



# Analytical Report:

Impact of tuition fees on enrollment, graduate career choice, and other select topics in tertiary education finance and administration

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## Summary

The Manitoba Organization of Faculty Associations (MOFA) contracted the Breakwater Group to analyze the impact of tuition fee levels on enrollment and graduate career choice, as well as the association of tuition with several other variables. This analytical report compiles our findings, which are summarized below.

1. Although the overall demand for post-secondary education is relatively insensitive to price changes in the countries surveyed, the vast majority of the literature reviewed concludes that increasing tuition fees has a negative impact on enrollment rates for low-income students.
2. There appears to be a significant causal relationship between student debt and career choice, particularly in professional programs with higher tuition fees, such as medicine, dentistry, and law.
3. Tuition fees in Organization for Economic Co-operative Development (OECD) countries vary significantly, with several countries charging zero tuition for domestic students.
4. There appears to be a negative relationship between average tuition fees and per student public expenditure on tertiary education institutions such that countries with higher public expenditure have lower average tuition fees. This negative relationship strengthens when comparing average tuition fees and public expenditure as a share of total tertiary education expenditure. There is also a correspondingly strong positive correlation between average tuition fees and the share of total expenditure on tertiary education covered directly by private households.
5. Countries with more students taking on loans have higher average loan amounts and subsequently larger per student debt at graduation. The number of students with loans and the size of debt at graduation are positively associated with higher average tuition fees. However, there exist substantial deviations and much variation not associated with average tuition fees. For example, in the subset of zero tuition countries alone, the percentage of students with a loan ranges from 11% to 68%.
6. Income contingent loans do not appear to have a significant effect on university participation among low-income students. In contrast, well-designed financial aid programs in the form of means-tested or need-based grants have been found to be effective in increasing post-secondary enrollment among low-income students.
7. The relationship between teacher compensation and tuition fees appears to be weak, with some indication that countries with higher tuition fees spend a smaller share of tertiary educational expenditures on teaching staff compensation than those with zero tuition or lower levels of tuition.
8. There is little evidence of a correlation between student-teacher ratios and average tuition fees.
9. Based on our research, the Government of Manitoba's recent legislative proposal permitting annual tuition increases of up to 5% plus the rate of inflation will have a negative impact on the university participation of low-income students, unless countervailing measures are introduced, particularly in the form of well-designed means-tested grants.

# 1. Introduction

The Manitoba Organization of Faculty Associations (MOFA) contracted the Breakwater Group to complete a research project examining:

- The relationship between tuition fees and tertiary enrollment based on socio-economic status;
- The relationship between student debt and graduate career choice; and
- The relationships between tuition fees, public expenditure on tertiary education, student debt, teacher compensation, and student-teacher ratios.

The Breakwater Group undertook a review of the existing literature, including academic journal articles, reports, and other publications; compiled data from existing reports; and synthesized the findings in this analytical report. The scope of work was limited to a review of available data and existing studies from countries within the OECD. The presentation of the data is limited to a comparative analysis – an original econometric analysis was not undertaken.

## 2. Literature review

### Relationship between tuition fees and enrollment (in general and for students from families with lower socio-economic status)

Although the impact of tuition fees on aggregate post-secondary enrollment is the subject of an ongoing debate, the literature from several developed countries clearly shows that an increase in tuition fees has a negative impact on enrollment among low-income students. Marcucci and Johnstone (2007) point to a growing worldwide trend of decreased government support for post-secondary education, and increased costs for students and their families in the form of tuition fees. With respect to the impact of tuition fees on aggregate enrollment rates in OECD countries, Marcucci and Johnstone suggest that, although overall number of students participating in higher education is relatively insensitive to price/tuition fees, there may be a corresponding change in the proportion of students enrolled from different socio-economic groups as a result of this trend. The present literature review briefly surveys this debate in the United States, Canada, the United Kingdom, the Republic of Ireland, Germany, and the Netherlands.

#### United States

Since the early 1980s, tuition fees have become an increasingly important source of revenue for public universities and colleges as state appropriations for post-secondary education have come under pressure. In their seminal piece, Leslie and Brinkman (1987) found that a \$100 increase in tuition led to a 0.07 percentage point drop in enrollment among 18 to 24 year-olds in the United States, with higher price sensitivities among low-income students. Although the 1980s was a decade in which both tuition and enrollment rose, Kane (1995) discovered that the enrollment gap between youth in the bottom income quartile and youth in the top income quartile grew by 12 percentage points from 1977 to 1993. Picking up from Leslie and Brinkman,

Heller (1997) surveyed the existing literature on the demand for post-secondary education in the United States during the 1970s and 1980s, and confirmed a negative relationship between tuition fees and the demand for post-secondary education. All things being equal, a \$100 increase in tuition led to a drop in average enrollment ranging from 0.50 to 1.00 percentage points. According to Heller, students from wealthier families were found to be less sensitive to tuition changes than were those from poorer families, and black students were more sensitive to tuition changes than were white students. For the period 1990-1995, Berger and Kostal (2002) found that an inflation-adjusted \$100 increase in tuition led to a decrease of 0.63 percentage points in the average enrollment rate. For the period 1991-2006, Hemelt and Marcotte (2011) found that a \$100 increase in tuition fees led to a decline in average enrollment of 0.23% when taking all four-year universities and colleges in the United States into account. However, Shin and Milton (2006) found that the effect of a tuition change was insignificant on overall enrollment after observing hundreds of public colleges and universities in the United States during the period 1998-2002. Shin and Milton argue that their model is more robust than previous studies seeing as it controlled for more factors, including tuition fees of competitor institutions, economic conditions, financial aid, and the wage premium. Nevertheless, the literature in the United States confirms that increases in tuition fees have a negative impact on post-secondary enrolment rates among low-income students.

## Canada

Johnson and Rahman (2005) note that real tuition fees across Canada remained unchanged from 1976 to 1988, and rose considerably from 1989 to 2003. Post-secondary institutions in nearly all Canadian provinces began raising tuition fees in the 1990s while the governments of British Columbia and Québec froze them. Unsurprisingly, Coelli (2009) found that the enrollment equality gap widened in provinces that witnessed increases in real tuition fees, and narrowed in provinces in which real tuition fees fell during the period 1993-2004. Coelli discovered that university enrollment outcomes for low-income youth fell by 13 to 17 percentage points relative to high-income youth after inflation-adjusted tuition fees increased by \$1,000 for the period 1993-2004. Coelli also found that changes in enrollment outcomes for middle- and high-income youth were statistically insignificant, although Neill (2009) showed that enrolments for youth from middle education backgrounds (i.e., with parents who have some post-secondary education, but not a degree) fell by over 4 percentage points when tuition increased by \$1,000 during the period 1979-2002. For the period of 1973 to 1999, Fortin (2004) found that a doubling of tuition fees in both Canada and the United States would lead to a 15% drop in university enrollment. Johnson and Rahman (2005) estimated that a current-year \$1,000 increase in real tuition fees reduced university enrollment among 17 to 19 year-olds by between 1 and 3 percentage points for the period 1976-2003. In contrast, Christofides *et al.* (2001) estimated that the income-driven enrollment gap shrank between 1975 and 1993. While parental income and education were important explanatory variables, Christofides *et al.* could not find a significant effect of tuition fees on post-secondary participation rates. Although the effect of changes in tuition fees on average enrollment may be contested, the impact of increases in tuition fees on enrollment among low-income students in Canada is not (Mackenzie, 2004).

## United Kingdom

The United Kingdom became a laboratory for measuring the impact of tuition fees on enrollment when, in 1998, means-tested tuition fees were introduced in the UK for the first time, while maintenance grants were abolished in favour of maintenance loans the following year. In 2006/07, a higher tuition fee cap of £3,000 was imposed on all students, regardless of socio-economic background. Loans were improved with the added option of deferring payments until after graduation, and maintenance grants for the poorest students were reintroduced and enhanced in the same year. In 2012, the UK government again increased the tuition fee cap to £9,000 per year. [Note that the Scottish government pays first cycle undergraduate tuition fees of Scottish and non-UK EU students attending Scottish universities (European Commission, 2014/15).]

