Global Higher Education Rankings

Affordability and Accessibility in Comparative Perspective

2005

Educational Policy Institute

The Educational Policy Institute

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In closing, we do remind readers that, despite extensive assistance and encouragement from the four corners of the world, some errors may have occurred during the collection and analysis of the data. These errors are, of course, entirely our own.

Executive Summary

Over the past few decades, higher education has become available around the over the world to a degree unimaginable to earlier generations. Once the exclusive preserve of elites, the "massification" of higher education has provided opportunities to an ever-widening group of youth across OECD countries. In many ways, accessible mass higher education is the foundation of the modern knowledge economy, and without it, the bright futures of many youth around the world would be dimmed.

Preserving and enhancing the accessibility of higher education – that is, the ability of people from all backgrounds to access higher education on a reasonably equal basis – is an issue that confronts governments and stakeholders all over the world. Yet despite its importance as a field of policy, it is only very recently (outside the United States at least) that any empirical rigor has been brought to the topics of affordability and accessibility in higher education.

This inaugural edition of the Global Higher Education Rankings is, indeed, the first systematic and rigorous exploration of the affordability and accessibility of higher education within an international comparative context.

The report is effectively divided into four parts following an introduction: methodology, affordability rankings, accessibility rankings, and conclusions. The end of the report also includes individual country reports which profile national results, and two appendices relating to data and indicator scores.

Affordability

The affordability section of this report looks at the complete and high quality data on affordability of higher education in fifteen countries: Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, The Netherlands, New Zealand, Sweden, the United Kingdom and the United States. (Following local convention, data on Belgium's two linguistic communities – Flemish and French – is reported separately, bringing to sixteen the number of jurisdictions covered in the affordability rankings in this report.)

There are many possible definitions of what constitutes an affordable education; not surprisingly, countries' relative level of affordability changes depending on the chosen definition. The report compares countries on six different measures of affordability which, taken together, also provide a weighted overall affordability ranking. The results of the composite affordability ranking are as follows:

1. Sweden
2. Finland
3. The Netherlands
4. Belgium (Flemish Community)
5. Ireland
6. Belgium (French Community)
7. Austria
8. Germany
9. France
10. Italy
11. Canada
12. Australia
13. United States
14. United Kingdom
15. New Zealand
16. Japan

Among the analytical findings of the study on comparative affordability are:

- Sweden is the "most affordable" country in this study because of its combination of low educational costs, generous grants and high take-up of loans.
- The Netherlands and Finland also do well because of low to middle educational costs, and generous grants, and reasonable, though limited, loans programs.
- Despite low educational costs, the rest of continental Europe fares only moderately well because of its limited student aid programs.
- The United States, Canada and Australia are not far behind Europe, because higher education costs are offset by higher student aid and higher national incomes.
- The United Kingdom and New Zealand are near the bottom of the ranking because of high costs and low national incomes.

The data and rankings indicate that while continental European countries are generally more affordable than their North American and Australasian counterparts, the gap is less than is sometimes imagined. Despite very high tuition fees, the US is actually on some measures more affordable than some countries with no tuition.

Accessibility

The accessibility section of this report looks at the relevant, complete data on accessibility of higher education in thirteen countries: Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, The Netherlands, Sweden, the United Kingdom and the United States.

Given the difference in national focus and priorities regarding higher education accessibility, data on accessibility is far less open to international comparison than is data on affordability. As such, the accessibility rankings in this report have used indicators which are, albeit rough, widely available. The four different accessibility indicators used for the rankings reflect the two broad concepts of higher education accessibility: the extent of participation, and the social composition of the participants.

There are many possible definitions of what constitutes an accessible education; not surprisingly, countries' relative level of accessibility changes depending on the chosen definition. The report compares countries on four different measures of accessibility which, taken together, also provide a weighted overall accessibility ranking. The results of the composite accessibility ranking are as follows:

1. The Netherlands
2. Finland
3. United Kingdom
4. United States
5. Canada
6. Australia
7. Ireland
8. France
9. Sweden
10. Italy
11. Germany
12. Belgium
13. Austria

Among the analytical findings of the study on comparative accessibility are:

- The Netherlands and Finland both have high participation rates and good or excellent gender parity scores. Finland's high overall score is largely due to its very high participation rates; the Netherlands gets the top spot because of its excellence in educational equity and gender parity.

- The United Kingdom, the United States, Canada, Australia, and Ireland cluster in the mid-to-high zone of the rankings, which is striking evidence of policy congruence across a shared linguistic zone.

- Germany, Belgium and Austria fare well in terms of the gender parity index, but are at or near the bottom on the other three accessibility measures. None has a particularly high participation or attainment rate and all of them have student bodies that are elite relative to the national make-up.

Overall Conclusions

Finland and the Netherlands are the undisputed success stories of the survey in terms of accessibility and affordability. Both have large student bodies, high attainment rates, extensive grant programs, and student bodies that are reasonably reflective of broader society.

While there is some clustering, the data and rankings suggest quite strongly that the links between accessibility and affordability are not straightforward. For instance, with the exceptions of Finland and the Netherlands, no country has consistently high scores across both the affordability and accessibility rankings.

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Introduction

Access to higher education – that is, the ability of people from all backgrounds to access higher education on a reasonably equal basis – is an issue that confronts governments all over the world. In all countries, there are strong and vocal lobbies insisting that education remain (or become) "affordable" and "accessible" to all.

These are indeed important goals. Unfortunately, questions regarding affordability and accessibility are rarely posed in a systematic and rigorous way. What, for instance, constitutes an "affordable" education? At what point does an education become "unaffordable"? How can we know whether a system of education is "accessible"? Would anyone really be able to distinguish a system that is "accessible" from one that is "inaccessible"? What is the link between the concepts of affordability and accessibility? And just how inextricable is that link?

This project, the Global Higher Education Rankings, is not an attempt to answer any of these questions in any definitive sense. Such an undertaking is, frankly, beyond the means of researchers at the moment. But it is an attempt to force policy-makers, stakeholders and academics around the world to confront these questions in a more systematic fashion, by putting international statistics on affordability and access in a consistent, comparative framework and shedding harsh light on national claims of policy success.

The idea for this report stemmed from a set of informal discussions between scholars at a seminar in Pinhao, Portugal in October 2004. These scholars, who were presenting papers regarding access to post-secondary education in various OECD countries,[1] were surprised at the apparent similarities in access outcomes across countries, even though these countries had very different tuition and student aid regimes. There was a temptation among some to conclude that perhaps this meant that finances (or, "affordability") had very little to do with the "accessibility" of education. In the end, however, it was recognized that there was insufficient comparable cross-national data to draw a firm conclusion one way or the other.

This report, then, is an attempt to fill this data gap; it provides scholars, policy-makers and stakeholders with comparable cross-national data on affordability and accessibility of higher education. It does not set an absolute standard for either concept, but by showing how different countries perform on a spectrum of indicators of affordability and accessibility, permits nations to see how well they are doing relative to other countries around the world. Crucially, the report assigns different rankings to countries' efforts in making education "accessible" and "affordable." This is deliberately done in order to permit an analysis (undertaken towards the end of this report) of the relationship between different measures of affordability and accessibility.

The authors do not believe that this report constitutes the last word in portraying accessibility or affordability in an international comparative perspective. Quite the contrary: we rather suspect that it marks a beginning, rather than an end, to such discussions. These rankings have been constructed on

[1] The collected papers of this meeting will be published in the forthcoming publication: Amaral, Jongbloed, Teixeira and Vossensteyn (eds). *Cost Sharing and Accessibility with Respect to Higher Education in Mature Economies.* Kluwer Academic Publishing (2005)

the basis of available data. It is both hoped and expected that better data will become available as time goes by, permitting future analyses to improve on what we have done here by allowing for a more nuanced and accurate exploration of indicators, and the expansion of countries included in the analysis. The weightings of these rankings have been constructed in accordance with what we believe to be reasonable definitions of the terms affordability and *accessibility*. We fully expect that others may disagree with these weightings, and further, that constructive criticism from those who dispute them will result in improved analyses in the future. May the conversation be long and insightful.

Part I: Methodology

In order to examine and rank jurisdictions in terms of the affordability and accessibility of their higher education systems, one must be in possession of the following:

- An acceptable range of indicators that are indicative of affordability and accessibility;
- Weightings for each of such indicators to permit an overall assessment of affordability and accessibility; and
- For each acceptable indicator, data that is sufficiently comparable across jurisdictions to permit "fair" international comparisons.

The last element will be discussed extensively in the Data Sources appendix to this report. For now, in the methodology section, we will examine in particular the first two points: indicators and weightings.

Affordability Indicators & Weightings

Indicators

When making inter-jurisdictional comparisons regarding the financial "barriers" to education, one may choose to compare either "raw" costs (that is, the actual cost to the student, converted into a common currency), or the costs expressed as a percentage of some form of income (student income, family income, or some proxy thereof). The working assumption for this paper is that comparisons are more meaningful if cost data is expressed as a function of "Ability to Pay" (ATP). Put simply, expressing affordability solely in terms of costs appears nonsensical given inter-jurisdictional differences in income; therefore the best way to approach the concept is to include both costs and resources.

Given the above assumption, there are four possible types of indicators that can be used to look at affordability:

- *Costs as a Fraction of Ability to Pay* – These are relatively easy to measure. Tuition (including mandatory fees), Education Costs (tuition plus books and materials), Living Costs (room and board) and Total Costs (education costs plus living costs) can all be expressed as a function of an ATP measure.
- *Support as a Fraction of Ability to Pay* – Various forms of government support should be included in any calculation of affordability. One way of doing so is measuring Grants, Loans and Tax Expenditures per student; all of which can all be expressed as a fraction of ATP.
- *Support as a Fraction of Costs* – Another way to achieve the same thing is to measure government support as a fraction of the costs students face (e.g. grants as a percentage of total costs).

- *Cost minus Support as a Fraction of Ability to Pay* – A final way of measuring affordability is to calculate various forms of "net" costs (i.e. costs minus subsidies) or "out-of-pocket" costs (costs minus all government assistance) as a fraction of ATP.

Table 1. Possible Affordability Indicators

Cost/ATP	Support/ATP	Support/Cost	Cost minus support/ATP
Tuition as a % of ATP	Grants per student as a % of ATP	Grants per student as a % of tuition	Net Tuition as a % of ATP (tuition minus grants/tax credits)
Education Costs as a % of ATP	Loans per student as a % of ATP	Grants per students as a % of education costs	Out-of-pocket Tuition as a % of ATP (tuition minus loans and grants/tax credits)
Living Expenses as a % of ATP	Tax credits per student as a % of ATP	Grants per student as a % of total costs	Net Education Costs as a % of ATP
Total Costs as a % of ATP		Loans per student as a % of tuition	Out-of-pocket Education costs as a % of ATP
		Loans per students as a % of education costs	Net total costs as a % of ATP
		Loans per student as a % of total costs	Out-of-Pocket total costs as a % of ATP
		Tax credits per student as a % of tuition	
		Tax credits per students as a % of education costs	
		Tax credits per student as a % of total costs	

Any of these measures are reasonable potential measures of affordability, and choosing between them is necessarily a normative exercise. Direct measures of support (i.e. the measures in the second and third columns of Table 1) were eliminated as possible indicators of affordability, on the grounds that while it is important to capture such data, on their own these measures say little about the affordability of education. Ultimately, the most important aspects of the information these measures represent were fully contained in the "cost minus support" indicators (i.e. column four of Table 1).

After consulting much literature on accessibility and conferring with colleagues in different parts of the world, six indicators of affordability were settled upon:

1. **Education Costs as a percentage of ATP.** The basic unit of analysis for measuring "affordability" of higher education is the cost of education. This cost is not simply "tuition"; it also includes any additional mandatory ancillary fees as well as the cost of books and study materials.

2. **Total Costs as a percentage of ATP.** Education costs, however, are not the only costs facing students. Students also need to pay a number of other expenses related to day-to-day living (which for the purposes of this report covers only the estimated costs of rent and food). Thus, "total costs" (education plus living costs) are at least as important a measure of affordability as education costs alone. These costs are somewhat problematic in that individuals may choose to reduce their living costs by continuing to live with their families during their period of studies. However, students may choose to live with their parents for a number of reasons – out of financial neces-

sity, financial convenience (living at home frees up income for consumption), or for reasons rooted deeply in national culture. In writing this report, the normative decision was made to portray the costs of study for students living away from home, in the full knowledge that many students may, for a variety of reasons, make lifestyle choices that result in them facing much lower costs than those portrayed in this study.

3. **Net Costs as a percentage of ATP.** Offsetting total costs are grants. In terms of human capital theory (Becker 1964), since grants reduce the cost of attendance, a dollar of grants should have the same effect on human capital investment decisions as a dollar in tuition reduction. It is standard practice in most North American discussions of affordability (among many others, see St. John 2002, Berkner and Chavez 1997, Swail 2004) to measure not simply the "sticker" cost of education, but also the "real" cost after subsidies such as grants have been taken into account. This study will follow therefore this practice and report net costs as well. In Europe, where certain types of indirect support such as rent assistance or subsidized student housing is the norm, we have made our best effort to include these in the grant calculation as well.

4. **Net Cost After Tax Expenditure as a percentage of ATP.** Grants, however, are not the only form of non-repayable assistance given out by governments. Some governments – notably Germany, Austria, Belgium and Canada – also provide assistance through the tax system or though family allowances. Although it is not common practice in the United States, it seems reasonable that if net costs were to be taken into account, so should net costs after tax expenditures. Otherwise, the report would be excluding sources of government expenditures which in some countries run into the billions of dollars. Some might argue that no distinction should be made between the two types of assistance since both forms of assistance are non-repayable; however, there is some skepticism in the student aid community that these instruments have the same effectiveness as grants (see Usher 2004; Finnie, Usher and Vossensteyn 2004). Moreover, when describing available assistance to students, it is general practice in Europe to make a distinction between the two types of support (see Vossensteyn 2004). It has therefore been decided to keep calculations involving tax expenditures separate from calculations involving other types of non-repayable assistance.

5. **Out-of-Pocket Costs as a percentage of ATP.** Net costs are an important element of human capital theory because net costs affect investment decisions. However, student loan programs – which are used in a majority of countries included in this study – are established on the premise that in addition to dilemmas relating to net cost, students are also affected by "liquidity constraints." That is to say, a student might not be bothered by the net cost of a program in terms of the cost-benefit ratio she will derive from it, but that does not reflect whether or not she can amass the necessary funds to study and live (see Finnie 2004, Usher and Junor 2004). Loans do not offset the cost of an education, but they do alleviate short-term liquidity problems associated with obtaining an education. "Out-of-pocket" costs – sometimes called "Net Price 2" in certain American affordability studies – are equal to total average costs minus total average loans and grants per student.

6. **Out-of-pocket Costs After-Tax Expenditures as a percentage of ATP**. As with simple net costs, out-of-pocket costs similarly exclude tax expenditures. Here, as with the fourth indicator, tax expendi-

tures are included for balance, to reflect costs incurred by governments who favour this somewhat unorthodox type of student assistance.

Defining "Ability to Pay"

As noted earlier, it is imperative to put costs in various countries into an affordability perspective by expressing them in terms of "Ability to Pay". Unfortunately, this is more difficult than it sounds; accepted measures comparing individual or household incomes are few and far between. One measure frequently used in North America – household after-tax income – is scarcely used in Europe. In any case, the fact that Americans tend to pay for healthcare by private insurance rather than taxes, tends to make disposable income look exaggeratedly high in the US. An alternative measure of "disposable income" does not represent comparable taxes and transfers in all countries where it is reported. Pre-tax household income, can also be tricky, since "households" across countries differ in size. While there have been some attempts to standardize household income on an "equalized per-person basis" the results do not lend themselves to ease of understanding. Moreover, these also seem to give an exaggerated advantage to the United States. Some particular studies have tried to establish comparable household income data based on national surveys; however, the instruments and years of participation vary greatly where available.

