eliminate differences in price levels between countries." (OECD, *National Accounts*)

It is important to distinguish between the consumer price index (CPI) and the cost of living index. The CPI is an indicator of variations in consumer prices. It is calculated by comparing, over time, the price of a fixed basket of commodities purchased by consumers. The index therefore reflects only the movement of prices over time; it is not a cost of living index, although people often call it that<sup>31</sup>.

Obviously, the various Canadian provinces use the same currency, but developing a purchasing power parity index by province would make it possible to take into account differences in the cost of living between the provinces.

For the time being, there are no purchasing power parity indices by province, but Statistics Canada seems to have the data needed to produce such indices. The Ministère des Finances du Québec has in fact developed a simplified method to approximate provincial PPP indices<sup>32</sup> and preliminary data have been produced using it.

"The objective here is to obtain conversion rates for public spending, expressed in monetary value, which eliminate price differences between the provinces, in order to permit comparisons in volumes of services<sup>33</sup>."

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31 See the following articles from the Institut de la statistique du Québec (ISQ) on the subject:

**Flash-info - Travail et rémunération**, *Inflation et coût de la vie*, vol. 4, n° 1, January 2003, accessible on the Web: <http://www.stat.gouv.qc.ca/publications/remuneration/pdf/pdf-bulletin/TRjanv03.pdf>.

**Flash-info - Travail et rémunération**, *Indice du coût de la vie*, vol. 4, n° 2, March 2003, accessible on the Web: <http://www.stat.gouv.qc.ca/publications/remuneration/pdf/pdf-bulletin/TRmars03.pdf>.

32 Québec, Ministère des Finances, Direction générale des finances publiques et de la fiscalité locale et autochtone. *Méthode simplifiée pour approximer les PPA provinciales*, juin 2004.

33 Québec, Ministère des Finances, *op. cit.*, p. 1 (translation).

The following table provides the purchasing power parity indices that were used for inter-province comparisons of per-student spending by universities (Table 4 in the text), of average professors' salaries (Table 6 in the text) and of per-student revenues (Table 7 in the text).

**Table A2.1 Purchasing power parity indices for the provinces in 2008<sup>e</sup> (Québec = 100)**

Newfoundland	102.1
Prince Edward Island	100.0
Nova Scotia	104.1
New Brunswick	100.0
<b>Atlantic Provinces</b>	<b>102.2</b>
<b>Québec</b>	<b>100.0</b>
<b>Ontario</b>	<b>110.5</b>
Manitoba	99.0
Saskatchewan	100.0
Alberta	106.3
British Columbia	106.3
<b>Western Provinces</b>	<b>105.0</b>
<b>Canada without Québec</b>	<b>107.5</b>
<b>Canada</b>	<b>105.9</b>

e: Estimates.

Source: DRSI, MELS. Calculations based on data provided by the Ministère des Finances du Québec.

## APPENDIX 3

### Breakdown of the total per-student spending by universities in Québec and in Ontario

This appendix presents the breakdown of per-student spending in the universities by type of expenditure, in Québec and in Ontario, in 2008-2009.

**Table A3.1 Total per-student spending in universities, Québec and Ontario, by type of expenditure, in 2008-2009 (in current dollars)**

	Québec	Ontario	Difference
1. Academic ranks	5 947	5 309	638
2. Other instruction and research	1 719	2 237	-518
3. Other salaries and wages	5 838	5 639	199
4. Benefits	2 611	2 441	170
<b>Total of salaries and benefits (lines 1 to 4)</b>	<b>16 115</b>	<b>15 626</b>	<b>489</b>
5. Travel expenses	705	660	45
6. Library acquisitions	327	426	-99
7. Printing and duplicating	103	144	-41
8. Materials and supplies	1 321	1 356	-35
9. Communications	89	136	-47
10. Other operational expenditures	2 413	1 256	1 157
11. Utilities	458	510	-52
12. Renovations and alterations	463	680	-217
13. Scholarships, bursaries and prizes	1 272	1 621	-349
14. Externally contracted services	704	426	278
15. Professional fees	800	314	486
16. Cost of goods sold	42	0	42
17. Interest	1 168	247	921
18. Furniture and equipment purchase	1 587	1 271	316
19. Equipment rental and maintenance	295	246	49
20. Internal sales and cost recoveries	80	-53	133
21. External cost recoveries	0	0	0
22. Buildings, land and land improvements	1 285	1 471	-186
23. Lump sum payments	16	47	-31
<b>Total of other expenses (lines 5 to 23)</b>	<b>13 128</b>	<b>10 758</b>	<b>2 370</b>
<b>Total<sup>34</sup></b>	<b>29 242</b>	<b>26 383</b>	<b>2 859</b>

Source: DRSI, MELS. Calculations based on data from Statistics Canada and CAUBO.

<sup>34</sup> The totals may differ slightly from the sum of the components because of rounding.