For the period 1992-2007, which covered two tuition fee hikes, Dearden *et al.* (2011) found that tuition fees had a significantly negative effect on university participation, with a £1,000 increase in fees resulting in a decrease in participation of 3.9 percentage points among first-year students aged 18 and 19 years old. However, non-repayable support in the form of maintenance grants had a positive effect on university participation, with a £1,000 increase in grants resulting in a 2.6 percentage point increase in participation. Galindo-Rueda *et al.* (2004) found that the income-driven gap in post-secondary participation in the UK widened between 1994 and 2001. Galindo-Rueda *et al.* showed that individuals from unskilled backgrounds in a year 2000 cohort were 10 percentage points less likely to enter university relative to their peers from the same socio-economic background in a 1996 cohort, suggesting that the 1998 introduction of tuition fees had an effect on low-income student participation. However, Galindo-Rueda *et al.* concluded that social class had a small and insignificant effect on post-secondary participation when considering prior achievement. Similarly to Galindo-Rueda *et al.*, Chowdry *et al.* (2013) argued that socio-economic differences in post-secondary participation rates were influenced by differences in prior achievement. However, Chowdry *et al.* admitted that many students who came of age for higher education in 2006/07 - the year tuition fees were increased to £3,000 per year - may have foregone post-secondary education that year to avoid the increases, and that the tuition fee hikes scheduled for 2012 may end up questioning their results. Wilkins *et al.* (2013) tested the impact of tuition fee increases on student behaviour immediately before the UK government's £9,000 cap came into effect in 2012. They found that financial considerations had a significant effect on students' higher education intentions. Interestingly, the authors found that students from middle-class backgrounds were more likely to switch to cheaper alternatives in the UK than their working-class peers, while a significant share of working-class students considered studying overseas to avoid higher tuition costs. Callender and Jackson (2008) discovered that the fear of debt associated with high tuition fees had a significant impact on where to study among lower-class students in the UK following the 2004 passage of an Act of Parliament imposing a maximum tuition fee of £3,000 (which came into effect in the 2006/07 academic year). Over two-thirds of low-income students considered a post-secondary institution closer to home in order to save money. On balance, the literature surveyed from the United Kingdom points to a negative relationship between tuition fees and average *as well as* low-income enrollment.

## Republic of Ireland

Although undergraduate tuition fees were officially abolished in Ireland in 1996, a minimum 'contribution fee' of 2,750€ is charged to full-time Irish and EU students regardless of socio-economic background for their first cycle as of the 2014/15 academic year. Students who do not qualify for need-based grants pay a consolidated fee (tuition fee + contribution fee) of 6,000€ (European Commission, 2014/15). Need-based grants are currently contingent on parental income, the number of dependent children in the household, and distance from the post-secondary institution attended (Denny, 2014; European Commission, 2014/15). Prior to abolition, low-income students progressing to university benefitted from need-based grants, which covered tuition costs and included a contribution to living expenses (Denny, 2004). Starting in the second cycle, Irish and EU students most commonly pay 6,000€ annually in tuition fees, although qualifying students can receive a maximum of 5,915€ in need-based grant assistance. Need-based and merit-based bursaries, as well as tax relief measures are also available to qualifying students (European Commission 2014/15).

Prior to 1996 – the year tuition fees were officially abolished in Ireland – low-income families were exempt from paying tuition fees and higher-income families qualified for tax refunds. In light of this fact, Denny (2014) argued that the abolition of undergraduate tuition fees in Ireland did not improve the chances of students from low socio-economic backgrounds progressing to university. Instead, Denny posits that higher education participation is influenced by prior achievement. According to Denny, students from low socio-economic backgrounds perform worse in secondary school than their higher-income peers, making them less likely to attend university. Factors, including the father's socio-economic status, labour market status, and occupation, influenced the likelihood of performing well in secondary school, and thus progressing to university. McCoy and Smyth (2011) found that the abolition of tuition fees did not boost working-class participation rates in higher education. McCoy and Smyth pointed to other costs related to higher education that may impact the decision to enter, including the cost of living and accommodation. Although working-class students in the Republic of Ireland may not pay tuition once grants and other benefits are taken into consideration, there is little evidence that this policy has boosted working-class participation in post-secondary education. This is likely due to the fact that before and after abolition, low-income students were effectively not paying tuition once income contingent grants are considered. In this respect, the Irish case is a unique one worthy of further research.

## Germany

Tuition fees in Germany were legally banned from 1976 to 2005. However, in 2005, the German constitutional court allowed *Länder* (states) to charge tuition. Starting in 2006/07, seven German *Länder* introduced tuition fees of 1,000€ per year on average. Following significant political pressure from civil society, 'fee states' quickly began to re-abolish tuition fees and, by the 2014/15 academic year, no German state charged tuition (European Commission, 2014/15). Post-secondary students in Germany are currently charged a nominal administration fee.

Hübner (2012) found that the introduction of a 1,000€ tuition fee reduced aggregate university enrollment rates amongst high school graduates by 2.7 percentage points. After controlling for spillover effects to the comparison group (the 'non-fee states'), the true effect reduced enrollment probabilities by roughly 4.7 percentage points. Kroth (2015) found that enrollment for high school graduates from low parental education backgrounds dropped by 14% when tuition was charged. However, Bruckmeier and Wigger (2014) did not find a significant effect on aggregate enrollment in those German states that introduced tuition fees. Just like the United Kingdom, Germany was an ideal laboratory for measuring the impact of tuition fees on post-secondary enrollment. Although there was little discussion in the German literature of the impact of tuition fees on low-income participation, there appears to be, on balance, a negative relationship between tuition fees and aggregate enrollment.

### Netherlands

Real tuition fees declined steadily from 1950 until the early 1970s, and have since increased in the Netherlands. Canton and De Jong (2005) measured the effect of tuition fees on the demand for university education during the period 1950-1999 in the Netherlands, while controlling for financial aid, per capita income, the college premium (returns to schooling), alternative wages (opportunity costs), and the unemployment rate. They found that, in the short run, the impact of tuition fees on average enrollment was significantly negative. However, for the time period under analysis that impact was offset by the larger positive effect of financial aid on enrollment. Full-time students under the age of 30 received grants throughout the year, while low-income students qualified for supplementary grants, hence reducing the net price of higher education (European Commission, 2014/15). However, grants were scheduled to be converted into means-tested grants as of the 2015/16 academic year, while the granting of student loans was to expand (European Commission 2014/15).

### Summary

Although the demand for post-secondary education is relatively insensitive to price in the countries surveyed, the literature is clear that an increase in tuition fees has a negative impact on enrollment among low-income students. In the United States and the United Kingdom, most researchers found a small but significantly negative relationship between tuition fees and average enrollment, with that relationship strengthening at the lower end of income distribution. The same conclusions can be drawn from the Canadian, German, and Dutch cases, although a generous financial aid regime in the Netherlands offset those negative effects. The impact of financial aid reforms in the Netherlands implemented in 2015/16 are yet to be determined. The Irish case is unique. Although tuition for working-class students in the Republic of Ireland may be at or near zero once grants and other benefits are taken into consideration, there is little evidence that this policy has boosted working-class participation in post-secondary education, which may be due to the fact that, when need-based grants are considered, the net effect for low-income students with respect to realized cost may have been marginal. Despite the Irish case, the literature has overwhelmingly supported the hypothesis that increases in tuition fees lead to a drop in post-secondary enrollment, particularly among low-income students.

Overall, these conclusions suggest a changing socio-economic composition of the post-secondary student body in OECD countries as a result of rising tuition fees in recent years. This trend is even more pronounced in the professional programs, such as medicine, dentistry, and law, surveyed below. As discussed below, lower-income students tend to view education costs as a debt rather than an investment more than their higher-income peers.

## Causal relationship between student debt and career choice

Based on the literature (primarily examining North American cases), there appears to be a significant causal relationship between student debt and career choice, particularly in the more expensive disciplines, such as medicine, dentistry, and law.