The remaining standard basis for international income comparisons is the less-than-perfect measure of Gross Domestic Product (GDP) per capita. Despite this measure's obvious drawbacks – it does not measure household income well, let alone disposable household income – it has the benefit of being a recognized measure of relative *national* purchasing power that has been used in a number of other publications. Therefore, when expressing costs as a fraction of ability to pay, GDP per capita will be used as a proxy of income and the measure of ATP. GDP per capita values in the various countries included in this study are presented below in Table 2, in $US 2003 Purchasing Power Parity (PPP). In order to keep costs and ability to pay consistent, data on costs will also be converted in to comparable form at Purchasing Power Parity (PPP) using OECD data on PPP. Costs obtained from survey sources earlier than 2003 will be inflated to 2003 values using consumer price index information for each individual country.

Table 2. Gross Domestic Product per Capita (GDP/capita) in $US at 2003 PPP

Country	GDP/Capita (2003, PPP)	Country	GDP/Capita (2003, PPP)
Australia	$ 29,143	Ireland	$ 36,774
Austria	$ 29,972	Italy	$ 27,049
Belgium	$ 28,396	Japan	$ 28,162
Canada	$ 30,463	Netherlands	$ 29,411
Finland	$ 27,252	New Zealand	$ 21,176
France	$ 27,327	Sweden	$ 26,655
Germany	$ 27,608	United Kingdom	$ 27,106
Ireland	$ 36,774	United States	$ 37,352

Weighting the Indicators

In effect, our six indicators are based on different combinations of five separate inputs:

- Education costs (including tuition, books, and other necessary materials)
- Living costs (for these purposes, room and board during the academic year)
- Grants
- Loans
- Tax Expenditures

Our reading of the literature on financial barriers to higher education (which, admittedly, is somewhat biased towards North American sources), permits the following conclusions about the relative importance of the proposed indicators to be drawn:

- *Education costs are the most important of the five inputs.* They are the most obvious "price" of education, and should be the foundation of all our indicators.

- *Living costs are nearly as important as education costs*, for the very simple reason that students need to have their living expenses covered.

- *Grants are nearly as important as education and living costs*. Again, following human capital theory, a dollar in grants should completely offset a dollar of tuition fees and so it stands to reason that they should be given nearly comparable treatment. However, because people seem to attach greater importance to costs than to subsidies (perhaps due to a form of Richard Thaler's "mental accounting"; see Thaler, 1991), they are given somewhat less weight than costs.

- *Loans are important, but less so than grants*. As per Finnie (2004), there are two types of barriers to education – one related to "cost-benefits" and the other related to liquidity. Grants contribute to solving both problems, while loans contribute only to solving the latter. As a result, loans have been accorded half the weight given to grants.

- *Tax Expenditures are the least important of all*. Even though tax expenditures are simply a convoluted form of grant, there appears to be significant scepticism among experts as to their efficacy in promoting access to education (which is, in theory, why governments choose to make education affordable).

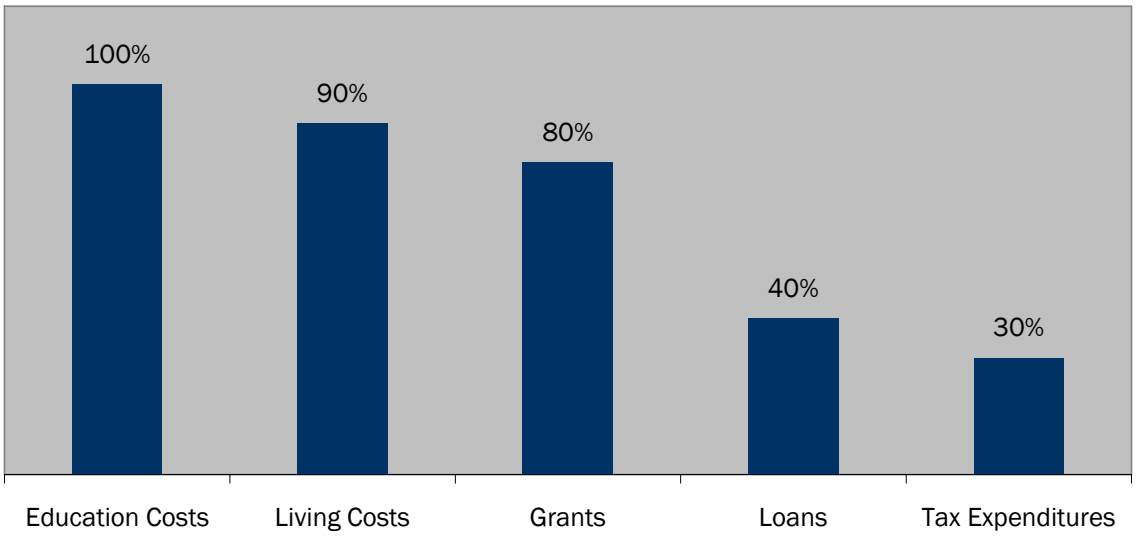
On the basis of these findings, the six rankings have been assigned weightings as follows.

Table 3. Affordability Indicator Weightings

INDICATOR	WEIGHTING
AFFORDABILITY:	100%
Educational Costs as a % of GDP/capita	10%
Total Cost as a % of GDP/capita	10%
Net Cost as a % of GDP/capita	25%
Net Cost After Tax Expenditures as a % of GDP/capita	15%
Out-of-Pocket Costs as a % of GDP/capita	25%
Out-of-Pocket Costs After Tax Expenditures as a % of GDP/capita	15%

Figure 1, below, shows the extent to which each of the five input factors affect, through some contribution, the overall ranking. *Education Costs* are a part of the final calculation in all six of the indicators, thus contributing to one hundred percent of the eventual ranking. *Living Costs*, which are an element of total costs, are part of the calculation in five of the six indicators, thus contributing to ninety percent of the final ranking. *Grants*, involved in four of the calculations, are close behind at eighty percent. *Loans* affect only two of the indicators, and affect forty percent of the final rank; *Tax Expenditures*, which also affect two indicators, affect only thirty percent of the final score.

Figure 1. Contribution of Affordability Inputs to Affordability Rankings



Accessibility Indicators and Weightings

Indicators

Finding useful comparative indicators for accessibility is both easier and more difficult than finding them for affordability. Easier, in the sense that there appears to be considerably more consensus regarding what constitutes "accessibility" than what constitutes "affordability." More difficult, in the sense that there are very few common statistical measurements permitting useful cross-national comparisons. This study has chosen to use four indicators of accessibility:

1. **Participation Rates.** In one sense, this is the most obvious of all possible indicators: the fraction of young people engaged in higher education studies. There are, however, some difficulties in trying to find standard cross-national measures of participation, in part because students in different countries do not all start higher education at the same time. This study will use the participation rate of the four years of age with the highest rates of participation, a measure developed by Herb O'Heron at the Association of Universities and Colleges of Canada.

2. **Attainment Rates.** Raw participation rates are unsatisfactory measures of accessibility for two reasons. Firstly, it measures participation as opposed to completion. Secondly, it corrects for a possible confound in participation rates between "number of students attending" and "length of time in studies" (i.e. a country with a lot of people in short programs may have the same participation rates as a country with fewer people in longer programs). Using some kind of measure of attainment corrects both these problems. This study will use the percentage of the 25 – 34 year old population has completed a "tertiary type A" (higher education) degree.

3. **The Educational Equity Index (EEI).** This measure is described in an Educational Policy Institute paper entitled *A New Measuring Stick* (available at www.educationalpolicy.org). In brief, it quantifies educational inequality by measuring the degree to which students from high socio-economic status backgrounds (as measured by paternal education levels) are over-represented in higher education. The specific measure is best expressed algebraically:

$$\text{Jurisdictional EEI} = 100 * \frac{\text{(\% of all males 45-65 with higher education degrees)}}{\text{(\% of all students whose fathers have higher education degrees)}}$$

High EEI scores imply that the composition of the student body "looks like" society as a whole, while low EEI scores imply that the student body is drawn disproportionately from already privileged families.

4. **Gender Parity Index**. Proximity to gender parity is another possible indicator of equity in higher education access. In this indicator, any deviation from gender parity is treated as being indicative of inequality and therefore negative.

Weighting the Indicators

Our reading of the literature on access to higher education permits us to conclude the following about the relative importance of the proposed indicators:

- Generally speaking "access" is held to have two possible interpretations (see Anisef et. al, 1985). One measure ("Type I Access") measures the total number of places available while the other ("Type II Access") examines the social background of the students who fill them. One type of access is not generally thought to be more important than the other; therefore, indicators examining the "Type I" and "Type II" should have equal weight.

- The two Type I indicators – participation and attainment – seem to be equally important measures of access and therefore deserve roughly equal weight.

- The two Type II indicators – the EEI and Gender Equity – do not seem to command equal weight. With respect to measures looking at the equality of participation, the Educational Equity Index, which is effectively a measure of socio-economic inequality, was deemed to be of greater importance than the Gender Parity Index, in part because there is not an enormous amount of variation in enrolments by gender between the countries included in this report. As a result, the EEI was given an 80 percent weighting and Gender Parity index given a 20 percent weighting, within the student body composition section.

Table 4. Accessibility Indicator Weightings

INDICATOR	WEIGHTING
ACCESSIBILITY:	100%
Participation Rate (tertiary)	25%
Educational Attainment (in the 25 – 34 year old population)	25%
Educational Equality Index	40%
Gender Parity Index (based on tertiary Gross Enrolment Ratio)	10%

Part II: Affordability Rankings

This section looks at the data on affordability of higher education in various countries around the world. Although we initially looked at the possibility of including nearly fifty countries in this survey, in the end it was determined that complete, high quality data was available only for fifteen countries: Australia, Belgium, Austria, Canada, Finland, France, Germany, Ireland, Italy, Japan, The Netherlands, New Zealand, Sweden, the United Kingdom and the United States. Following local convention, we have reported data on Belgium's two linguistic communities – Flemish and French – separately, bringing to sixteen the number of jurisdictions covered in the affordability rankings in this report.

Data is presented for each country on five cost "inputs" – education costs, living costs, grants, loans and tax expenditures – and the five additional cost "indicators" derived from these inputs (a sixth indicator, education costs, is identical with an input). For each of the cost indicators, data is reported simultaneously in eight currencies. However, as noted in the methodology section, the rankings are based not on costs but on affordability; that is, costs modified by the ability of individuals to pay them. Therefore, at the end of each of the six indicators sections there is also a table ranking the sixteen jurisdictions in terms of affordability.

Education Costs - 10 % of Total Score

The basic unit of analysis for measuring "affordability" of higher education is the cost of education. This cost is not simply tuition; it also includes any additional mandatory ancillary fees and the cost of books and study materials. Where a country has both public and private provision of higher education (i.e. the United States and Japan), an enrolment-weighted average of tuition costs in both sectors have been used. Table 5 shows education costs for all 16 jurisdictions in this survey.

Not surprisingly, the cheapest educational costs are in those countries where tuition fees do not exist: Finland, Belgium, and Sweden. Three "free" tuition countries – Germany, France and Ireland – actually have surprisingly high educational costs due to high registration fees and high costs of books and other educational materials. There then follow a number of "low" tuition countries (including Italy, the Netherlands and Austria), and then some "medium" tuition countries (which include Australia, New Zealand the United Kingdom and Canada). Finally, there are the two high tuition countries – Japan and the United States – both of which have substantial private provision of four-year higher education. If one were to eliminate private institutions from these two countries' calculations, their average education costs would fall by roughly one half.

Table 5. Education Costs (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	3,828	4,766	2,373	3,574	36,079	5,170	526,590	5,624
Austria	1,478	1,840	916	1,380	13,932	1,997	203,344	2,172
Belgium (Flemish)	821	1,022	509	767	7,740	1,109	112,969	1,206
Belgium (French)	821	1,022	509	767	7,740	1,109	112,969	1,206
Canada	4,149	5,166	2,573	3,875	39,108	5,605	570,802	6,096
Finland	271	338	168	253	2,559	367	37,346	399
France	1,738	2,164	1,078	1,623	16,383	2,348	239,122	2,554
Germany	2,083	2,594	1,292	1,945	19,633	2,814	286,562	3,060
Ireland	1,575	1,961	976	1,470	14,842	2,127	216,630	2,314
Italy	2,135	2,659	1,324	1,994	20,126	2,884	293,754	3,137
Japan	8,248	10,269	5,114	7,702	77,737	11,140	1,134,619	12,117
Netherlands	1,990	2,478	1,234	1,858	18,757	2,688	273,771	2,924
New Zealand	3,327	4,142	2,062	3,106	31,352	4,493	457,609	4,887
Sweden	852	1,061	529	796	8,034	1,151	117,264	1,252
United Kingdom	3,257	4,055	2,019	3,041	30,695	4,399	448,012	4,785
United States	9,604	11,957	5,954	8,968	90,518	12,972	1,321,174	14,110

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

In terms of affordability, Finland's higher education system is by some considerable distance the least expensive, with educational costs only at one percent of GDP per capita. Education costs in most countries cluster between about five and fifteen percent of GDP per capita. In the two highest-cost countries, Japan and the United States, education costs reach twenty-nine and twenty-six percent of GDP per capita, respectively. The rankings in terms of education cost affordability are shown below in Table 6.

Table 6. Education Cost Affordability Rankings

Rank (of 16)	Country	EC/GDP per capita	Rank (of 16)	Country	EC/GDP per capita
1	Finland	1.0%	9	Germany	7.5%
2 (tie)	Belgium (Flemish)	2.9%	10	Italy	7.9%
2 (tie)	Belgium (French)	2.9%	11	United Kingdom	12.0%
4	Sweden	3.2%	12	Australia	13.1%
5	Ireland	4.3%	13	Canada	13.6%
6	Austria	4.9%	14	New Zealand	15.7%
7	France	6.4%	15	United States	25.7%
8	Netherlands	6.8%	16	Japan	29.3%

Living Costs

In addition to education costs, students must also find the money to live. The cost of living in a country therefore materially impacts the affordability of education in that it increases the total amount of money required to complete each year of study.

Table 7. Living Costs (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	6,720	8,366	4,166	6,275	63,335	9,077	924,416	9,873
Austria	5,821	7,247	3,609	5,435	54,860	7,862	800,710	8,551
Belgium (Flemish)	4,145	5,160	2,570	3,870	39,063	5,598	570,155	6,089
Belgium (French)	4,615	5,746	2,861	4,309	43,497	6,234	634,869	6,780
Canada	4,909	6,112	3,044	4,584	46,269	6,631	675,327	7,212
Finland	5,229	6,510	3,242	4,882	49,281	7,062	719,289	7,682
France	5,401	6,724	3,348	5,043	50,901	7,295	742,938	7,934
Germany	4,417	5,499	2,738	4,124	41,627	5,966	607,580	6,489
Ireland	4,957	6,171	3,073	4,628	46,715	6,695	681,840	7,282
Italy	4,421	5,504	2,741	4,128	41,669	5,972	608,190	6,495
Japan	6,156	7,664	3,817	5,748	58,019	8,315	846,818	9,044
Netherlands	4,924	6,130	3,053	4,597	46,405	6,650	677,308	7,233
New Zealand	7,546	9,395	4,679	7,046	71,124	10,193	1,038,103	11,087
Sweden	5,431	6,761	3,367	5,071	51,184	7,335	747,061	7,978
United Kingdom	8,602	10,709	5,333	8,032	81,071	11,618	1,183,285	12,637
United States	6,344	7,898	3,933	5,924	59,790	8,568	872,670	9,320

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

Living costs – which include the costs of rent and food for an academic year – vary widely across the sixteen jurisdictions in this survey. The cost of living is reasonably low in a number of continental European countries, possibly due to the availability of subsidized student accommodation. The cost of living is considerably higher in Scandinavian and Anglophone countries, with the exception of Canada.

The highest cost of living is the UK, possibly due to the high concentration of students in the Greater London area, which is one of the most expensive cities on the globe.

Total Costs [TC] - 10 % of Total Score

Just as direct educational costs are one way to measure "affordability", so too are total costs – that is, the combined costs of education and living expenses. Among the sixteen jurisdictions in this survey, the difference in total costs from the lowest (Flemish Belgium) to the highest (the United States) is roughly $11,000 U.S. per year of studies. Put another way, total costs in Belgium are roughly one-third of the costs in the United States.

Again, with respect to total costs, certain countries cluster together. In continental Europe, total costs cluster between roughly $5,000 and $7,500 US. The Commonwealth countries (Australia, Canada, New Zealand and the United Kingdom) come next, ranging between $9,000 and $12,000 in total costs. At the high end are Japan and the United States, with the latter having the highest costs at nearly $16,000 US per year of study.