Based on an experiment conducted on law students at New York University during the years 1998-2001, Field (2009) found that up-front tuition subsidies were associated with higher rates of public interest law than were financially equivalent loan repayment schemes, strongly suggesting that debt burden influenced career choice. Field concluded that individuals face strong psychological costs related to debt. Grayson *et al.* (2012) suggested that economic concerns might be playing an increasingly greater role in a medical student's career choice in the United States. In 2010, average medical school debt for students in the United States was \$158,000 and rising (Grayson *et al.* 2012). Grayson *et al.* found that, compared to their primary care counterparts, students planning high-paying non-primary care careers anticipated greater debt, placed a higher importance on income, and anticipated a higher average annual income post-graduation. Moreover, students surveyed who valued income highly, and anticipated more debt and income post-graduation, were more likely to switch to more lucrative careers during medical school. Similar results can be found in Canada. Between 1997 and 2000, medical school tuition fees in Ontario doubled on average, and evidence suggests that medical students are increasingly coming from affluent families (Kwong *et al.* 2002). According to Kwong *et al.* (2002), the proportion of first-year medical students expecting to graduate with at least \$100,000 in debt more than doubled during this short period, with more reporting being "very" or "extremely" stressed about their financial outlook. Consequently, twice as many first-year students in Ontario cited financial concerns as having a major influence on desired specialty choice relative to fourth-year students. Walton *et al.* (2006) surveyed dental students in Canada's ten dental schools and reported that half of all respondents felt that tuition costs were higher than expected, and that a third of respondents indicated that debt level influenced their career choice. Although most studies on the relationship between student debt and career choice focus primarily on medicine, dentistry, and law, Callender and Jackson (2008) did not find a relationship between the fear of debt and the choice of study in general, even among low-income students in the UK. However, Callender and Jackson discovered that lower-income students tended to view education costs as a debt rather than an investment more than their higher-income peers.



### 3. Data Analysis: Correlations between tuition fees, public expenditure on tertiary education, student debt, teacher compensation, and student-teacher ratios.

This section summarizes data on tuition and a number of variables based on data contained in the OECD's *Education at a Glance 2016* (OECD, 2016a) and its associated data files (OECD, 2016b). Data availability limits the sample size for the analysis undertaken below, with countries included based on the availability in OECD (2016b).

The OECD report identifies four country groups based on their tuition regimes and public financial support structure for students in the form of loans and grants, summarized in Table 3.1. These include (1) zero tuition and high levels of public support in the Nordic countries of Denmark, Finland, Iceland, Norway, and Sweden; (2) high tuition and high public support in countries, such as Australia, Canada, New Zealand, the United Kingdom, and the United States; (3) high tuition and lower levels of student support in Chile, Japan, and Korea; and (4) mid-range tuition and lower levels of need-based student support systems in countries including Austria, Belgium, France, Italy, and Switzerland. The OECD report finds that zero/low tuition rates are not associated with proportion of the population participating in the tertiary education system and suggests that this is due to the alternative public support mechanisms to promote access, such as grants and subsidized loan programs, which may include below-market rates of interest or conditional repayment terms (p.236)<sup>1</sup>.

Table 3.1: Tuition and Tertiary Education Regimes

	Low/Targeted Public Support	High/Broad-based Public Support
<b>Zero Tuition</b>		Denmark, Finland, Iceland, Norway, and Sweden
<b>Mid-range Tuition</b>	Austria, Belgium, France, Italy, and Switzerland	
<b>High Tuition</b>	Chile, Japan, and Korea	Australia, Canada, New Zealand, the United Kingdom (England), and the United States

Source: OECD (2016a, p. 238)

<sup>1</sup> The OECD distinguishes between post secondary education and tertiary education. Tertiary programs loosely correspond to education taking place in Universities and Colleges with a minimum duration of two years of full time enrollment required for programs completion. Non-tertiary post secondary education would include other recognized adult education programs that aim to build on knowledge developed at the secondary level.

## Tuition Fees

Of the 35 OECD member states, the OECD only has functional tuition fee data for 16 member countries. Table 3.2 presents the data on estimated annual average tuition fees charged to domestic students at the bachelor's or equivalent level, based on full-time student status, in converted US dollars based on the Purchasing Power Parity (PPP) method. For most countries, data is from the 2013/14 academic year, with the exceptions highlighted in the table notes. The data is based on tuition charged in public institutions, except for the United Kingdom, where the data refers to "government-dependent private institutions" (OECD, 2016b, 'Indicator B5'). The average tuition data does not account for any form of student aid, such as "grants, subsidies or loans that partially or fully offset the student's tuition fees" (OECD, 2016b, 'Indicator B5'). They also note the data "should be interpreted with caution as they result from the weighted average of the main tertiary programmes and do not cover all educational institutions". Based on this data, tuition fees in OECD countries vary significantly, with several countries implementing zero tuition fees ranging up to \$9,019 in the United Kingdom, whose data is restricted to England.

## Average Tuition and Public Expenditure on Tertiary Education Institutions

In the OECD, driven by growing student populations, spending on tertiary education is increasing at a faster rate than spending at the primary and secondary levels, with public sources of revenue growing faster than private sources (OECD, 2016, p.211). Figure 3.1 depicts public expenditure per student in USD PPP terms and average tuition level pairings.

## Table 3.2: Tuition Fees in OECD Countries

Annual average tuition fees in USD (PPP) charged by public tertiary education institutions (for full-time student nationals, Bachelor's or equivalent) 2013/14 academic year

<b>Australia</b>	4,473
<b>Austria</b>	861
<b>Belgium (Fl.)<sup>2</sup></b>	729
<b>Belgium (Fr.)</b>	155
<b>Canada<sup>2</sup></b>	4,761
<b>Chile</b>	N/A
<b>Czech Republic</b>	N/A
<b>Denmark</b>	0
<b>Estonia</b>	0
<b>Finland</b>	0
<b>France</b>	0 to 8,313
<b>Germany</b>	N/A
<b>Greece</b>	N/A
<b>Hungary</b>	N/A
<b>Iceland</b>	N/A
<b>Ireland</b>	N/A
<b>Israel</b>	2,957
<b>Italy</b>	1,602
<b>Japan<sup>2</sup></b>	5,152
<b>Korea<sup>2</sup></b>	4,773
<b>Latvia</b>	N/A
<b>Luxembourg</b>	N/A
<b>Mexico</b>	N/A
<b>Netherlands</b>	2,300
<b>New Zealand</b>	4,113
<b>Norway</b>	0
<b>Poland</b>	N/A
<b>Portugal</b>	N/A
<b>Slovak Republic</b>	0
<b>Slovenia</b>	0
<b>Spain</b>	N/A
<b>Sweden</b>	0
<b>Switzerland<sup>3</sup></b>	1,015
<b>Turkey</b>	0
<b>United Kingdom<sup>4</sup></b>	9,019
<b>United States<sup>1</sup></b>	8,202

1. Reference year 2011/12 for tuition fees.

2. Reference year 2014/15 for tuition fees (2014 in Korea).

3. Academic reference year 2012/13.

4. Data refer to government-dependent private institutions in England only.

Source: OECD (2016b) - Indicator B5.