Table 8. Total Costs (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	10,548	13,132	6,540	9,849	99,414	14,247	1,451,006	15,496
Austria	7,299	9,087	4,525	6,815	68,791	9,858	1,004,054	10,723
Belgium (Flemish)	4,966	6,183	3,079	4,637	46,803	6,707	683,124	7,296
Belgium (French)	5,436	6,768	3,370	5,076	51,237	7,343	747,838	7,987
Canada	9,059	11,278	5,616	8,459	85,377	12,235	1,246,129	13,308
Finland	5,500	6,848	3,410	5,136	51,840	7,429	756,635	8,081
France	7,139	8,888	4,426	6,666	67,284	9,643	982,060	10,488
Germany	6,500	8,092	4,030	6,069	61,261	8,779	894,141	9,549
Ireland	6,531	8,132	4,049	6,099	61,557	8,822	898,470	9,595
Italy	6,557	8,163	4,065	6,122	61,795	8,856	901,943	9,633
Japan	14,404	17,933	8,930	13,450	135,755	19,455	1,981,437	21,161
Netherlands	6,914	8,608	4,286	6,456	65,162	9,338	951,079	10,157
New Zealand	10,873	13,537	6,741	10,153	102,477	14,686	1,495,711	15,974
Sweden	6,283	7,823	3,895	5,867	59,218	8,487	864,325	9,231
United Kingdom	11,859	14,764	7,352	11,073	111,766	16,017	1,631,297	17,422
United States	15,948	19,855	9,888	14,891	150,308	21,541	2,193,845	23,430

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

In terms of affordability – that is, total costs as a faction of GDP per capita - Flemish Belgium and Ireland have nearly identical levels of affordability with total costs between seventeen and eighteen percent of GDP/capita. At the other end of the affordability spectrum are New Zealand and Japan, where total costs are just over fifty-one percent of per capita GDP. Interestingly, when measured in terms of purchasing power, the United States appears considerably more affordable than it does when measured on costs alone. The gap in purchasing power between North America and Europe shows up in

other ways as well; when measured in terms of affordability, costs in Canada come very close to costs in France – this despite the latter having virtually no tuition fees.

Table 9. Total Cost Affordability Rankings

Rank (of 16)	Country	Total Costs/ GDP per capita	Rank (of 16)	Country	Total Costs/ GDP per capita
1	Belgium (Flemish)	17.49%	9	Austria	24.35%
2	Ireland	17.76%	10	France	26.12%
3	Belgium (French)	19.14%	11	Canada	29.74%
4	Finland	20.18%	12	Australia	36.19%
5	Netherlands	23.51%	13	United States	42.70%
6	Germany	23.54%	14	United Kingdom	43.75%
7	Sweden	23.57%	15	Japan	51.15%
8	Italy	24.24%	16	New Zealand	51.34%

Grants

The main way in which many governments help individuals offset the cost of attending higher education is through grants. With the exception of Japan, all countries in this survey provide their students with some sort of grant. Included in the definition of grant used here are certain kinds of rent, housing and food subsidies which are commonly provided by governments – notably in continental Europe – to reduce student living expenses. Table 10 shows average grant expenditures in each country (i.e., total grants divided by total FTE students).

Four countries have very high levels of grants – Sweden, the Netherlands, Finland, and the United States. The first two are no surprise: Sweden and the Netherlands also happen to be the only countries in the survey whose grant programs are "universal" (i.e. all students receive a grant). Finland's grant program is not universal but is close with nearly 80% of students receiving grants, and substantial ones at that.

The United States, however, is an interesting case. Roughly half of its grants – those that come from government – are income-based and are hence directly targeted to students from low-income backgrounds. The remainder is provided by educational institutions themselves and for the most part they come from the same private, high-tuition institutions that give the US such a high average educational cost to begin with. In total, average per student grants in the US are equal to roughly half of average educational costs.

Table 10. Grants per Student (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	1,376	1,713	853	1,285	12,966	1,858	189,242	2,021
Austria	849	1,057	527	793	8,005	1,147	116,844	1,248
Belgium (Flemish)	275	342	170	257	2,591	371	37,821	404
Belgium (French)	254	316	157	237	2,393	343	34,931	373
Canada	1,114	1,387	691	1,040	10,502	1,505	153,289	1,637
Finland	2,565	3,194	1,590	2,395	24,177	3,465	352,879	3,769
France	1,350	1,681	837	1,260	12,723	1,823	185,694	1,983
Germany	315	393	196	294	2,972	426	43,379	463
Ireland	1,028	1,280	638	960	9,693	1,389	141,481	1,511
Italy	254	316	157	237	2,394	343	34,941	373
Japan	0	0	0	0	0	0	0	0
Netherlands	3,969	4,942	2,461	3,706	37,410	5,361	546,021	5,831
New Zealand	1,224	1,524	759	1,143	11,535	1,653	168,356	1,798
Sweden	2,757	3,432	1,709	2,574	25,985	3,724	379,263	4,050
United Kingdom	963	1,199	597	899	9,074	1,300	132,440	1,414
United States	4,025	5,012	2,496	3,759	37,938	5,437	553,737	5,914

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

There is another group of countries, including all the Commonwealth countries, France, Austria and Ireland, where grants per student average roughly $1,000 (note that in the UK, the term "grants" covers the income-based tuition waivers in place since 1998). In most of these countries, the average grant size is actually between $1,000 and $3,000; however, restrictive eligibility practices reduce these figures considerably when measured on an average per student basis, as reported in Table 10. Below them are European countries with grant programs that reach very few students: notably, Belgium, Italy and Germany. Of these, Italy is notable in having a very high merit component attached to its grant assistance.

Net Costs [NC] - 25 % of Total Score

The term "net cost" refers to the total average cost of education minus the average grant available on a per student basis. It is generally considered a more accurate measure of affordability than education costs or total costs because it incorporates government subsidies into the cost calculation.

Table 11. Net Costs (various currencies at PPP)

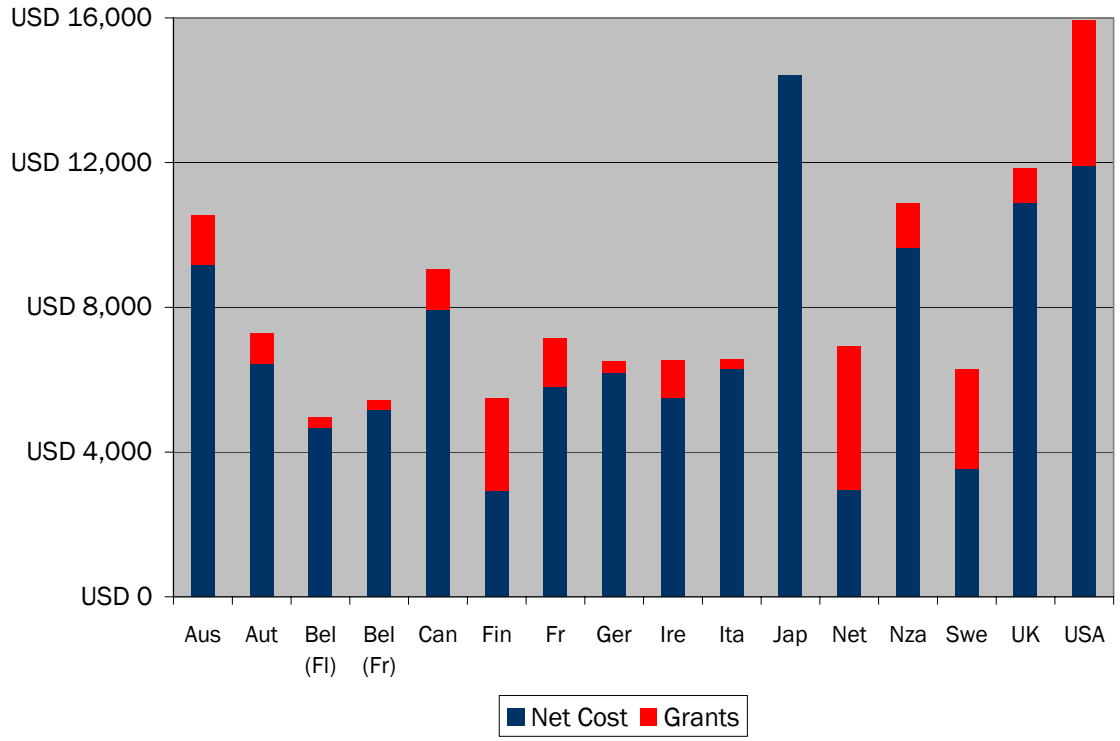
	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	9,172	11,420	5,687	8,565	86,448	12,389	1,261,764	13,475
Austria	6,449	8,030	3,999	6,022	60,786	8,711	887,211	9,475
Belgium (Flemish)	4,691	5,840	2,908	4,380	44,212	6,336	645,303	6,892
Belgium (French)	5,182	6,452	3,213	4,839	48,844	7,000	712,907	7,614
Canada	7,944	9,891	4,925	7,418	74,874	10,730	1,092,840	11,671
Finland	2,935	3,654	1,820	2,741	27,663	3,964	403,755	4,312
France	5,789	7,207	3,589	5,406	54,562	7,819	796,366	8,505
Germany	6,185	7,700	3,834	5,775	58,289	8,353	850,763	9,086
Ireland	5,503	6,851	3,412	5,138	51,864	7,433	756,989	8,084
Italy	6,303	7,847	3,908	5,885	59,401	8,513	867,002	9,259
Japan	14,404	17,933	8,930	13,450	135,755	19,455	1,981,437	21,161
Netherlands	2,945	3,666	1,826	2,749	27,752	3,977	405,058	4,326
New Zealand	9,649	12,013	5,982	9,010	90,942	13,033	1,327,355	14,176
Sweden	3,526	4,390	2,186	3,293	33,233	4,763	485,062	5,180
United Kingdom	10,896	13,565	6,755	10,174	102,692	14,717	1,498,857	16,007
United States	11,923	14,844	7,392	11,133	112,370	16,104	1,640,108	17,516

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

When analyzed in terms of average net costs per student, we again find that the countries in this survey cluster into recognizable groups, albeit not the same ones we have seen on previous measures of costs. The Netherlands, Finland and Sweden are now clearly more affordable than the other countries. Two of these have free tuition but, more importantly, all three of them have very extensive grant programs which puts them into a class by themselves when it comes to net costs. The rest of continental Europe clusters into a band between roughly $4,700 and $6,500 US, while Canada follows not far behind at approximately $8,000 US. The other predominantly-Anglophone countries are spread between approximately $9,000 and $12,000 US. Japan, which was already the most expensive country in this survey even before average grants were subtracted, is now by some considerable distance the most expensive country in the survey.

By showing the difference between net costs and total costs, Figure 2 shows the contribution made by grants in reducing the costs facing students in various countries.

Figure 2. The Role of Grants in Reducing Total Costs



Despite the North Americans having much higher net costs than European countries, the difference in GDP per capita means that, on an affordability basis, the affordability gap between the US and Canada on the one hand, and continental Europe on the other, is much smaller than might be expected. Low per capita GDP in the UK and New Zealand, however, means that these countries have net costs that are much less affordable than might be expected – closer, indeed, to Japan than they are to the United States, let alone continental Europe.

Table 12. Net Cost Affordability Rankings

Rank (of 16)	Country	Net Costs/ GDP per capita	Rank (of 16)	Country	Net Costs/ GDP per capita
1	Netherlands	10.0%	9	Germany	22.4%
2	Finland	10.8%	10	Italy	23.3%
3	Sweden	13.2%	11	Canada	26.1%
4	Ireland	15.0%	12	Australia	31.5%
5	Belgium (Flemish)	16.5%	13	United States	31.9%
6	Belgium (French)	18.3%	14	United Kingdom	40.2%
7	France	21.2%	15	New Zealand	45.6%
8	Austria	21.5%	16	Japan	51.1%

Tax Expenditures

Grants are not the only form of non-refundable assistance provided by governments to reduce to cost of education. In addition, many governments provide various forms of tax expenditures and tax-based benefits. Often, these subsidies are given not to students directly but instead to their families in the form of increased family allowance cheques and/or reductions in taxes owed. Table 13 shows average tax expenditure in each country (i.e. total tax expenditures divided by total FTE students).

Ten of the sixteen jurisdictions included in this survey provide students and their families with some sort of tax relief specifically designed to encourage post-secondary study. In cases such as Ireland (where registration fees are tax-deductible) and Australia (where income from academic scholarships are free from tax), this assistance amounts to less than $50 per student per year, on average. In other cases such as Austria and Germany, where students' families are provided with very generous allowances, the assistance comes close to $2,000 US per student per year. Canada (which bases most of its assistance on months of attendance and tuition fees), Belgium and France (family allowances) also have reasonably generous tax assistance packages for their students, while the United States (mostly tuition) and Japan (exemptions of student income from part-time jobs) also have tax expenditure programs, albeit relatively small ones.

Table 13. Tax Expenditures per Student (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	11	14	7	11	108	15	1,570	17
Austria	1,914	2,383	1,187	1,787	18,040	2,585	263,309	2,812
Belgium (Flemish)	820	1,020	508	765	7,724	1,107	112,736	1,204
Belgium (French)	800	996	496	747	7,538	1,080	110,017	1,175
Canada	1,238	1,541	768	1,156	11,669	1,672	170,321	1,819
Finland	0	0	0	0	0	0	0	0
France	618	770	383	577	5,828	835	85,064	908
Germany	1,962	2,443	1,216	1,832	18,493	2,650	269,911	2,883
Ireland	49	61	30	46	461	66	6,727	72
Italy	0	0	0	0	0	0	0	0
Japan	364	453	226	340	3,428	491	50,035	534
Netherlands	0	0	0	0	0	0	0	0
New Zealand	0	0	0	0	0	0	0	0
Sweden	0	0	0	0	0	0	0	0
United Kingdom	0	0	0	0	0	0	0	0
United States	639	796	396	597	6,024	863	87,928	939

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

Net Costs after Tax Expenditures [NCATE] - 15 % of Total Score

"Net Costs after Tax Expenditure" refers to the total average cost of education minus all non-repayable assistance from governments, either in the form of grants or tax expenditures. Though some do not consider tax expenditures to have the same effect as grants in terms of impacting access to education (in part because benefits do not always flow directly to the student), the two forms of assistance *are at least theoretically equivalent ways of* reducing total costs.