Fig. 3.1a: Public Expenditure on Tertiary Education and Average Tuition Fees

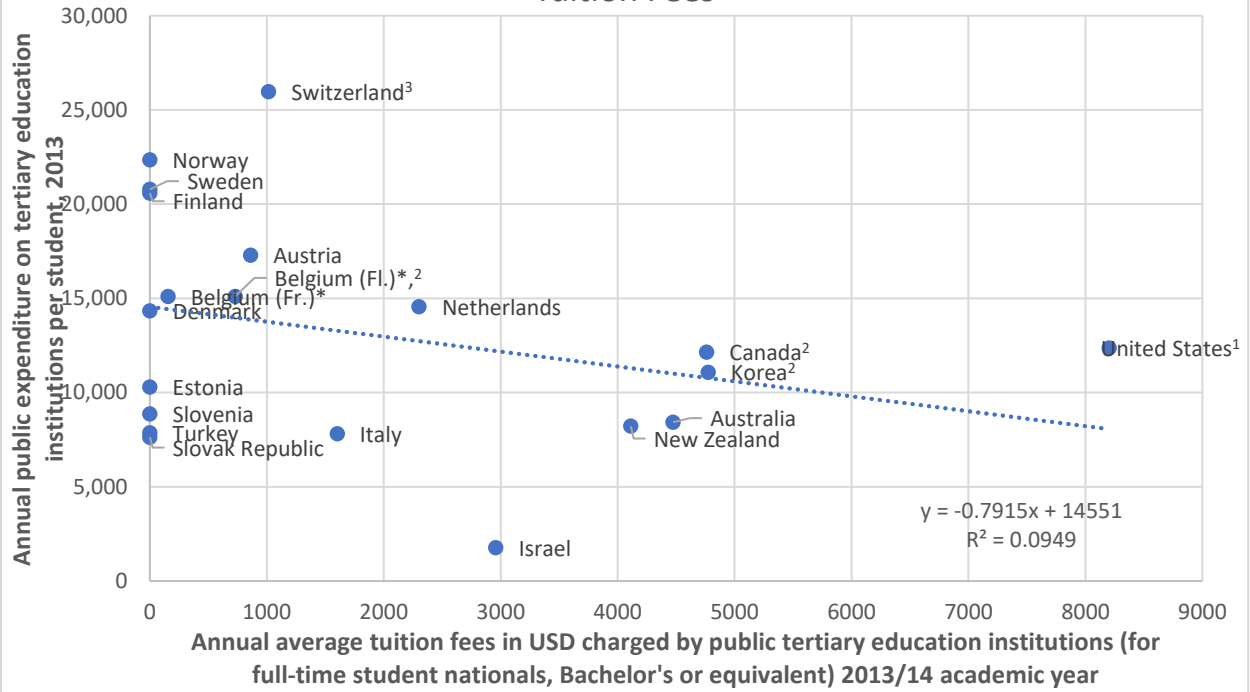
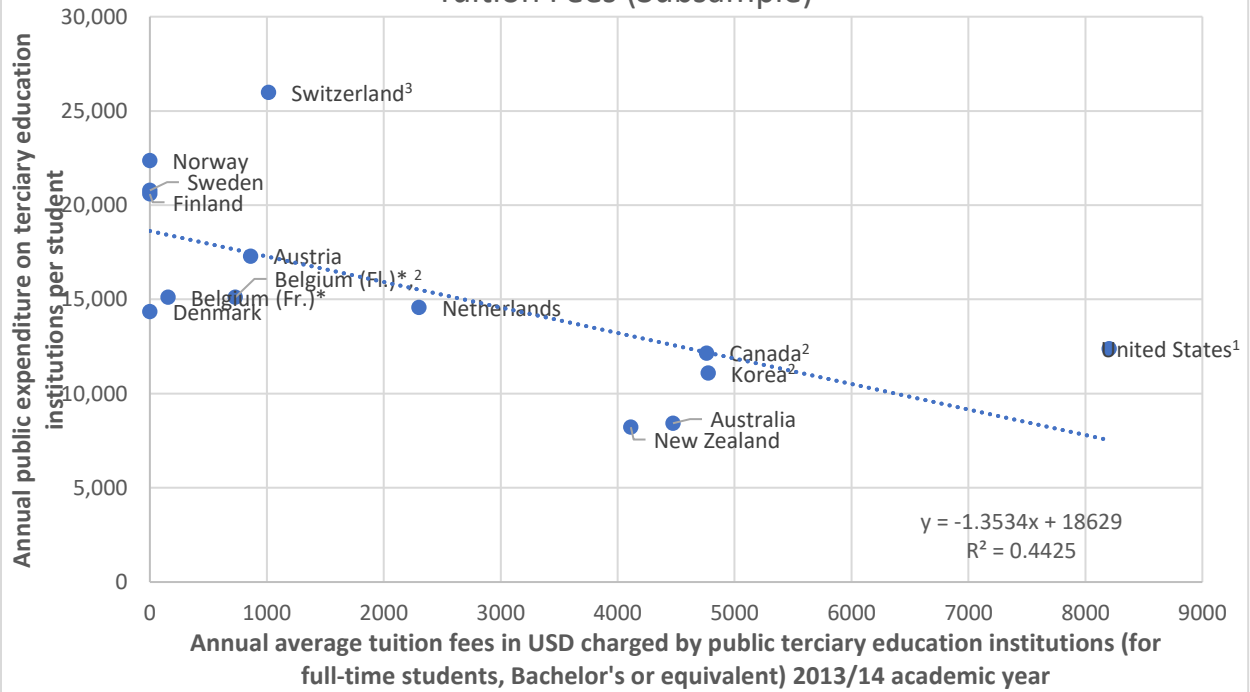


Fig 3.1b Public Expenditure on Tertiary Education and Average Tuition Fees (Subsample)



1. Reference year 2011/12 for tuition fees.

2. Reference year 2014/15 for tuition fees (2014 in Korea).

3. Financial reference year 2013 and academic reference year 2012/13.

\*Annual Public Expenditure in Belgium data is for Fl. and Fr. combined. Source: OECD (2016b) Indicators B3 and B5.

As can be seen in Figure 3.1a, there appears to be a weak negative relationship between tuition and public expenditure levels<sup>2</sup>. While the highest spending countries are countries with larger annual public expenditures, several countries, in particular Eastern European and Mediterranean countries, have both lower tuition and lower public expenditures. Excluding these countries produces a much stronger relationship, as can be seen in Figure 3.1b.

## Average Tuition and Public Expenditure Shares

Education in OCED countries at all levels relies heavily on public expenditures. While private sources make up a higher proportion on average (30%) than at lower levels of education, public sources still fund the majority of tertiary education expenditures (OECD, 2016, p.212). There is however significant variation in the OECD with respect to how tertiary education is funded from the three main categories of funding (public, private household, and non-household private) and, within countries, models can vary over time as governments implement reforms, with dramatic changes possible, such as in Chile where between 2008 and 2013 the public share of tertiary institutional education expenditures increased from 15% to 35% (OECD, 2016, pp.213-214).

The OECD (2016b) sample demonstrates that, based on an unweighted average of share percentages in OECD countries, government funds the majority of tertiary education institutional expenditures, with an average public share of 70%. The average private household spending share, including tuition fees, contributes 22%, and the average non-household private share is 10%. However, these averages mask significant variations among countries. Certain countries rely heavily on tuition fees paid by private households. For example, Chile and Japan rely on private households to fund approximately half of the cost of tertiary education institutional expenditures, while Australia, Korea, and the United States source between 42% and 47% of expenditures from private household revenues. At the other extreme, countries such as Finland and Denmark charge zero tuition at public institutions for domestic students and do not raise any proportion of tertiary education revenues from private households. Other countries, such as Sweden, Austria, Norway, and Belgium fund less than five percent of tertiary education institutional spending from private household expenditures. These low tuition countries rely heavily on public funding and a small amount (1% to 10%) of non-household private funding, and are amongst the highest in per student public tertiary education expenditures in USD PPP terms. Ireland and the United Kingdom at 19%, and Canada at 25%, are near the middle of the pack with respect to the share of private household expenditures. The United Kingdom and Canada also rely on a significant amount of non-household private funding, both with 23% of total expenditures from non-household private sources, as does Korea at 24%, whereas Ireland relies minimally on non-household private funding with only 3% of funding coming from non-household private sources.

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<sup>2</sup> This is consistent with the findings of Wing and Williams (1977), who investigate the relationship between state revenues and tuition fees at 54 public research universities and 49 other public PhD.-granting universities in the United States for the academic year 1972/73. They discovered that, for every dollar increase in tuition, state revenues decreased by \$0.65 at doctoral-granting universities, and \$1.08 at research universities.

Figure 3.2 plots the association between average tuition levels and the public expenditure shares of tertiary educational institutions. As expected, given that private household and public expenditures together constitute a majority of educational expenditures in all countries, a clear inverse relationship is present, with higher tuition rates being associated with lower public expenditure shares. In Figure 3.3 we see the expected strong correlation between average tuition fee levels and the share of tertiary educational expenditures covered directly by private households, given that private household expenditures are based primarily on tuition fees. Figure 3.4 plots non-household private expenditures, such as foundation and corporate contributions, and average tuition fees. The association is positive with higher tuition fee countries also relying more heavily on private non-household funding sources. Together this data suggests that low tuition fee policies are being accommodated through higher public expenditures as opposed to greater non-private household expenditures.

Figure 3.5 presents the data on total expenditure per student and average tuition rates, showing in general higher private expenditures in high tuition countries are not sufficient to offset the higher public expenditure in low tuition countries such that higher tuition fees are associated with lower overall spending on tertiary education, although this relationship is not particularly strong, with wide variation amongst zero and low tuition countries. It is however clear that those high tuition countries are not spending more per student on tertiary education.