Table 14. Net Costs After Tax Expenditures (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	9,161	11,405	5,680	8,554	86,340	12,373	1,260,194	13,459
Austria	4,535	5,647	2,812	4,235	42,746	6,126	623,901	6,663
Belgium (Flemish)	3,871	4,820	2,400	3,615	36,488	5,229	532,568	5,688
Belgium (French)	4,383	5,456	2,717	4,092	41,306	5,920	602,890	6,439
Canada	6,706	8,349	4,158	6,262	63,205	9,058	922,519	9,852
Finland	2,935	3,654	1,820	2,741	27,663	3,964	403,755	4,312
France	5,171	6,438	3,206	4,828	48,734	6,984	711,302	7,597
Germany	4,222	5,257	2,618	3,943	39,796	5,703	580,852	6,203
Ireland	5,454	6,790	3,381	5,093	51,403	7,367	750,262	8,013
Italy	6,303	7,847	3,908	5,885	59,401	8,513	867,002	9,259
Japan	14,040	17,480	8,705	13,110	132,327	18,964	1,931,402	20,627
Netherlands	2,945	3,666	1,826	2,749	27,752	3,977	405,058	4,326
New Zealand	9,649	12,013	5,982	9,010	90,942	13,033	1,327,355	14,176
Sweden	3,526	4,390	2,186	3,293	33,233	4,763	485,062	5,180
United Kingdom	10,896	13,565	6,755	10,174	102,692	14,717	1,498,857	16,007
United States	11,283	14,048	6,996	10,536	106,345	15,240	1,552,180	16,577

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

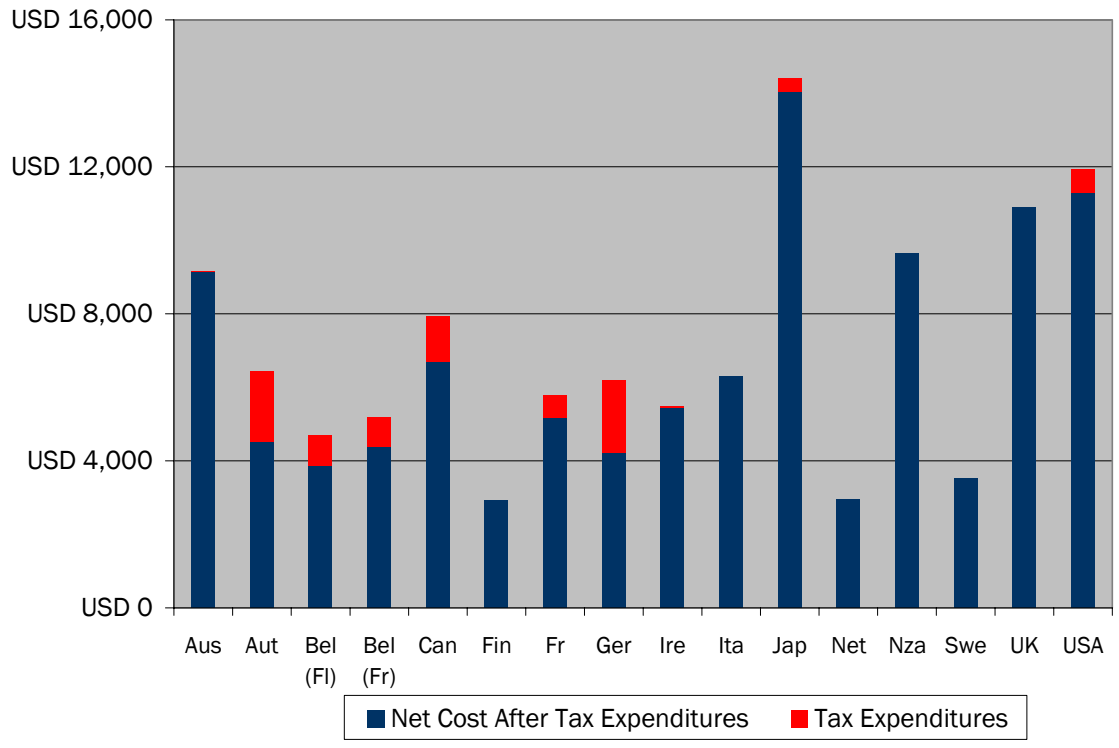
The presence of tax credits does not modify "net cost" affordability for many countries. They make higher education in Canada and the US more slightly more affordable, but not to the extent that they become comparable with European levels. In Austria, Germany and Belgium, tax expenditures make a difference in the sense that net costs fall below those of countries which have similar cost structures (such as Italy and Ireland), but are insufficient to bring costs down to the low levels seen in Scandinavia and the Netherlands.

Table 15. Net Cost after Tax Expenditures Affordability Rankings

Rank (of 16)	Country	NCATE/ GDP per capita	Rank (of 16)	Country	NCATE/ GDP per capita
1	Netherlands	10.0%	9	France	18.9%
2	Finland	10.8%	10	Canada	22.0%
3	Sweden	13.2%	11	Italy	23.3%
4	Belgium (Flemish)	13.6%	12	United States	30.2%
5	Ireland	14.8%	13	Australia	31.4%
6	Austria	15.1%	14	United Kingdom	40.2%
7	Germany	15.3%	15	New Zealand	45.6%
8	Belgium (French)	15.4%	16	Japan	49.9%

Figure 3 shows the contribution made by tax expenditures to the reducing net costs. In most countries, this contribution is small or negligible. However, in Germany and Austria, tax expenditures and family benefits reduce the net cost of education by almost a third. Indeed, in both these countries, tax expenditures and family benefits are a far more important source of aid for education than either of the more traditional supports of loans or grants.

Figure 3. The Role of Tax Expenditures in Reducing Net Costs



Loans

Another major tool for improving the affordability of education is student loans. These are used by ten out of the sixteen jurisdictions covered by this survey: Austria, the two Belgian communities, France, Ireland and Italy do not offer students loans to help students cover the cost of their education. Interestingly enough, the absence of loan programs in these countries is not because they possess such low costs and generous grant programs that loans are unnecessary. As we have just seen, these six communities actually fall well behind the Netherlands and the Nordic countries in terms of the affordability of education on a net cost basis. Though it may be co-incidental, these countries all possess large catholic majorities. This may suggest that differences in educational affordability may be rooted in cultural biases rather than because of "objective" policy factors. Table 16 shows average loans in each country (i.e., total loans divided by total FTE students).

Table 16. Loans per Student (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	2,789	3,473	1,729	2,605	26,290	3,768	383,716	4,098
Austria	0	0	0	0	0	0	0	0
Belgium (Flemish)	0	0	0	0	0	0	0	0
Belgium (French)	0	0	0	0	0	0	0	0
Canada	1,468	1,828	910	1,371	13,840	1,983	202,001	2,157
Finland	647	805	401	604	6,096	874	88,972	950
France	0	0	0	0	0	0	0	0
Germany	315	393	196	294	2,972	426	43,379	463
Ireland	0	0	0	0	0	0	0	0
Italy	0	0	0	0	0	0	0	0
Japan	1,768	2,201	1,096	1,651	16,664	2,388	243,225	2,598
Netherlands	652	812	404	609	6,148	881	89,736	958
New Zealand	2,580	3,212	1,599	2,409	24,314	3,484	354,878	3,790
Sweden	3,087	3,843	1,914	2,883	29,096	4,170	424,672	4,535
United Kingdom	4,261	5,305	2,642	3,979	40,160	5,755	586,160	6,260
United States	4,865	6,057	3,016	4,543	45,852	6,571	669,239	7,147

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

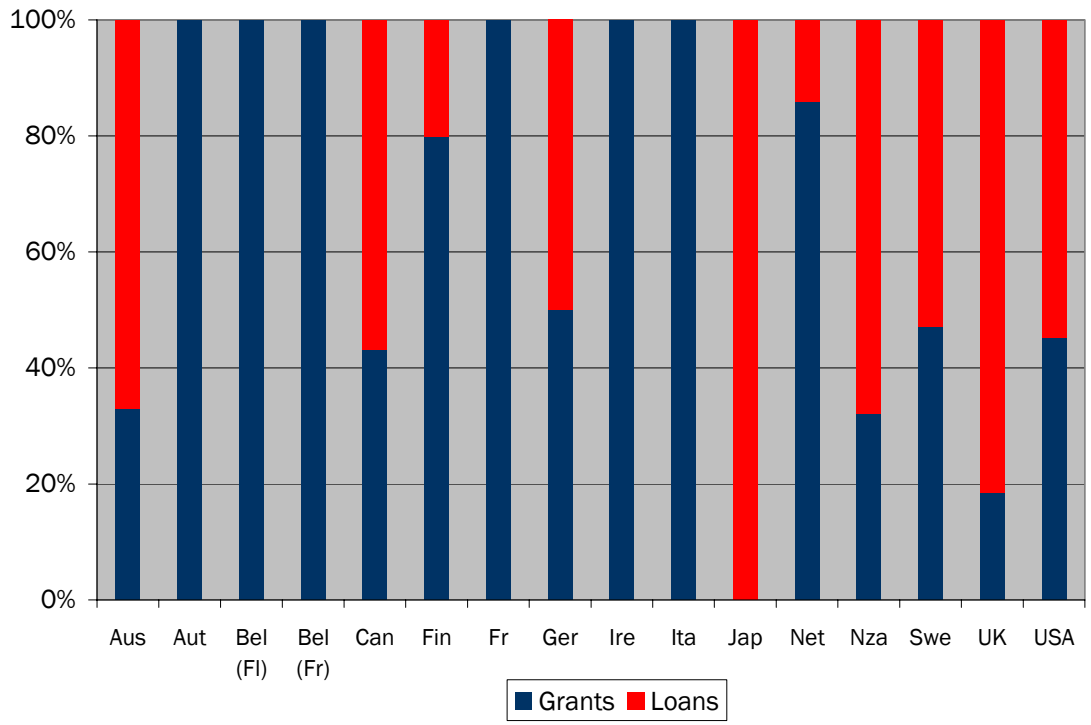
The amount of loan per student varies widely between jurisdictions. It is lowest in Germany, where stringent loan assistance criteria both limits the number of students who may receive loans and grants, and keeps the average loan amount at an almost derisory $300 US/year. At the other extreme, the United Kingdom ($4,261 US/year) and the United States ($4,865/year) provide their students, on average with over ten times as much as German students receive. Despite similar high totals, the US and the UK experiences with student loans are slightly different: in the UK, nearly all students take out a loan, while in the US a little less than half do. Hence, among those who receive loans, average borrowing is actually much higher in the United States than it is in the UK.

Seven of these countries have loan programs that are effectively "universal" (i.e. open to all or nearly all students without a need test); the UK, Sweden, the US (through its Stafford unsubsidized loan pro-

gram), Finland, the Netherlands, New Zealand and Australia (through its well-known HECS program). Interestingly, these countries have very different take-up rates on their loans, despite their near-universal availability. In the UK and Sweden, over 80 percent of all students choose to take up a loan with Australia (77 percent) close behind Roughly six in ten New Zealanders take out loans, while in Finland and the United States, only about half do. On the other end of the spectrum is the Netherlands, where only one student in five chooses to take a loan, even though all are entitled to do so. This may indicate very different national attitudes towards educational debt, or it may reflect different underlying students needs (e.g. presence or lack of part-time employment opportunities or parental financial support). Certainly, it suggests that the same policy instrument may have very different effects in different countries, and for that reason alone, this phenomenon is worthy of future study.

Among the ten countries which do provide student loans, seven of them provide more loans than grants to their students, one provides loans and grants in equal measure (Germany) while the other two (Finland and the Netherlands) provide significantly less in grants than in loans. Japan uses loans exclusively (though, confusingly, they are called "scholarships", which reflects the fact that there is a merit criteria attached to them). The country next most reliant on loans is the UK, where 80% of all assistance is loan-based. New Zealand and Australia use loans and grants in roughly a 2:1 ratio, while Canada, Sweden, and the US all issue between fifty and sixty percent of their assistance in the form of loans. Figure 4 shows the relative importance of grants and loans as a means of financial support in all sixteen jurisdictions, based on total average per student receipt of each type of assistance.

Figure 4. The Loan/Grant Mix in Sixteen Jurisdictions



Out-of-Pocket Costs [OOPC] - 25 % of Total Score

Out-of-pocket costs refers to the sum of expenditures for which a student must student must find resources in the short term – that is, all costs minus all student assistance, both in the form of loans and grants. It does not represent the "cost" of education accurately (because loans must be repaid) but it does represent the liquidity constraints facing students in a more or less accurate way.

Table 17. Out Of Pocket Costs [OOPC] (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	6,383	7,947	3,957	5,960	60,158	8,621	878,048	9,377
Austria	6,449	8,030	3,999	6,022	60,786	8,711	887,211	9,475
Belgium (Flemish)	4,691	5,840	2,908	4,380	44,212	6,336	645,303	6,892
Belgium (French)	5,182	6,452	3,213	4,839	48,844	7,000	712,907	7,614
Canada	6,476	8,062	4,015	6,047	61,035	8,747	890,840	9,514
Finland	2,288	2,849	1,419	2,137	21,567	3,091	314,783	3,362
France	5,789	7,207	3,589	5,406	54,562	7,819	796,366	8,505
Germany	5,869	7,307	3,639	5,480	55,317	7,927	807,384	8,623
Ireland	5,503	6,851	3,412	5,138	51,864	7,433	756,989	8,084
Italy	6,303	7,847	3,908	5,885	59,401	8,513	867,002	9,259
Japan	12,636	15,732	7,834	11,799	119,091	17,067	1,738,212	18,564
Netherlands	2,292	2,854	1,421	2,140	21,604	3,096	315,321	3,368
New Zealand	7,069	8,801	4,383	6,601	66,628	9,548	972,477	10,386
Sweden	439	547	272	410	4,138	593	60,390	645
United Kingdom	6,635	8,260	4,113	6,195	62,532	8,961	912,697	9,747
United States	7,058	8,787	4,376	6,590	66,518	9,533	970,868	10,369

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

The inclusion of loans into the equation introduces a dramatic change to international affordability comparisons, most notably in the positions of Sweden and the five predominantly-Anglophone countries. The widespread availability and use of Sweden's generous system of loans means that its students face by far the lowest out-of-pocket costs for higher education – only about $439 US per year. Effectively, this means that Swedish students have no short-term financial worries; it also means that Swedish students likely graduate with, on average, much higher levels of debt than students elsewhere. However, given the low costs facing them, it seems likely that this choice is one that Swedish students are making willingly.

A startling change also occurs among the predominantly-Anglophone countries when loans are included in the calculation, particularly if one looks at the matter in terms of ability to pay. Measured in terms of GDP per capita, out-of-pocket costs in the United States are not only lower than all the other Anglophone countries, they are also lower than in much of continental Europe. Indeed, through this lens, Germany, Austria, France and Italy all appear to be more expensive than the US. Canada also manages to bring its out-of-pocket affordability to European levels, though this is less surprising given its lower net costs. Australia, New Zealand and the UK also seem much more affordable using an out-of-pocket cost measure, though high costs of living mean that they are still considerably less afford-

able than other countries. Japan, as ever, lags well behind the rest of the pack despite having an increasingly generous loan program that has doubled in size in recent years. Out-of-pocket cost affordability rankings are shown below.

Table 18. Out-of-Pocket Cost Affordability Rankings

Rank (of 16)	Country	OOP Cost/ GDP per capita	Rank (of 16)	Country	OOP Cost/ GDP per capita
1	Sweden	1.6%	9 (tie)	Canada	21.3%
2	Netherlands	7.8%	9 (tie)	Germany	21.3%
3	Finland	8.4%	11	Austria	21.5%
4	Ireland	15.0%	12	Australia	21.9%
5	Belgium (Flemish)	16.5%	13	Italy	23.3%
6	Belgium (French)	18.3%	14	United Kingdom	24.5%
7	United States	18.9%	15	New Zealand	33.4%
8	France	21.2%	16	Japan	44.9%

Out-of-Pocket Costs, After Tax Expenditures [OOPCATE] - 15 % of Total Score

This measure of affordability includes all relevant forms of cost (educational and living) and all possible forms of aid (grants, loans and tax expenditures). It is in some ways the most complete measure of affordability, though it remains somewhat controversial because of the way it includes "indirect" student supports such as tax expenditures and family allowances.

Table 19. Out Of Pocket Costs after-Tax Expenditures (various currencies at PPP)

	US $	CAN $	UK £	Euro €	SEK	AUS $	Japan ¥	NZ $
Australia	6,371	7,933	3,950	5,949	60,051	8,606	876,478	9,361
Austria	4,535	5,647	2,812	4,235	42,746	6,126	623,901	6,663
Belgium (Flemish)	3,871	4,820	2,400	3,615	36,488	5,229	532,568	5,688
Belgium (French)	4,383	5,456	2,717	4,092	41,306	5,920	602,890	6,439
Canada	5,238	6,521	3,247	4,891	49,365	7,075	720,519	7,695
Finland	2,288	2,849	1,419	2,137	21,567	3,091	314,783	3,362
France	5,171	6,438	3,206	4,828	48,734	6,984	711,302	7,597
Germany	3,907	4,864	2,422	3,648	36,824	5,277	537,473	5,740
Ireland	5,454	6,790	3,381	5,093	51,403	7,367	750,262	8,013
Italy	6,303	7,847	3,908	5,885	59,401	8,513	867,002	9,259
Japan	12,272	15,279	7,609	11,459	115,663	16,576	1,688,177	18,029
Netherlands	2,292	2,854	1,421	2,140	21,604	3,096	315,321	3,368
New Zealand	7,069	8,801	4,383	6,601	66,628	9,548	972,477	10,386
Sweden	439	547	272	410	4,138	593	60,390	645
United Kingdom	6,635	8,260	4,113	6,195	62,532	8,961	912,697	9,747
United States	6,418	7,991	3,979	5,993	60,493	8,669	882,940	9,430

[2003 PPP: 1.0 US$, 1.25 CAN$, 0.62 Pound Sterling, 0.934€, 9.42 SEK, 1.35 AUS$, 138 Yen, 1.47 NZ$]

Table 20. OOPCATE Affordability Rankings

Rank (of 16)	Country	OOPCATE/ GDP per capita	Rank (of 16)	Country	OOPCATE/ GDP per capita
1	Sweden	1.6%	9 (tie)	United States	17.2%
2	Netherlands	7.8%	9 (tie)	Canada	17.2%
3	Finland	8.4%	11	France	18.9%
4	Belgium (Flemish)	13.6%	12	Australia	21.9%
5	Germany	14.2%	13	Italy	23.3%
6	Ireland	14.8%	14	United Kingdom	24.5%
7	Austria	15.1%	15	New Zealand	33.4%
8	Belgium (French)	15.4%	16	Japan	43.6%

Figure 5 shows out-of-pocket, after-tax expenditures across the sixteen jurisdictions in our survey, in terms of ability to pay. Clearly, Sweden is the most affordable jurisdiction on this measure while Japan is the least. What is perhaps most remarkable, however, is the similarity of costs across the majority of the counties in this survey. Out-of-pocket cost after-tax expenditures in Australia, Belgium (both communities), Canada France, Germany, Ireland and the United States are all nestled within a small band between 13.5 and 19 percent of GDP per capita. Behind them sit Austria, Italy and the UK, followed distantly by New Zealand and Japan.