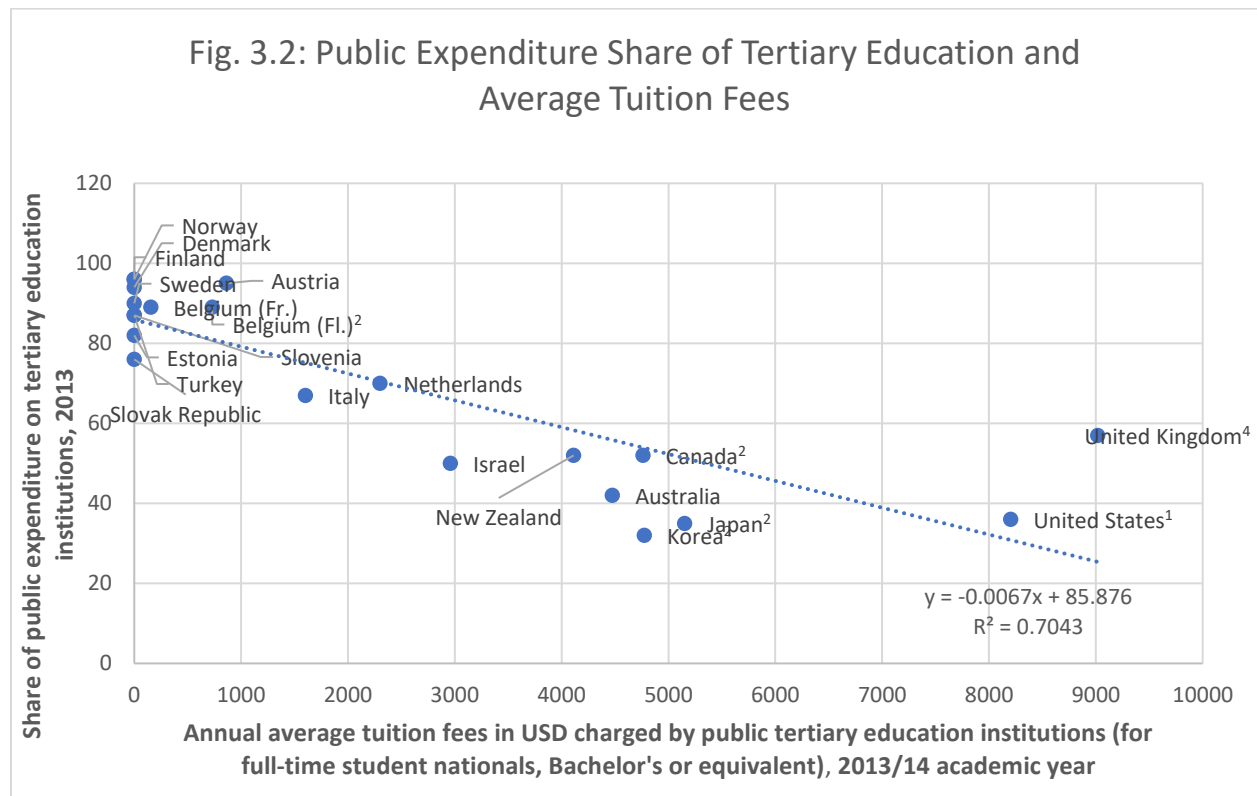


Fig 3.3: Share of Household Expenditure on Tertiary Education and Average Tuition Fees

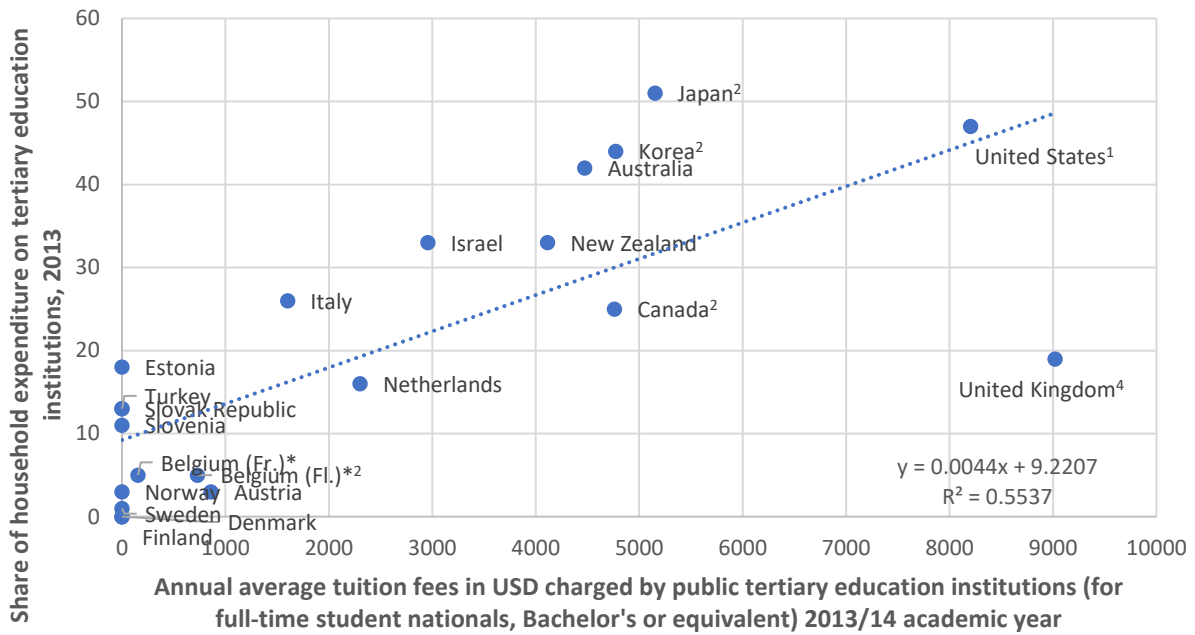


Fig 3.4: Share of Private Non-Household Expenditure on Tertiary Education and Average Tuition Fees

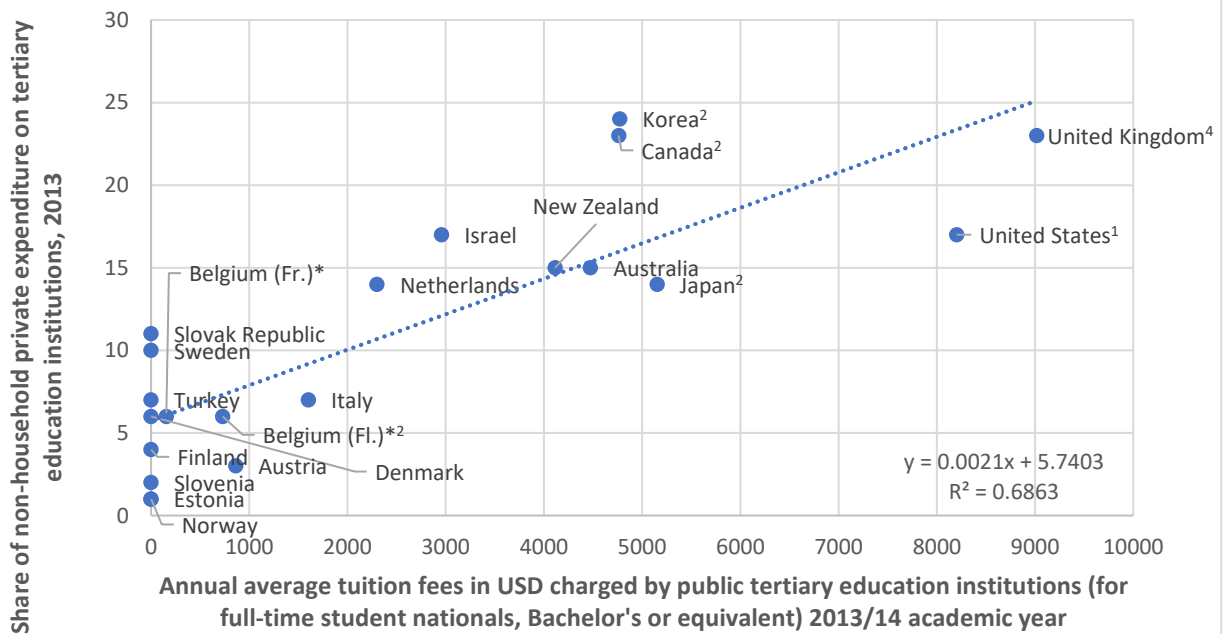
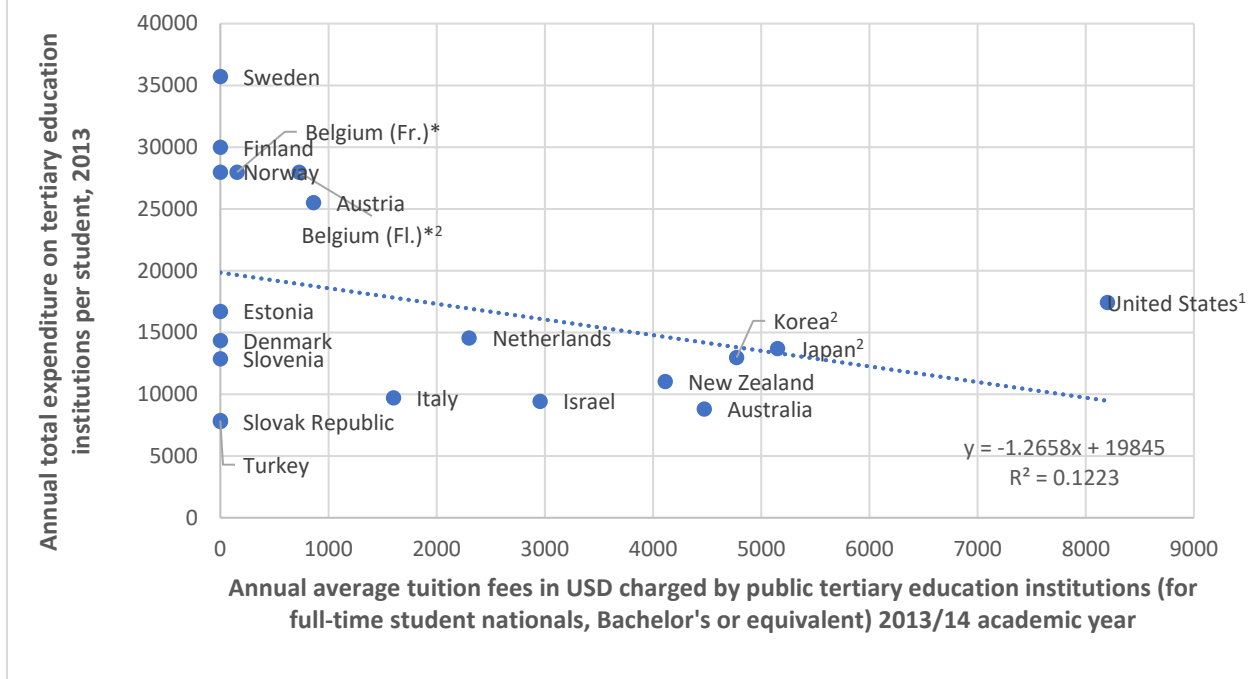


Fig. 3.5: Total Expenditure on Tertiary Education and Average Tuition Fees



1. Reference year 2011/12 for tuition fees.
  2. Reference year 2014/15 for tuition fees (2014 in Korea).
  3. Financial reference year 2013 and academic reference year 2012/13.
  4. Data refer to government-dependent private institutions in England only.
- Source: OECD (2016) Indicators B3 and B5.

## Tuition and Student Debt

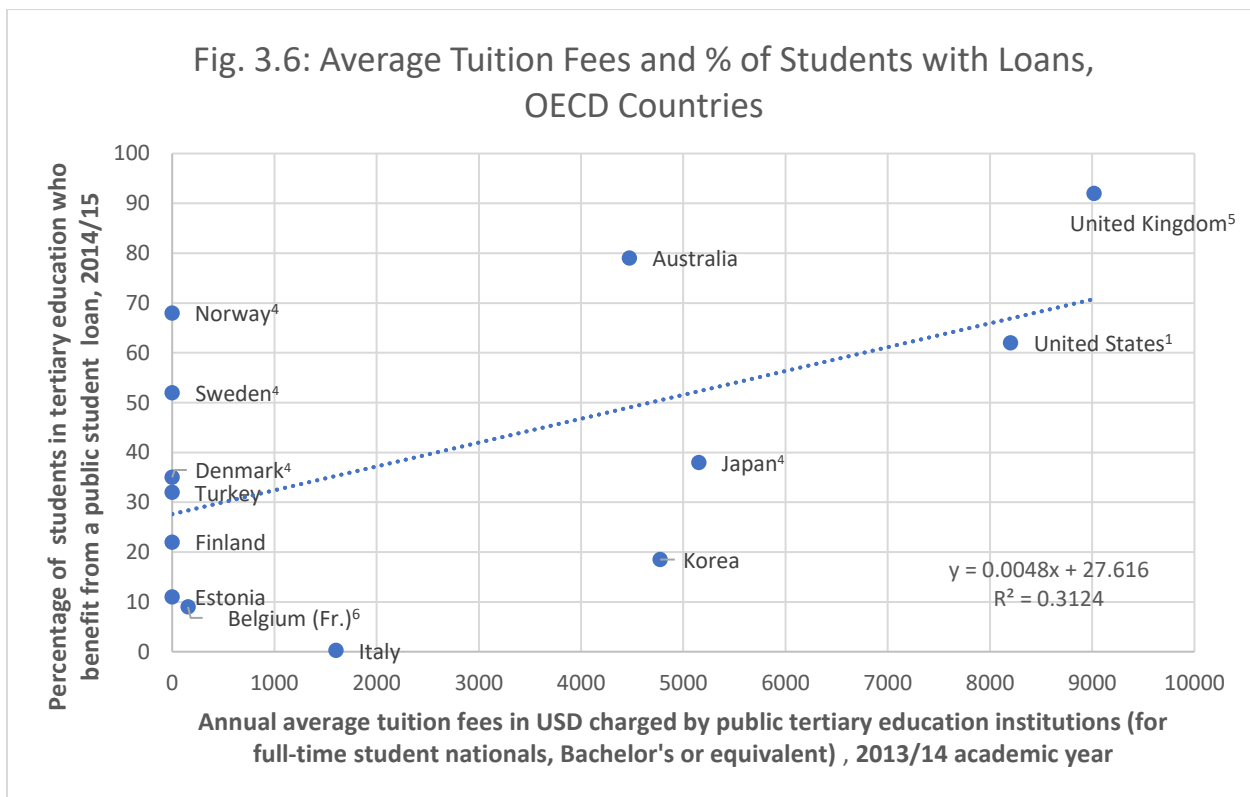
Straightforward and well-designed financial aid programs in the form of means-tested or need-based grants have been found to be effective in increasing post-secondary enrollment among low-income students, particularly in the United States and United Kingdom (Dearden *et al.* 2011; Deming & Dynarski 2009; Dynarski & Scott-Clayton 2013; Heller 1997; Hemelt & Marcotte 2011; Kane 1995; Marcucci & Johnstone 2007). Income contingent loans do not appear to have a significant effect on university participation among low-income students (Chapman & Ryan 2005; Dynarski & Scott-Clayton, 2013), and may even be financially burdensome for some students (Mackenzie, 2004).