Figure 5. Out-of-Pockets Costs after Tax Expenditures as a Percentage of GDP/Capita in Sixteen Jurisdictions

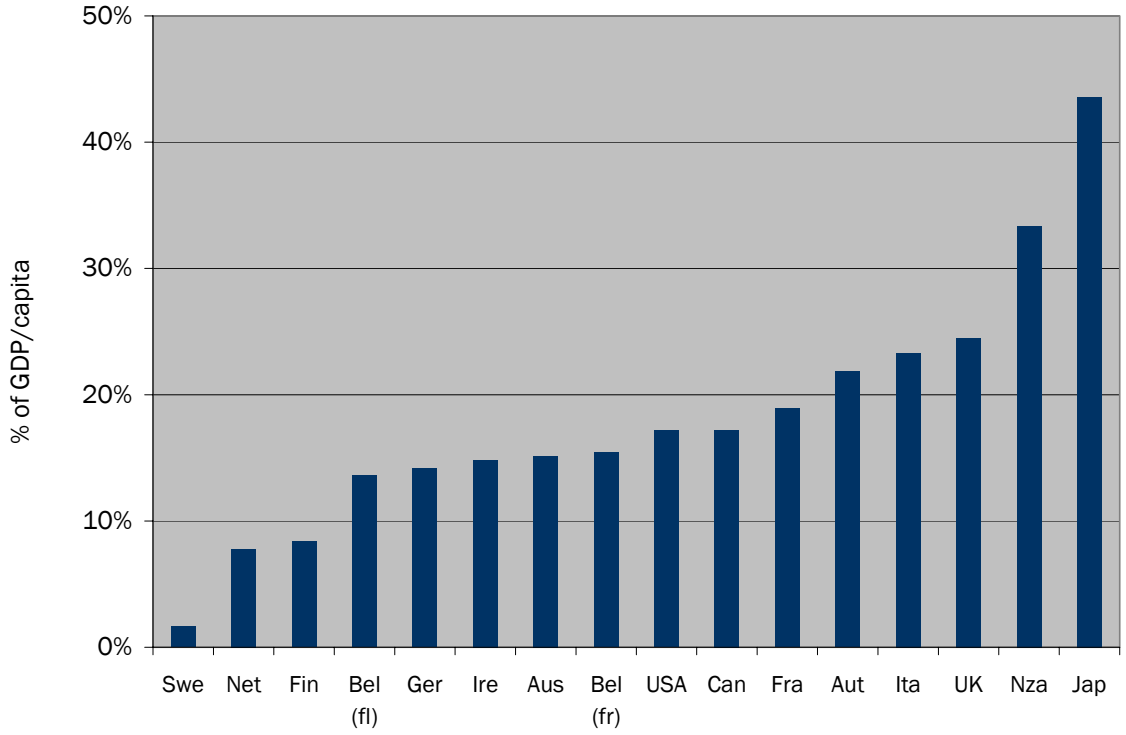
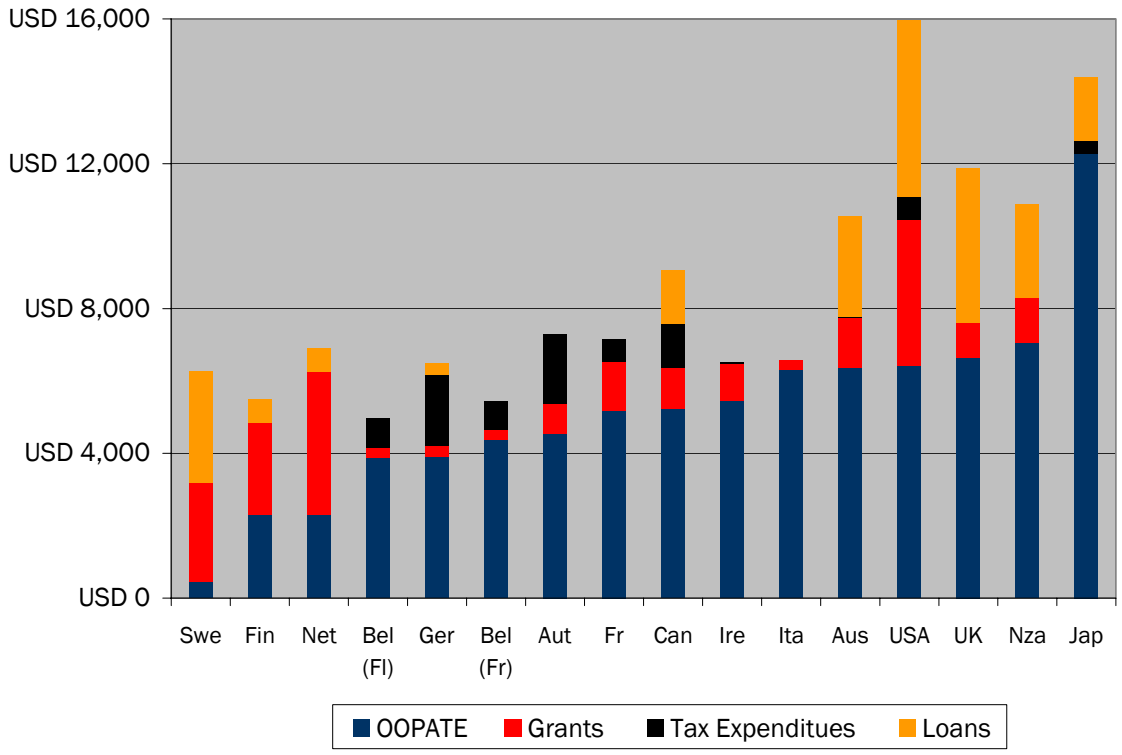


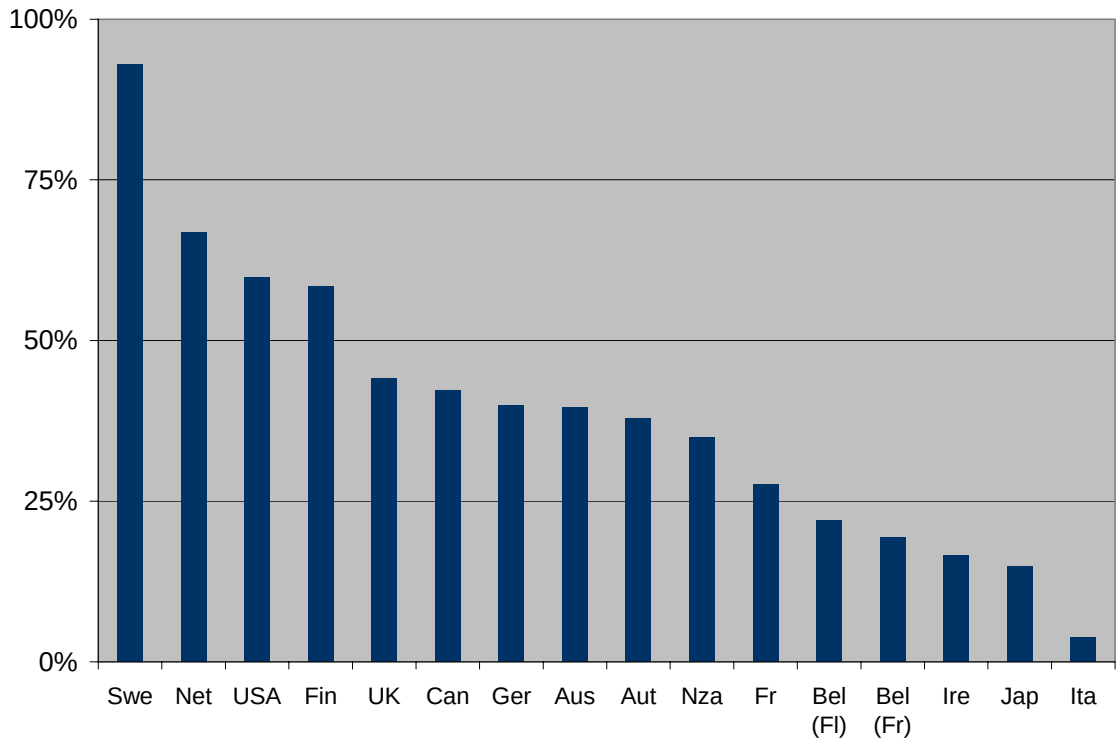
Figure 6 shows the contribution of the relevant student aid instruments to reducing the costs facing students in different countries. What becomes evident is that countries that have very high expenses tend to use loans as a major means to help students defray their costs, while countries where costs are low tend to rely on grants and tax expenditures as a means of assistance. It also shows that most countries tend to rely heavily on a single, dominant type of subsidy to help students defray the cost of their education. Only one country, Canada, actually uses a balance of all three types of expenditures, and only two others, Sweden and the United States, employ a reasonable balance of loans and grants.

Figure 6. The Role of Grants, Loans and Tax Expenditures in Reducing Total Costs



Another way to look at this data is presented in Figure 7, which shows total average aid as a percentage of total average costs. Sweden is clearly in a class of its own, providing students with, on average, enough support to cover 90 percent of their costs. The Netherlands, the US and Finland also do reasonably well on this measure, with all three providing their students with aid equal to over half of their total costs. (However, much of the American aid is made up of loans while in the other two countries the aid mostly consists of grants.) The UK, Canada, Germany, Australia and New Zealand each give out aid equal to roughly 40 percent of total costs, followed by France (28 percent), Belgium (20 percent) Ireland and Japan (15 percent). Italy, effectively, provides its students with practically no aid at all except for a very small number of subsidized dormitory places and a largely merit-based system of grants.

Figure 7. Total Average Aid as a Percentage of Total Average Costs in Sixteen Jurisdictions



Affordability: Composite Rankings and Concluding Remarks

This study has shown both that there are multiple perspectives of affordability, and also that, depending upon which definition is chosen, countries may be perceived as being more or less affordable compared to others. However, when the various elements of the comparison are scored, weighted and summed in accordance with the methodology laid out in the introduction, Sweden clearly earns the title of having the "most affordable" system of higher education. Honourable mentions go to Finland and the Netherlands, both of which, like Sweden, have modest costs combined with very extensive loans and grants programs.

Table 21. Overall Affordability Rankings (out of 16 jurisdictions)

	Education Costs	Total Costs	Net Costs	Net Costs After Tax Expenditures	Out-of-pocket Costs	Out of Pocket Costs After Tax Expenditures	Overall Ranking (out of 16)
Sweden	4	7	3	3	1	1	1
Finland	1	4	2	2	3	3	2
Netherlands	8	5	1	1	2	2	3
Belgium (fl)	2 (tie)	1	5	5	5	4	4
Ireland	5	2	4	4	4	6	5
Belgium (fr)	2 (tie)	3	6	8	6	8	6
Austria	6	9	8	6	11	7	7
Germany	9	6	9	7	9 (tie)	5	8
France	7	10	7	9	8	11	9
Italy	10	8	10	11	13	13	10
Canada	13	11	11	10	9 (tie)	10	11
Australia	12	12	12	13	12	12	12
United States	15	13	13	12	7	9	13
United Kingdom	11	14	14	14	14	14	14
New Zealand	14	16	15	15	15	15	15
Japan	16	15	16	16	16	16	16

After these countries come Belgium and Ireland, two catholic European countries with no tuition, no loans programs and small need-based grants program. Next are Austria, Germany and France, three countries whose rankings are so close together that they could be considered as effectively identical in terms of affordability.

Italy, the most expensive continental European country and Canada, the least expensive Anglophone country, are very similar in terms of their overall affordability profiles, despite one of them having theoretically "free" higher education and the other having tuition fees of over $3,000 US. Australia and the United States have similarly close affordability profiles, despite the wide gap in the "sticker" price of tuition.

Lagging behind the others are three special cases: the United Kingdom, New Zealand and Japan. In the case of the first two, the issues are the same: despite costs that are modest in international comparison, both countries have high costs of living, low GDP per capita and provide their assistance predominantly in the form of loans. As a result, in neither country can education truly be considered *affordable*, and in most respects lag behind some allegedly expensive countries such as the United States.

At the bottom of the ranking, there is Japan – a country with high costs and little public student assistance. On the face of it, Japan appears to be very expensive. This does not, however, mean that higher education is truly beyond the means of most Japanese families. As is the case in many East Asian countries, household savings rates in Japan are extremely high; hence, most students can likely draw upon parental contributions far larger than those commonly seen in Europe and North America. Thus, while the various methods of calculating cost and affordability make Japan seem extremely expensive, it is also possible that Japanese students can draw on extensive family resources to meet these costs. Whether this in fact means that Japanese higher education is actually more or less attainable than elsewhere, and whether or not Japan's system of student assistance is in fact adequate, are questions that are beyond the scope of this survey. (On a side note, it is the authors' hope to expand the Rankings to include other Asian countries in future versions of this report.)

One aspect of affordability that is not fully addressed in this survey is the differences of costs and affordability *within* countries. Generally, all countries show some variation in living costs between larger and smaller urban areas. In Europe, for instance, it is much more expensive to study in Rome, Paris or London than it is to study in Salerno, Caen or Durham. Similarly, there are differences in family incomes within countries which would affect relative affordability inside a country. Of necessity, however, this survey has taken national averages in costs and ability to pay in order to make reasonably simple international comparisons.

More specifically, however, there are some countries in this survey where educational costs vary substantially, either between sub-national jurisdictions (as is the case for public education in Canada and the US), or between public and private higher education sectors (as in the United States and Japan.) Within Canada, for instance, one has jurisdictions like Quebec, which resembles Germany in terms of costs and available assistance, and also jurisdictions like Nova Scotia, where costs and assistance levels give it an affordability profile more akin to New Zealand or Japan. Similarly, in the United States, public universities in the large industrial states of the East and Great Lakes tend to be considerably more expensive than those in the agricultural states of the South, Midwest and West.

These regional differences in educational costs can have profound effects on affordability, particularly if they are combined with regional differences in living expenses (as noted above) and with regional differences in the availability of grants and loans. Indeed, certain American states like Mississippi, Oklahoma and Louisiana have out-of-pocket costs that rival Sweden's, making them among the cheapest places in the world to attend higher education.

Consideration also needs to be given to the difference between educational costs in the public and private education sectors. Looking only at public 4-year colleges in the United States (which, after all,

hold approximately two-thirds of all American enrolments at the 4-year level) the country's affordability profile would be close to that of Ireland. In Japan, excluding the private sector (which would not make much sense considering it holds two-thirds of all students) would have the effect of giving Japan an affordability profile comparable to that of New Zealand.

Finally, what does all of this data really tell us about affordability? In some ways, it does not tell us more than what was known at the start of the survey: that there are multiple measures of affordability and that countries may appear to have different levels of affordability depending on the measure chosen. But a close reading of the data also reveals that certain countries' debates about affordability are overlooking some key points about what makes education affordable or not.

For instance, it is evident from the German debate on affordability (highlighted by the German Constitutional Court decision to lift the national ban on tuition fees) that certain parties feel that students can bear a greater share of the cost of education. This may well be true, but it is also true that even with free tuition, higher education in Germany is in some important respects less affordable than higher education in the United States. A major increase in tuition fees, without an expansion of the BAfoG system of loans and grants, may therefore render education in Germany unaffordable for many.