Despite this, the distribution of support between student aid types has seen a marked shift towards loans, with the number of students taking student loans increasing by 40% between 2004/05 and 2014/15 (OECD, 2016a, p.239). Countries with more students taking loans have higher average loan amounts and subsequently larger per student debt at graduation (OECD, 2016b, p.240). There exists a wide variety of subsidy mechanism combinations amongst OECD countries administered through publicly supported loan programs. Elements include reduced or delayed payment of interest with, for example, some countries with moderate to high student debt, such as the Netherlands, Sweden, and Denmark charging interest rate at or below 1%;



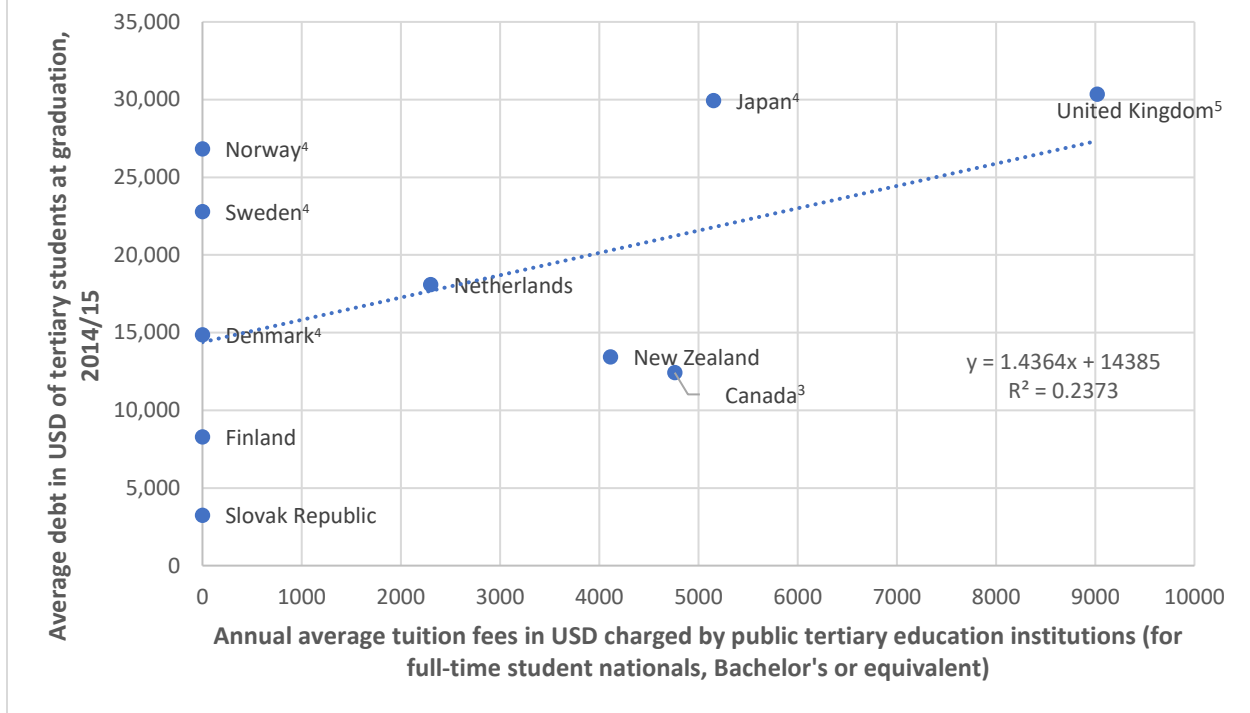
and conditional repayment and/or forgiveness schemes based on need or performance that, in some countries, results in up to 10% of loans being forgiven (OECD, 2016, pp.239-240)<sup>3</sup>. The following data on student loans and debt should be interpreted in this context and recognizing that the realized financial burden with varying with interest rate and forgiveness policies.

The association between average tuition fees and student debt is summarized in Figures 3.6 and 3.7, displaying tuition-debt pairings based on the percentage of students with loans and average student debt, respectively. In both debt variables, there appears to be a positive association with average tuition fees. Of particular note is the high variation amongst the zero tuition countries with respect to both variables, with students with a loan ranging between 11% and 68%, and average debt amounts between \$3,247 and \$26,826 at graduation. In both cases, only two countries that do charge tuition fees have values above these ranges in the available data sample.



<sup>3</sup> See OECD (2016a, pp.261-265) for details on loan-based subsidy programs in OECD countries.

Fig. 3.7: Average Debt and Tuition Fees, 2013/14



1. All students in bachelor's, master's, doctoral or equivalent programmes.
  2. Reference year 2011/12 for tuition fees and the proportion of students with student loans.
  3. Reference year 2012/13 for debt/loan variables. Canadian data based only on federal student loans.
  4. Reference year 2014/15 for debt/loan variables (for Japan, 2013/14 reference year for debt at graduation). Denmark data includes Danish students studying abroad and excludes doctoral students.
  5. Reference year 2014/15 for debt/loan variables and tuition refers to government-dependent private institutions in England only.
  6. Includes foreign students.
- Source: OECD (2016b) - Indicator B5.

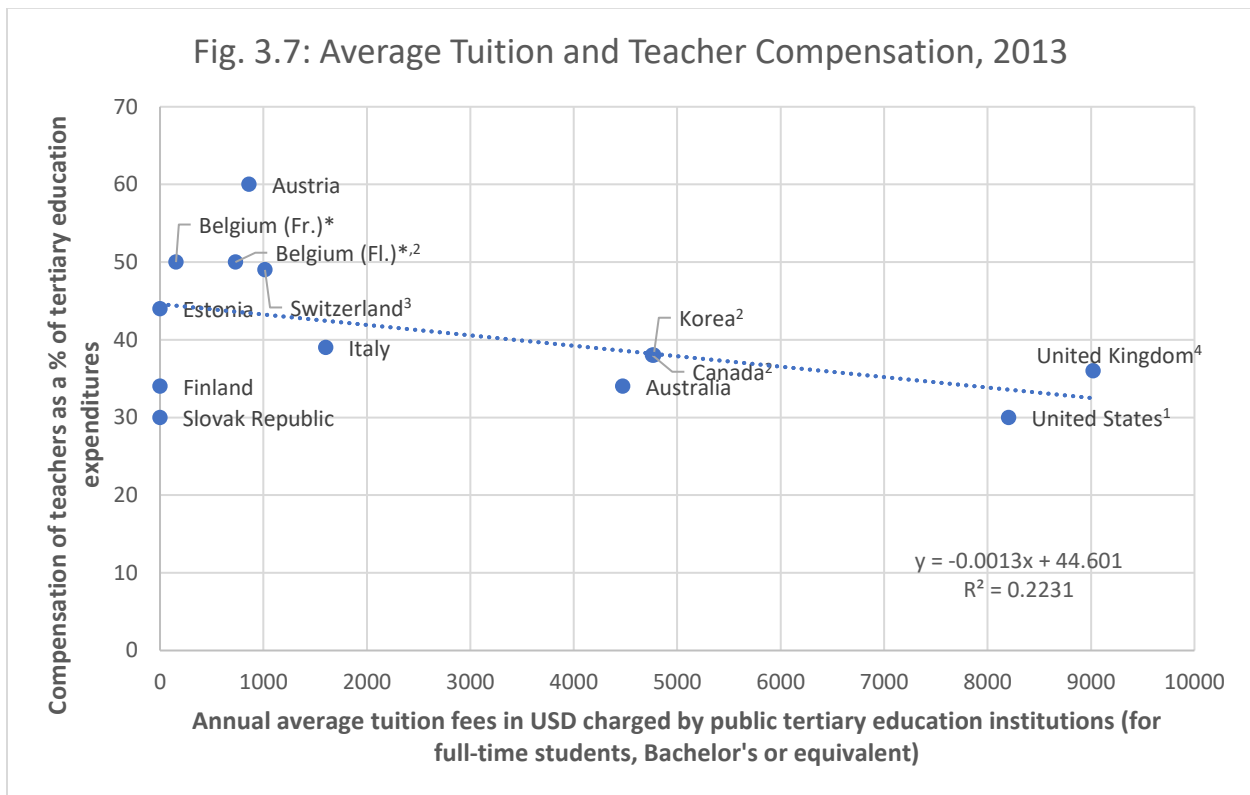
## Teacher Compensation

Altbach *et al.* (2012) discuss the pressures faced by the professoriate in 28 countries on all continents, noting that academic salaries have not kept up with inflation and job security is increasingly threatened. They highlight that, though most full-time academic staff are able to enjoy a middle-class standard of living on their base salary, a growing proportion of them feel compelled to increase their workload to earn extra money in order to maintain that lifestyle, particularly for younger academic staff, although in Canada, unions have significantly helped improve the working conditions of part-time academic staff. Altbach *et al.* argue that the dramatic rise of the private sector in higher education has provided supplementary employment opportunities to academic staff in the public sector.

With respect to the faculty salary rates and the level of tuition, we were unable to find publicly available data on average faculty salaries to undertake this analysis. One study (Lugt, 1983) estimated the correlation between faculty salaries and tuition levels at 383 private, four-year undergraduate colleges in the United States for the 1979/80 academic year. Most of the colleges studied were liberal arts colleges. Lugt found a strong positive correlation between

average faculty salary and tuition levels, with half of the variation in average faculty salaries accounted for by differences in tuition (R-square of 0.52). Lugt also notes that entry-level salaries across the sample were relatively uniform, while salaries for full professors varied greatly.

There is data available regarding the share of tertiary education institution expenditures spent on teacher compensation. The relationship between teacher compensation and average tuition based on the available data appears to be weak, with some indication that countries with higher tuition fees are spending a smaller share of tertiary educational expenditures on teaching staff compensation than those with zero tuition or lower levels of tuition. This data is presented in Figure 3.7. There is significant variation at low levels of tuition, with countries with tuition fees below between 30% and 60% of tertiary education expenditures allocated to teacher compensation, and countries with average tuitions greater than \$4,000 falling within the 30% to 38% range.

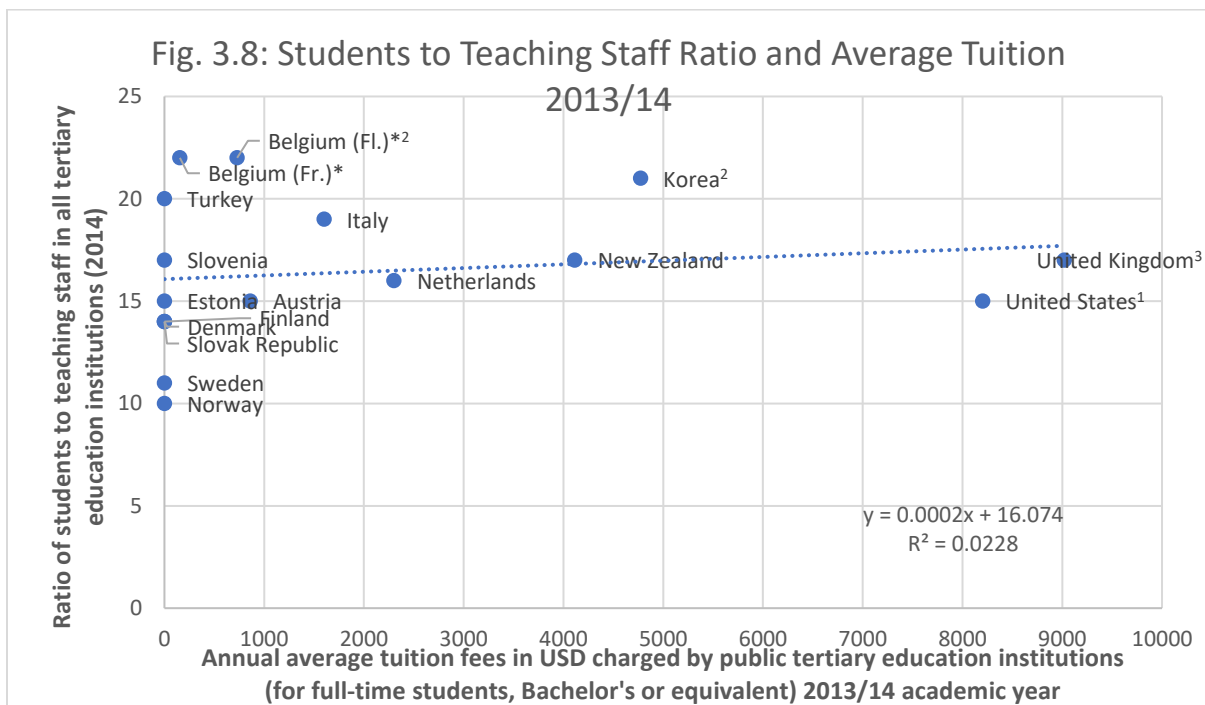


1. Reference year 2011/12 for tuition fees.
  2. Reference year 2014/15 for tuition fees (2014 in Korea).
  3. Financial reference year 2013 and academic reference year 2012/13.
  4. Data refer to government-dependent private institutions in England only.
- \*Compensation for Teachers in Belgium data is for Fl. and Fr. combined.  
 Source: OECD (2016b) Indicators B5 and B6

## Student-Teacher Ratios

Androushchak and Yudkevich (2012) compare student-to-faculty ratios for the 2008/09 academic year from 28 countries on all continents. The ratio of the total number of students to full-time faculty in public and private, degree-granting universities vary greatly between countries. With respect to public universities, Canada, the United States, and the United Kingdom were found in the middle of the pack with ratios of 24, 21, and 20, respectively, while Australia, Germany, and Japan were found at the lower end with ratios of 12, 11, and 10, respectively. The picture in private universities was starkly different. In Germany, the ratio was 45, while in the United States and the United Kingdom, the ratios were 17 and 14, respectively. Data for private universities in many countries, including Canada, was unavailable.

One hypothesis is that higher tuition may generate additional resources for educational institutions and thereby facilitate greater investments in teaching positions. OECD (2016b) contains data on the ratio of students to teaching staff in tertiary educational institutions. The ratio ranges from a low of 10 in Norway to a high of 45 in Greece, with an unweighted average of 17 students per teaching staff in the available sample. Figure 3.8 presents the data along with average tuition rates. As can be seen, there appears to be no correlation between the two variables.



1. Reference year 2011/12 for tuition fees.

2. Reference year 2014/15 for tuition fees (2014 in Korea).

3. Financial reference year 2013 and academic reference year 2012/13.

<sup>\*</sup>Student teacher ratio in Belgium data is for Fl. and Fr. combined.

Source: OECD (2016b) - Indicators B5 and D2.

## 4. Conclusion

Amongst OECD countries, there is substantial variation with respect to the average rates of tuition charged to domestic students, with various identifiable regimes, including zero tuition and high levels of public support in the Nordic countries, high tuition and high public support in Anglophone countries, high tuition and lower levels of student support in Pacific Rim countries, and Continental Europe with mid-range tuition and more modest public support systems.

There exists an extensive literature examining the relationship between tuition fees and enrollment in tertiary educational institutions. Much of this literature utilizes econometric approaches to account for other influences on participation rates, which is valuable given the array of supports that governments have put in place to increase access beyond regulating tuition fees, such as subsidized loan programs and income-tested grants that may have counter-balancing effects to higher tuition rates.

There is a clear consensus in the literature that the overall demand for post-secondary education is relatively insensitive to cost. This is not the case for students from modest socio-economic backgrounds, where the vast majority of the literature reviewed concludes that increasing tuition fees has a negative impact on enrollment rates for low-income students.

While tuition appears to be a significant barrier for low-income students, it is likely that zero tuition regimes alone will not equalize participation rates among socio-economic classes. Well-designed financial aid programs in the form of need-based grants will be required to compensate for the non-tuition costs associated with a partial withdrawal from the labour market required to pursue advanced education. Both the 'sticker shock' of high tuition rates and the fear of indebtedness associated with student loans required to offset lost labour market income are likely to discourage participation by students from low-income families.

In addition to high tuition restricting participation, the resulting student debt also appears to play a role in determining career choice, particularly in professional programs with higher tuition fees, such as medicine, dentistry, and law. Our research lends validation to the fear that high tuition fees and the often-resulting high debt loads risk diverting students from 'public interest' careers into those that yield greater private financial gain.

The literature on average tuition rates and the other variables examined is less well developed than that with respect to enrollment, and we rely primarily on data published by the OECD presenting simple correlations. Based on this, there appears to be a negative relationship between average tuition fees and per student public expenditure on tertiary education institutions as well as public expenditure share, while higher tuition fees are associated with higher non-household private contribution shares. We also found that the number of students with loans and the size of debt at graduation are positively but weakly associated with higher average tuition fees, however there are substantial deviations. The relationship between teacher compensation and tuition fees appears to be weak, with some indication that countries with higher tuition fees spend a smaller share of tertiary educational expenditures on teaching staff

compensation than those with zero tuition or lower levels of tuition, and there is little evidence of a correlation between student-teacher ratios and average tuition fees.

Based on our research, the anticipated growth in university tuition fees in Manitoba due to the provincial government's legislative proposal permitting annual tuition increases of up to 5% plus the rate of inflation will have a negative impact on the participation of low-income students in advanced education, unless countervailing measures are introduced. Further investigation of the diverse student aid regimes amongst OECD countries and literature comparing the effectiveness of different combinations of support may be worthwhile. While the literature points to the superiority of means-tested or need-based grants relative to income contingent loans for increasing post-secondary enrollment among low-income students, further investigation of the specific attributes of these programs and which have been the most effective could be informative for universities, colleges, and other stakeholders looking to minimize the impact of higher fees on educational access.

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