Another country where recent policy debates appear to have been running on at least partly faulty assumptions is the UK. Data in this publication is based on the system of tuition, loans and fee waivers in place until fall 2005. When the new system, based on the 2004 white paper, comes into effect in 2005, UK higher education will become more expensive, and its affordability ranking will fall slightly, possibly by enough to drop its score below New Zealand's. The government there may quite rightly insist that it has gone out of its way to ensure that out-of-pocket costs will not increase after the reform. But the plain fact is that, after the white paper reforms take effect, *net costs*, on an ability-to-pay basis, will be over 50 percent higher than they are in the supposedly "expensive" United States. If US private institutions are excluded, then UK net costs will be double those in America. The primary reason for this is not – as government opponents claim – high tuition fees. Rather, it is because the UK's system of grants is at best average by international standards and scrawny by American ones.

Canada and the United States, on the other hand, have the opposite problem in that many people believe these countries' systems to be less affordable, in a comparative sense, than they really are. If recent debates are anything to go by, government critics seem to assume that the absence of tuition fees and loan programs in much of Europe implies that higher education in North America is much less affordable than in these other, tuition-free countries. This is certainly true if one compares Canada and the US to the rather special cases of Sweden, Finland and the Netherlands – but as for the rest of Europe, it can only be considered true if one blinds oneself to international differences in student aid and average incomes. The fact is: compared to much of Europe, North American student assistance programs are reasonably generous and net costs are close to the same as a percentage of family income.

Part III: Accessibility Rankings

This section looks at the data on accessibility of higher education in various countries around the world. Unfortunately, data on accessibility is far less open to comparison than is data on affordability. Simply put, different countries care about different aspects of accessibility to different degrees, and hence collect very different statistics about their own systems. This renders detailed inter-jurisdictional comparisons very difficult and limits our ability to make useful comparisons. As such, the accessibility rankings have used indicators which are, albeit rough, widely available.

In this section, indicators attempt to capture the accessibility of higher education in terms of two broad concepts: first, "how many" people get to participate; and second, "who" gets to participate in higher education. (This distinction was referred to in the methodology section as Type I and Type II access respectively.) Complete, high quality data was available only for thirteen countries: Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, the Netherlands, Sweden, the United Kingdom and the United States. Data was unavailable for Japan on the participation indicator, while data was unavailable for New Zealand on the Educational Equity Index. In contrast to the affordability section of this report, where data for Belgium was presented separately for its two linguistic communities, data for Belgium is here presented for the entire country.

Best 4-Year Participation Rate - 25 % of Total Score

The most obvious definition of accessibility is how many people are given the opportunity to attend higher education, with larger systems seen as being more accessible than smaller ones. Yet although this is a simple concept, measurement of participation in a consistent, cross-national context is a remarkably tricky affair.

Participation rates are usually expressed as the number of students of a certain age group in a country enrolled in higher education as a fraction of the country's entire population of the same age. In a cross-national context, this creates problems because the typical age of the student body differs from place to place. In predominantly-Anglophone countries, for instance, the "normal" age of students is 18-21 whereas in Scandinavia it is often 20-23. Hence, cross-national comparisons done at a certain static age range are liable to under- or over-state the true participation rate depending on the age range chosen for comparison.

In order to avoid this problem, this study uses a methodology recently developed by the Association of Universities and Colleges of Canada to look at participation in a cross-national comparison. This new approach reports the participation rate of each country for the four-year age range in which that country has the highest four-year participation rate. In effect, instead of choosing one lens to look at all countries, one allows each country to "choose its own lens."

Using this method, Finland has by some considerable distance the highest participation rate among the countries in this study with nearly 40 percent of its 21-24 year-olds participating in higher education. Italy (32.4 percent), the Netherlands (29.6 percent), France (25.2 percent) and the UK (24.1 percent) are next, meaning that the top five countries in terms of participation are all European. Beyond

that, the next seven countries' participation rates are all bunched in a narrow range between Australia's 22 percent and Ireland's 19 percent. Last comes Germany, with the survey's lowest rate of higher education participation at just 17 percent.

Table 22. Participation Rankings

Rank (of 13)	Country	Highest 4-year Participation Rate	Ages for Highest 4-year period
1	Finland	39.7%	21-24
2	Italy	32.4%	20-23
3	Netherlands	29.6%	19-22
4	France	25.2%	19-22
5	United Kingdom	24.1%	18-21
6	Australia	22.0%	18-21
7 (tie)	Canada	20.3%	19-22
7 (tie)	United States	20.3%	18-21
9 (tie)	Austria	19.4%	21-24
9 (tie)	Belgium	19.4%	18-21
9 (tie)	Sweden	19.4%	20-23
12	Ireland	19.0%	18-21
13	Germany	17.5%	21-24

Attainment Rate - 25 % of Total Score

While data on participation rates provides one good snapshot of accessibility, it has a crucial limitation, in that it focuses only on a particular age group. One of the supposed strengths of the North American system of higher education is that it provides more "second chances" to older students. If this is true, then focusing simply on the participation rate of a particular group of (generally young) students could provide a misleading picture of the extent to which a particular system is accessible.

Simple participation rates also distort the access picture in another way, by measuring participation rather than completion. Though "drop-outs" are exceedingly hard to measure even in a national context, it is generally acknowledged that some countries do a better job of getting their students through post-secondary education than others. Thus, it is important to balance participation rates with attainment rates, which are the second Type I access indicator used.

Attainment rates for the population aged 25-34 are presented below in Table 23. Despite not having an extraordinarily high participation rate, the United States has the highest attainment rate of any country (31 percent of all 25-34 year-olds.) Canada is second, followed closely by Australia and the Netherlands. Austria, by some distance, is the weakest performer on this measure and Germany does not fare particularly well, either. (It is possible that this relatively poor performance may be partially explained by the typically older composition of students for those both countries, as shown in Table 22.) However, most countries attainment rates for the 25-34 age group, cluster in a fairly narrow band between 18 and 22 percent. Perhaps the most striking result is found in Italy, where despite having the second-highest participation rate in the survey, it also has the second-lowest attainment rate

which is striking evidence of the serious student retention problems facing the Italian higher education system.

Generally speaking, the predominantly-Anglophone countries do well on this measure, while continental European countries do relatively poorly. This result could mean one of four things: 1) there may be an impact on attainment that stems from successfully bringing in older "second-chance" students; 2) it may be that they are better at retaining and graduating students than other countries; 3) it may be that typical students are older (and perhaps programs longer) in non-Anglophone countries; or 4) it may be some combination of the aforementioned factors.

Table 23. Attainment Accessibility Rankings

Rank (of 13)	Country	Attainment Rate	Rank (of 13)	Country	Attainment Rate
1	United States	31%	8	Finland	21%
2	Canada	26%	9	France	19%
3 (tie)	Australia	25%	10	Belgium	18%
3 (tie)	Netherlands	25%	11	Germany	13%
5 (tie)	Ireland	23%	12	Italy	12%
5 (tie)	United Kingdom	23%	13	Austria	7%
7	Sweden	22%			

Educational Equity Index – 40 % of Total Score

Everywhere around the world, cultural capital plays a key role in access to education. Simply put, children of the elite are far more likely to enter higher education that the children of the working class, regardless of the cost of education. Yet a key aspect of most peoples' definition of accessible higher education is the idea that youth from all socio-demographic backgrounds may have access to advanced learning.

This, unfortunately, is an area of policy where there is very little data that permits useful cross-national comparison. Occasionally, an excellent researcher with access to high quality survey data may do an in-depth comparison of two countries. (Such is the case with Marc Frenette's 2005 study comparing access to education in Canada and the United States.) But the plain fact remains that far too few countries track the social origin of their students, and those that do often use different metrics to describe them. For instance, the UK uses "class" origin or postal codes as measures of social stratification, Canada tends to use family income quartile to do the same, while New Zealand and the United States tend to use race or ethnicity. All measures in all countries show significant social stratification in the student body; finding a common measure to make comparative evaluations is a more difficult task.

In order to overcome this problem in at least a limited way, the Educational Policy Institute (EPI) has constructed the Educational Equality Index (EEI), which measures accessibility as a ratio of socio-demographic characteristics (specifically, parental education) of students to socio-demographic characteristics of the entire population. The specifics of the EEI may be found in the methodology section

of this report as well as in the EPI publication *A New Measuring Stick*, which may is available at: www.educationalpolicy.org/pdf/measuringstick.pdf. In simple terms, however, a high EEI score indicates that the student body is very similar in socio-demographic characteristics to the overall population, while a low EEI score indicates that the student body is much more "elite" than the population overall.

This portrait of accessibility shown by the EEI scores in Table 24 is an interesting one. Under this measure of accessibility, the Netherlands has the most accessible system of education, followed closely by the UK, Canada and Ireland. A number of countries cluster closely behind these three: Finland, Australia, the United States, Sweden and France all have student bodies with social-background compositions which very similarly mirror their respective populations. The real outliers in terms of equitable accessibility are Belgium, Austria and Germany, all of which have relatively small student bodies and low attainment rates. It therefore seems possible that some connection exists between the size of the education system and its equality of access. EEI accessibility rankings, as well as the underlying data, are portrayed below.

Table 24. EEI Accessibility Rankings

Rank (of 13)		% of male population aged 45-64 with a university credential	% of university student population whose fathers have a university credential	EEI score
1	Netherlands	26%	39%	67
2	United Kingdom	19%	29.6%	64
3 (tie)	Canada	19%	31%	63
3 (tie)	Ireland	19%	30%	63
5	Finland	14%	23%	61
6	Australia	17%	28.5%	59
7	United States	29%	51%	57
8 (tie)	France	21%	38%	55
8 (tie)	Sweden	16%	29%	55
10	Italy	9%	19%	47
11	Germany	16%	37%	43
12	Austria	10%	26%	38
13	Belgium	18.5%	50%	37

Gender Parity – 10 % of Total Score

While the EEI indicator attempts to answer questions about the equitability of access based on students' social origins, the gender parity indicator attempts to do the same based on sex.

The UNESCO definition of Gender Parity Index (GPI) is the ratio of female-to-male value of a given indicator, with a GPI of 1 indicates parity between sexes; a GPI that varies between 0 and 1 means a disparity in favour of boys; a GPI greater than 1 indicating a disparity in favour of girls. Table 25 shows the Gender Parity Index score based on Gross Enrolment Ratio data from UNESCO.

In terms of scoring the gender parity index, one must not rank based on the highest or lowest GPI scores (which would imply a preference for one gender over another), but rather based on the distance from the parity score of one. In most cases, this does little to change the rank score; only in Germany – the single country in the survey where males continue to outnumber females in higher education – does it make a difference.

Germany and the Netherlands have student bodies where the gender balance is closest to parity, followed by Belgium and Austria. Most countries have gender balances in the range between 1.18 and 1.35, meaning that females in all these countries make up between about 55 and 60 percent of the student body. Only in Sweden does the gender balance tip any further to one side, where almost exactly two-thirds of student body being female.

Table 25. GPI Accessibility Rankings

Rank (of 13)	Country	Gender Parity Index	Distance from Parity	Rank (of 13)	Country	Gender Parity Index	Distance from Parity
1 (tie)	Germany	0.92	0.08	8	France	1.27	0.27
1 (tie)	Netherlands	1.08	0.08	9	Ireland	1.29	0.29
3	Belgium	1.18	0.18	10 (tie)	Canada	1.34	0.34
4	Austria	1.19	0.19	10 (tie)	Italy	1.34	0.34
5 (tie)	Finland	1.23	0.23	12	United States	1.35	0.35
5 (tie)	United Kingdom	1.23	0.23	13	Sweden	1.54	0.54
7	Australia	1.24	0.24				

Accessibility: Composite Rankings and Concluding Remarks

Just as the previous section showed that different perspectives may lead to different conclusions about which countries are affordable, this section has shown that multiple perspectives on accessibility may provide different insights as to which countries are accessible. Still, there are enough similarities between the results of different measures of accessibility that one can still draw some conclusions about the relative state of accessibility in different countries' higher education systems. Table 26 shows that final accessibility rankings once the different data elements have been scored and ranked according to the methodology introduced at the start of this paper.

Table 26. Accessibility Rankings (out of 13 jurisdictions)

	Participation	Attainment	EEI	GPI	Overall Rank (out of 13)
Netherlands	3	3 (tie)	1	1 (tie)	1
Finland	1	8	5	5 (tie)	2
United Kingdom	5	5 (tie)	2	5 (tie)	3
United States	7 (tie)	1	7	12	4
Canada	7 (tie)	2	3 (tie)	10 (tie)	5
Australia	6	3 (tie)	6	7	6
Ireland	12	5 (tie)	3 (tie)	9	7
France	4	9	8 (tie)	8	8
Sweden	9 (tie)	7	8 (tie)	13	9
Italy	2	12	10	10 (tie)	10
Germany	13	11	11	1 (tie)	11
Belgium	9 (tie)	10	13	3	12
Austria	9 (tie)	13	12	4	13

The final accessibility rankings put the Netherlands and Finland in first and second place, respectively. These countries both have high participation rates and good or excellent gender parity scores. Finland's high overall score is largely due to its very high participation rates; the Netherlands gets the top spot because of its excellence in educational equity and gender parity.

Below these two countries come the United Kingdom in third, followed by other predominantly-Anglophone countries (the United States, Canada, Australia, and Ireland) in fourth, fifth, sixth and seventh rank respectively. The fact that these five largely Anglophone countries end up so close together is striking evidence of policy congruence across a shared linguistic zone. Trailing these countries are France, Sweden and Italy.

At the very bottom of the rankings are Germany, Belgium and Austria. All three of these countries fare well in terms of the gender parity index, but are at or near the bottom on the other three accessibility measures. None has a particularly high participation or attainment rate and all of them have student bodies that are much more "elite" (relative to their national make-up) in their social origin than is the case in other countries.

Part IV: Conclusion

The preceding pages have examined in some detail the issues of accessibility and affordability in comparative perspective. But what, in sum, do all this data and these rankings really tell us for the 13 countries with both affordability and accessibility rankings?

First of all, they tell us that Finland and the Netherlands should be models for the international community when it comes to accessibility and affordability. Both have large student bodies, high attainment rates, extensive grant programs, and student bodies that are reasonably reflective of broader society. These countries are the undisputed success stories of this survey.

Second, the data and rankings indicate that while continental European countries are generally more affordable than their North American and Australasian counterparts, the gap is less than is sometimes imagined. Despite very high tuition fees, the US is actually on some measures more affordable than some countries with no tuition.

Third, they also teach us that certain clusters of countries have very similar profiles on both access and affordability. The United States and the Commonwealth countries have access and affordability profiles that are very similar to one another, as do the obvious pairing of Germany and Austria and the less obvious pairing of the Netherlands and Finland.

Fourth, the data and rankings suggest quite strongly that the links between accessibility and affordability are not as straightforward as some policymakers and analysts believe. Sweden, for instance, which has virtually eliminated all financial barriers to education, does not do especially well on any of the key measures of accessibility. On the other hand, Canada, the United States and the United Kingdom, which fare poorly on most affordability measures, do reasonably well in terms of accessibility. With the already-noted exceptions of Finland and the Netherlands, no country has consistently high scores across both the affordability and accessibility rankings. Similarly, no countries have consistently poor performance on both sets of rankings; the worst that can be said about any country is that they are mediocre across both rankings – a description that would apply to Italy, Germany and Austria.

These findings are not, of course, conclusive. There is much work still to be done in terms of fine-tuning the measurements and definitions of affordability and accessibility – not to mention filling the gaps in available data. In future editions of this report, the Educational Policy Institute will attempt to broaden coverage (in terms of the number of countries included) and refine it by making improvements to capture accessibility and affordability of higher education.

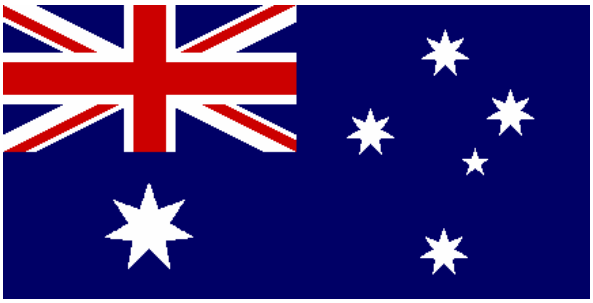
The affordability indicators included in this report could, for instance be improved if it was possible to more accurately unpack the total, net- and out-of-pocket costs facing students from different income groups. This would sidestep the “average cost” measures, which are admittedly crude, and allow for a closer focus on the situation of low-income and disadvantaged youth in each country. The accessibility indicators could be expanded and improved upon, with more detailed data on participation. For instance, if EEI data could be obtained not just for higher education as a whole, but also for specific advanced types of graduate and professional education, differences in social stratification between disciplines and education levels could also be examined. In short, as the availability and comparability of

data improves, so will these rankings. In fact, many suggestions from peer feedback on this project upon its conception provided a vision of what *should be* to accurately capture the concepts of affordability and accessibility, rather than what *could be* given the current reality of data limitations. Constructive criticism and feedback on this project is certainly welcome by the authors.

Still, even with the limited data available, these inaugural rankings serve two significant purposes. First, they bring empirical rigour to comparative discussions on the accessibility and affordability of higher education. Second, through its weighting scheme, provide clarification on the components of truly affordable and accessible higher education. The authors hope that the Global Higher Education Rankings is a welcome spur on extant discussions of the affordability and accessibility of higher education which are taking place, in many languages, in countries around the globe.

Country Reports

AUSTRALIA



NATIONAL STUDENT CONTEXT:

56 % live with parents/family

44 % live in university residences

AFFORDABILITY overall ranking: 12			
Indicator (input)	AUS $	% of GDP / capita	Rank (out of 16)
Education Costs	5,170.40	13.14%	11
(Living Costs)	9,076.52		
Total Costs	14,246.91	36.19%	12
(Grants)	1,858.10		
(Loans)	3,767.58		
(Tax Expenditures)	15.42		
Net Costs	12,388.82	31.47%	12
Net Costs, after tax expenditures	12,373.40	31.43%	13
Out-of-Pocket Costs	8,621.24	21.90%	12
Out-of-Pocket Costs, after tax expenditures	8,605.83	21.86%	12

ACCESSIBILITY overall ranking: 6		
Indicator	Value	Rank (out of 13)
Participation Rate	22%	6
Attainment Rate	25%	3 (tie)
Educational Equity Index	59	6
Gender Parity Index	1.24	7

AUSTRIA

NATIONAL STUDENT CONTEXT:

28 %	live with parents/family
11 %	live in university residences
61 %	of students live independently
74 %	work during semester (amount varies)
47.4 %	of university students are women
25.3 years	is the average student age

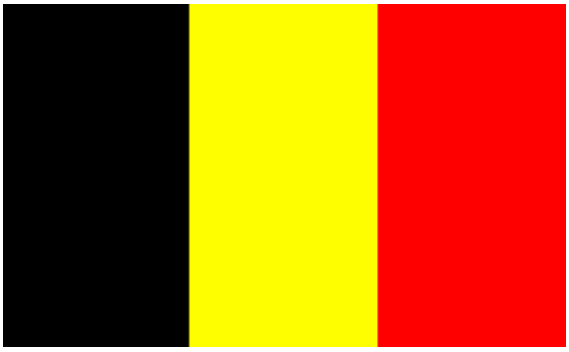
AFFORDABILITY overall ranking: 7

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	1,380.26	4.93%	5
(Living Costs)	5,435.08		
Total Costs	6,815.34	24.35%	9
(Grants)	793.11		
(Loans)	0.00		
(Tax Expenditures)	1,787.30		
Net Costs	6,022.23	21.52%	8
Net Costs, after tax expenditures	4,234.93	15.13%	6
Out-of-Pocket Costs	6,022.23	21.52%	11
Out-of-Pocket Costs, after tax expenditures	4,234.93	15.13%	7

ACCESSIBILITY overall ranking: 13

Indicator	Value	Rank (out of 13)
Participation Rate	19.40%	9 (tie)
Attainment Rate	7%	13
Educational Equity Index	38	12
Gender Parity Index	1.19	4

BELGIUM



Flemish STUDENT CONTEXT:

54 %	live with parents/family
5 %	live in university residences
41 %	of students live independently
63 %	work during semester (amount varies)
53.4 %	of university students are women
21.1 years	is the average student age

French STUDENT CONTEXT:

60 %	live with parents/family
5 %	live in university residences
35 %	of students live independently
50 %	work during semester (amount varies)
56.9 %	of university students are women
21.5 years	is the average student age

Flemish Belgium

AFFORDABILITY overall ranking: 4

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	766.81	2.89%	2
(Living Costs)	3,870.11		
Total Costs	4,636.93	17.49%	1
(Grants)	256.72		
(Loans)	0.00		
(Tax Expenditures)	765.23		
Net Costs	4,380.21	16.52%	5
Net Costs, after tax expenditures	3,614.98	13.63%	4
Out-of-Pocket Costs	4,380.21	16.52%	5
Out-of-Pocket Costs, after tax expenditures	3,614.98	13.63%	4

French Belgium

AFFORDABILITY overall ranking: 6			
Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	766.81	2.89%	2
(Living Costs)	4,309.38		
Total Costs	5,076.19	19.14%	3
(Grants)	237.10		
(Loans)	0.00		
(Tax Expenditures)	746.78		
Net Costs	4,839.09	18.25%	6
Net Costs, after tax expenditures	4,092.31	15.43%	8
Out-of-Pocket Costs	4,839.09	18.25%	6
Out-of-Pocket Costs, after tax expenditures	4,092.31	15.43%	8

Belgium (both communities together)

ACCESSIBILITY overall ranking: 12		
Indicator	Value	Rank (out of 13)
Participation Rate	19.40%	9 (tie)
Attainment Rate	18%	10
Educational Equity Index	37	13
Gender Parity Index	1.18	3

CANADA

NATIONAL STUDENT CONTEXT:

51.3 %	live with parents/family
n/a	live in university residences
48.7 %	of students live independently
45 %	work during semester (amount varies)
57 %	of university students are women
22.6 years	is the average student age

AFFORDABILITY overall ranking: 11

Indicator (input)	CAN $	% of GDP / capita	Rank (out of 16)
Education Costs	5,166.01	13.62%	12
(Living Costs)	6,112.00		
Total Costs	11,278.01	29.74%	11
(Grants)	1,387.33		
(Loans)	1,828.19		
(Tax Expenditures)	1,541.48		
Net Costs	9,890.68	26.08%	11
Net Costs, after tax expenditures	8,349.20	22.01%	10
Out-of-Pocket Costs	8,062.48	21.26%	9
Out-of-Pocket Costs, after tax expenditures	6,521.01	17.19%	10

ACCESSIBILITY overall ranking: 5

Indicator	Value	Rank (out of 13)
Participation Rate	20.30%	7 (tie)
Attainment Rate	26%	2
Educational Equity Index	63	3 (tie)
Gender Parity Index	1.34	10 (tie)

FINLAND

NATIONAL STUDENT CONTEXT:

24 %	live with parents/family
6 %	live in university residences
70 %	of students live independently
49 %	work during semester (amount varies)
60.4 %	of university students are women
25.5 years	is the average student age

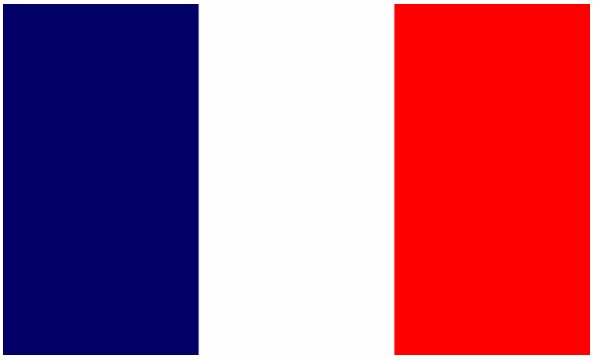
AFFORDABILITY overall ranking: 2

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	253.50	1.00%	1
(Living Costs)	4,882.41		
Total Costs	5,135.90	20.18%	4
(Grants)	2,395.28		
(Loans)	603.93		
(Tax Expenditures)	0.00		
Net Costs	2,740.62	10.77%	2
Net Costs, after tax expenditures	2,740.62	10.77%	2
Out-of-Pocket Costs	2,136.69	8.40%	3
Out-of-Pocket Costs, after tax expenditures	2,136.69	8.40%	3

ACCESSIBILITY overall ranking: 2

Indicator	Value	Rank (out of 13)
Participation Rate	39.70%	1
Attainment Rate	21%	8
Educational Equity Index	61	5
Gender Parity Index	1.23	5 (tie)

FRANCE



NATIONAL STUDENT CONTEXT:

46 %	live with parents/family
15 %	live in university residences
39 %	of students live independently
48 %	work during semester (amount varies)
54.7 %	of university students are women
22.4 years	is the average student age

AFFORDABILITY overall ranking: 9

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	1,623.12	6.36%	6
(Living Costs)	5,042.93		
Total Costs	6,666.05	26.12%	10
(Grants)	1,260.46		
(Loans)	0.00		
(Tax Expenditures)	577.40		
Net Costs	5,405.59	21.18%	7
Net Costs, after tax expenditures	4,828.19	18.92%	9
Out-of-Pocket Costs	5,405.59	21.18%	8
Out-of-Pocket Costs, after tax expenditures	4,828.19	18.92%	11

ACCESSIBILITY overall ranking: 8

Indicator	Value	Rank (out of 13)
Participation Rate	25.20%	4
Attainment Rate	19%	9
Educational Equity Index	55	8 (tie)
Gender Parity Index	1.27	8

GERMANY

NATIONAL STUDENT CONTEXT:

24 %	live with parents/family
15 %	live in university residences
61 %	of students live independently
66 %	work during semester (amount varies)
46.4 %	of university students are women
24.7 years	is the average student age

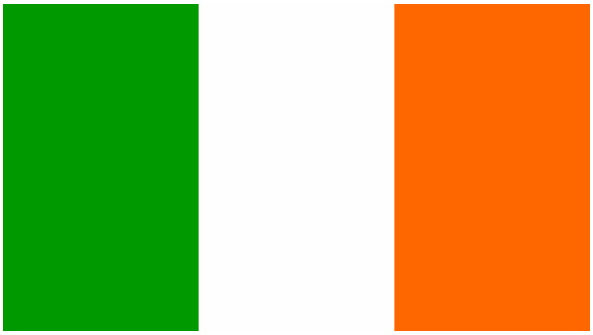
AFFORDABILITY overall ranking: 8

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	1,945.13	7.55%	8
(Living Costs)	4,124.14		
Total Costs	6,069.27	23.54%	6
(Grants)	294.45		
(Loans)	294.45		
(Tax Expenditures)	1,832.11		
Net Costs	5,774.83	22.40%	9
Net Costs, after tax expenditures	3,942.72	15.29%	7
Out-of-Pocket Costs	5,480.38	21.26%	10
Out-of-Pocket Costs, after tax expenditures	3,648.27	14.15%	5

ACCESSIBILITY overall ranking: 11

Indicator	Value	Rank (out of 13)
Participation Rate	17.50%	13
Attainment Rate	13%	11
Educational Equity Index	43	11
Gender Parity Index	0.92	1 (tie)

IRELAND



NATIONAL STUDENT CONTEXT:

34 %	live with parents/family
4 %	live in university residences
62 %	of students live independently
58 %	work during semester (amount varies)
60.7 %	of university students are women
23 years	is the average student age

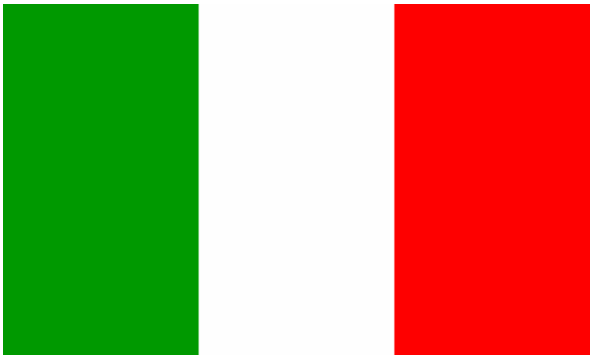
AFFORDABILITY overall ranking: 5

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	1,470.45	4.28%	4
(Living Costs)	4,628.21		
Total Costs	6,098.66	17.76%	2
(Grants)	960.35		
(Loans)	0.00		
(Tax Expenditures)	45.66		
Net Costs	5,138.31	14.96%	4
Net Costs, after tax expenditures	5,092.64	14.83%	5
Out-of-Pocket Costs	5,138.31	14.96%	4
Out-of-Pocket Costs, after tax expenditures	5,092.64	14.83%	6

ACCESSIBILITY overall ranking: 7

Indicator	Value	Rank (out of 13)
Participation Rate	19.00%	12
Attainment Rate	23%	5 (tie)
Educational Equity Index	63	3 (tie)
Gender Parity Index	1.29	9

ITALY



NATIONAL STUDENT CONTEXT:

68 %	live with parents/family
4 %	live in university residences
28 %	of students live independently
54 %	work during semester (amount varies)
55.7 %	of university students are women
23.4 years	is the average student age

AFFORDABILITY overall ranking: 10

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	1,993.95	7.89%	9
(Living Costs)	4,128.29		
Total Costs	6,122.23	24.24%	8
(Grants)	237.17		
(Loans)	0.00		
(Tax Expenditures)	0.00		
Net Costs	5,885.06	23.30%	10
Net Costs, after tax expenditures	5,885.06	23.30%	11
Out-of-Pocket Costs	5,885.06	23.30%	13
Out-of-Pocket Costs, after tax expenditures	5,885.06	23.30%	13

ACCESSIBILITY overall ranking: 10

Indicator	Value	Rank (out of 13)
Participation Rate	32.40%	2
Attainment Rate	12%	12
Educational Equity Index	47	10
Gender Parity Index	1.34	10 (tie)

JAPAN

NATIONAL STUDENT CONTEXT:

38.8 % of university students are women

AFFORDABILITY overall ranking: 16

Indicator (input)	Yen	% of GDP / capita	Rank (out of 16)
Education Costs	1,134,618.70	29.29%	15
(Living Costs)	846,818.00		
Total Costs	1,981,436.70	51.15%	15
(Grants)	0.00		
(Loans)	243,225.00		
(Tax Expenditures)	50,035.08		
Net Costs	1,981,436.70	51.15%	16
Net Costs, after tax expenditures	1,931,401.62	49.85%	16
Out-of-Pocket Costs	1,738,211.70	44.87%	16
Out-of-Pocket Costs, after tax expenditures	1,688,176.62	43.58%	16

The NETHERLANDS

NATIONAL STUDENT CONTEXT:

45 %	live with parents/family
34 %	live in university residences
21 %	of students live independently
77 %	work during semester (amount varies)
49.5 %	of university students are women
23.2 years	is the average student age

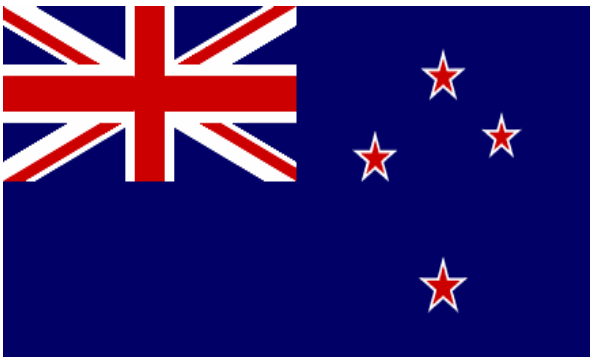
AFFORDABILITY overall ranking: 3

Indicator (input)	Euro €	% of GDP / capita	Rank (out of 16)
Education Costs	1,858.31	6.77%	7
(Living Costs)	4,597.45		
Total Costs	6,455.76	23.51%	5
(Grants)	3,706.30		
(Loans)	609.11		
(Tax Expenditures)	0.00		
Net Costs	2,749.46	10.01%	1
Net Costs, after tax expenditures	2,749.46	10.01%	1
Out-of-Pocket Costs	2,140.35	7.79%	2
Out-of-Pocket Costs, after tax expenditures	2,140.35	7.79%	2

ACCESSIBILITY overall ranking: 1

Indicator	Value	Rank (out of 13)
Participation Rate	29.60%	3
Attainment Rate	25%	3 (tie)
Educational Equity Index	67	1
Gender Parity Index	1.08	1 (tie)

NEW ZEALAND



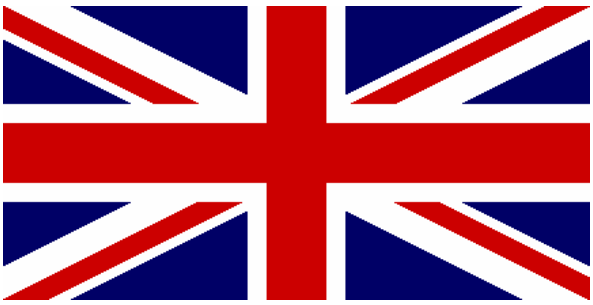
AFFORDABILITY overall ranking: 15			
Indicator (input)	NZD $	% of GDP / capita	Rank (out of 16)
Education Costs	4,887.13	15.71%	13
(Living Costs)	11,086.65		
Total Costs	15,973.78	51.34%	16
(Grants)	1,798.00		
(Loans)	3,790.00		
(Tax Expenditures)	0.00		
Net Costs	14,175.78	45.56%	15
Net Costs, after tax expenditures	14,175.78	45.56%	15
Out-of-Pocket Costs	10,385.78	33.38%	15
Out-of-Pocket Costs, after tax expenditures	10,385.78	33.38%	15

SWEDEN

AFFORDABILITY overall ranking: 1			
Indicator (input)	SEK	% of GDP / capita	Rank (out of 16)
Education Costs	8,034.16	3.20%	3
(Living Costs)	51,183.84		
Total Costs	59,218.00	23.57%	7
(Grants)	25,984.65		
(Loans)	29,095.80		
(Tax Expenditures)	0.00		
Net Costs	33,233.34	13.23%	3
Net Costs, after tax expenditures	33,233.34	13.23%	3
Out-of-Pocket Costs	4,137.54	1.65%	1
Out-of-Pocket Costs, after tax expenditures	4,137.54	1.65%	1

ACCESSIBILITY overall ranking: 9		
Indicator	Value	Rank (out of 13)
Participation Rate	19.40%	9 (tie)
Attainment Rate	22%	7
Educational Equity Index	55	8 (tie)
Gender Parity Index	1.54	13

UNITED KINGDOM



NATIONAL STUDENT CONTEXT:

22.3 %	live with parents/family
29.1 %	live in university residences
24.6 %	of students live independently
58 %	work during semester (amount varies)

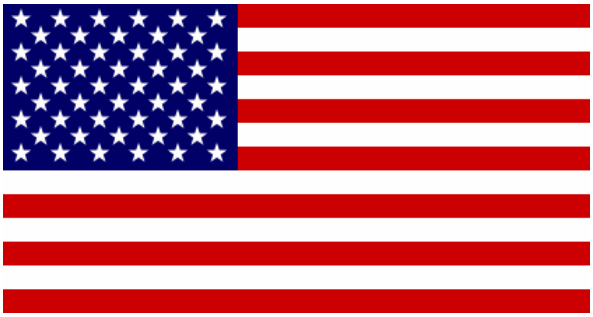
AFFORDABILITY overall ranking: 14

Indicator (input)	British Pound	% of GDP / capita	Rank (out of 16)
Education Costs	2,019.16	12.01%	10
(Living Costs)	5,333.00		
Total Costs	7,352.16	43.75%	14
(Grants)	596.90		
(Loans)	2,641.79		
(Tax Expenditures)	0.00		
Net Costs	6,755.26	40.20%	14
Net Costs, after tax expenditures	6,755.26	40.20%	14
Out-of-Pocket Costs	4,113.48	24.48%	14
Out-of-Pocket Costs, after tax expenditures	4,113.48	24.48%	14

ACCESSIBILITY overall ranking: 3

Indicator	Value	Rank (out of 13)
Participation Rate	24.10%	5
Attainment Rate	23%	5 (tie)
Educational Equity Index	64	2
Gender Parity Index	1.23	5 (tie)

UNITED STATES



AFFORDABILITY overall ranking: 13			
Indicator (input)	USA $	% of GDP / capita	Rank (out of 16)
Education Costs	9,604.16	25.71%	14
(Living Costs)	6,343.80		
Total Costs	15,947.95	42.70%	13
(Grants)	4,025.34		
(Loans)	4,864.97		
(Tax Expenditures)	639.19		
Net Costs	11,922.61	31.92%	13
Net Costs, after tax expenditures	11,283.43	30.21%	12
Out-of-Pocket Costs	7,057.64	18.89%	7
Out-of-Pocket Costs, after tax expenditures	6,418.45	17.18%	9

ACCESSIBILITY overall ranking: 4		
Indicator	Value	Rank (out of 13)
Participation Rate	20.30%	7 (tie)
Attainment Rate	31%	1
Educational Equity Index	57	7
Gender Parity Index	1.35	12

Appendix 1: Data Sources

The data in the Report are gathered from several sources, consistent in methodology as a rule, and where possible consistent by source. The selection of jurisdictions which were included in this initial *Global Higher Education Rankings*, was based primarily on the availability of data for the selected affordability and accessibility indicators. Indicator data limitations were most acute for countries which were neither participants in the Eurostudent Project 2000, nor the ICHEFAP project of State University of New York, Buffalo.

It is anticipated that through this project, and as a result of independent lines of inquiry already in motion, future versions of the EPI Global Higher Education Rankings and Report, will be more extensive and in-depth in coverage. Several countries were very close to inclusion in this publication, and many more will be examined (with full data) in future versions to provide a more international comparison of accessibility and affordability of higher education.

The current limitation of these rankings to some OECD countries is the result of imperfect access to comparable data, and is acknowledged to be an aspect of the growing pains of this project. Given the intention to expand the ranking's coverage, both in terms of countries and indicators, the authors welcome feedback on data sources.

Data Required

1) Affordability Data

- **Education Costs.** This indicator requires data on average tuition and fees (which are usually easily available for all jurisdictions), plus average cost of books (which is usually not easily available). Wherever possible, tuition data will be obtained using weighted aggregate data, and the book costs will be drawn from student expenditure surveys. Where no student survey data is available, we will use estimates of book costs drawn from the Country Reports of the International Centre for Higher Educational Finance and Accessibility Project (referred to herein as ICHEFAP.)

- **Total Costs.** This indicator requires not simply the data above but also on living expenses. Where possible, data on living expenses will be drawn from student expenditure surveys. Where no student survey data is available, estimates of accommodation costs are drawn from the *Eurostudent Project 2000* country reports, or the ICHEFAP Country Reports, while estimates for food costs are based on ICHEFAP.

- **Net Costs.** In addition to the total cost data described above, this indicator requires adequate information concerning grant expenditure per student and tax expenditure per FTE student. Both expenditure and enrolment data will be obtained from the relevant government sources in each country.

- **Out-of-pocket Costs.** In addition to the net cost data described above, this indicator requires information on approved loans per student and tax expenditure per FTE student. Data on this will be obtained from the relevant government source in each country.

On top of all this, an international standard for "Ability To Pay" (ATP) must be determined. Ideally, family or household income would be used as the measure of ATP (preferably after-tax income, if possible.) To date, the authors have not been able to identify and access an adequate source of data on

European family or household income which is comparable to reported income in North America; this is due in part to discrepancies both in the definition of "household" and in the reporting of "after tax" or "disposable" income. As such, the authors are currently using the suggested proxy of GDP per capita as the measure of ATP.

A note on making cost data comparable: Data from different countries may be drawn from different years and has certainly been expressed in different currencies. Currencies have been converted into comparable form at Purchasing Power Parity (PPP) using OECD data. Costs expressed in previous years' data will be inflated to the present using consumer price index information for each individual country.

2) Accessibility Data

- **Participation Rates.** The participation rate is calculated by the work of the Association of Universities and Colleges Canada (AUCC) which is based on OECD education data. For those countries where AUCC data were unavailable, the author's calculations based on the AUCC methodology and national statistics were used.

- **Attainment Rates.** The OECD data on attainment rates for 25-34 year olds are based on the OECD publication Education at a Glance: OECD Indicators 2004.

- **Educational Equity Index.** This requires two pieces of data: 1) the average education of older adult males (which is typically available from census data in each country); and 2) the average paternal education level of university students (which is usually available in various forms of student surveys that are conducted in each country.) The *Eurostudent Project 2000* country reports contain both halves of this data element for participating countries. For the other countries, sources are cited below.

- **Gender Parity Index.** This measure of gender parity is reported by the UNESCO Institute for Statistics and is based on the Gross Enrolment Ratio (GER) for tertiary education. (The UNESCO Education definition of the GER is: the number of pupils enrolled in a given level of education, regardless of age, expressed as a percentage of the population in the relevant official age group.)

DATA SOURCES: AFFORDABILITY

Tuition and Fees

Canada – Average tuition and ancillary fees are taken from Statistics Canada's annual tuition and fee survey for 2003-04, available at: http://www.statcan.ca/Daily/English/030812/d030812a.htm. It should be noted that while Statistics Canada presents "average" ancillary fees in each jurisdiction, this figure is not a weighted average but in fact simply a mid-way point between the highest and lowest fees in each jurisdiction. Thus, there is a certain inaccuracy built-in to Canadian fee data, but it is difficult to tell how large the inaccuracy is.

United States - Average tuition has been determined by taking average public and private tuition figures and weighting them according to student participation represented by each sector. The author's calculations are based on data for the 2002 academic year from the National Centre for Education Statistics (NCES) "Digest of Education", which is available at:
http://nces.ed.gov/programs/digest/.

The United Kingdom, Sweden, Germany, Italy, the Netherlands and Ireland – Data on tuition and fees are taken from *Student financial support: An inventory in 24 European countries* by Hans Vossensteyn (2004) of the Center for Higher Education Policy Studies (CHEPS).

Australia – Data on tuition comes from a table prepared for EPI by Ian Dobson of Monash University. Based on enrolment data which shows 39% of students in HECS band 1 ($3,680), 53% in HECS band 2 ($5,242) and 8% in HECS band 3 ($6,940). Government data shows that 22% of all students pay HECS upfront and receive a 25% discount; in the absence of any published data, figures assume that these students are spread equally across all bands.

Austria, France and New Zealand – Data on tuition comes from country reports available through the ICHEFAP project at the State University of New York, Buffalo.
http://www.gse.buffalo.edu/org/IntHigherEdFinance/

Japan – Japanese data on education costs comes from *Japan's Education at a Glance 2004*, which is available at: http://www.mext.go.jp/english/statist/04120801.htm.

Finland – Education cost data for Finland comes from a study which cites education costs (http://www.abo.fi/fa/ie/utrikes/index.php?page=budget).

Books and Other Education Costs

Canada - A flat fee of $585 per student has been added for books. This figure represents 65 percent of the average cost of two terms of required textbooks in arts and sciences according to the survey of book costs contained in *The Price of Knowledge* (Junor and Usher 2004). The reason for the 65% is that it is assumed that students do not buy all books at the listed bookstore price, relying instead to some extent on book sharing, used books, etc.

United States, The author's calculations are based on data for the 2002 academic year from the National Centre for Education Statistics (NCES) "Digest of Education", which is available at:
http://nces.ed.gov/programs/digest/.

Australia, Austria, France, the United Kingdom, Germany, the Netherlands and New Zealand – Books and materials costs are taken from country reports from ICHEFAP available at http://www.gse.buffalo.edu/org/inthigheredfinance/index.html. For Germany, and the Netherlands, data is corroborated with that in their respective Eurostudent country reports.

Sweden – Data on books and materials costs were provided by the national student assistance agency as part of a reply to an international survey in preparation for the May 1-2, 2004 OECD-CMEC-Canada Seminar on Student Financial Assistance.

Ireland – "Books" cost calculated from *Eurostudent* project country profile and from *Student financial support* by Vossensteyn (2004).

Italy – Italian data on other educational costs is taken from a specific study. (http://www.jeanmonnet-un-ina2.it/inc/common/fs/getFile.asp?nf=R3VpZGEgU3R1ZGVudGkgU3RyYW5pZXJpIDIucGRm&r=373)

Living Costs (accommodation)

In all countries, the accommodation component of living costs assumes that a student lives away from home. This was done in order to capture full cost-of-living expenses. An alternative approach would have been to determine the percentage of students living at home and away from home in each jurisdiction and multiply out the implicit cots-of-living expenses from this. While the latter approach was not pursued, the country profiles at the end of this report indicate, where available, the percentage of students who indeed live at home (i.e. with their parents) and away from home (i.e. independent).

Canada - Cost of Living has been derived from the results of the 2001-2002 Student Income-Expenditure Survey (author's calculations from the database). The Income-Expenditure Survey report, *Making Ends Meet*, is available at:
http://www.millenniumscholarships.ca/en/research/ekos.html

United States - The author's calculations are based on data for the 2002 academic year from the National Centre for Education Statistics (NCES) "Digest of Education" (Table 313), which is available at: http://nces.ed.gov/programs/digest/.

Australia, New Zealand, Sweden, and the United Kingdom – Living expenses are taken from various country reports from ICHEFAP available at:
http://www.gse.buffalo.edu/org/inthigheredfinance/index.html.

Austria, Belgium, Finland, France, Germany, Ireland, Italy, and the Netherlands – Data on living (accommodation) costs are pulled from the respective *Eurostudent 2000* country reports as a monthly figure, and then multiplied for the duration of the typical academic year.

Japan – Data for Japan is taken from *Japan's Education at a Glance 2004*, which is available at: http://www.mext.go.jp/english/statist/04120801.htm.

Living Costs (food)

In all countries, the food (or board) component of living costs assumes that a student lives away from home. This was done in order to capture full cost-of-living expenses. An alternative approach would have been to determine the percentage of students living at home and away from home in each jurisdiction and multiply out the implicit cots-of-living expenses from this, since we know that student expenditures on food are significantly lower for students living with their parents' than for students who live independently. While the latter approach was not pursued, the country profiles at the end of this report indicate, where available, the percentage of students who indeed live at home (i.e. with their parents) and away from home (i.e. independent).

Canada - Cost of Living has been derived from the results of the 2001-2002 Student Income-Expenditure Survey. Expenditures for housing, "other household expenditures" and food have been combined to form a single cost-of-living figure. Data from the Income-Expenditure Survey is accurate only at regional level. As a result, the reported Cost-of-living is the same for all provinces with the Atlantic and Prairie regions.

United States - The author's calculations are based on data for the 2002 academic year from the National Centre for Education Statistics (NCES) "Digest of Education" (Table 313), which is available at: http://nces.ed.gov/programs/digest/.

Australia, Austria, the United Kingdom, France, Germany, Sweden, New Zealand and the Netherlands – Living expenses are taken from various country reports from the ICHEFAP country report data avail-

able at http://www.gse.buffalo.edu/org/inthigheredfinance/index.html through the State University of New York, Buffalo. (Germany and the Netherlands had data on costs corroborated with their respective *Eurostudent* country reports.)

Belgium, Finland, Ireland and Italy – Data for these countries were inferred from the author's calculations based on ICHFAP data using an average between a comparable European country and the European average for food costs.

Japan – Data for Japan is taken from *Japan's Education at a Glance 2004*, which is available at: http://www.mext.go.jp/english/statist/04120801.htm.

Grants

"Grants" is the term given to all non-repayable assistance to students paid during the school year, and includes grants from national, sub-national (provinces or states) and institutional sources. "Average Grants" refers to the average grant given to each student who receives a grant. "Grants per Student" refers to the average grant given to *all* students, including those who did not necessarily receive a grant.

Canada - Canadian data on grants comes from several sources, most notably *The Price of Knowledge 2004* by S. Junor and A. Usher. All data governments provided data directly to the Canada Millennium Scholarship Foundation for this report, so this source is used to cover all assistance for all levels of government. Unfortunately, the Junor and Usher source covers grants to all students, not just university students. Grants to university students in each province were determined by multiplying the total amount of grants by the percentage of Canada Millennium Scholarship Foundation bursaries that were awarded to universities in each jurisdiction (the assumption being that the Foundation bursaries were distributed in roughly the same fashion as provincial grants). Data on institutional grants comes from Statistics Canada's *Financial Statistics of Canadian Universities*, which is prepared annually in conjunction with the Canadian Association of University Business Officers (CAUBO). All Canadian data is for the 2002-03 academic year.

United States – The US data on grants comes from several sources. Data on federal grants to students comes from two working files prepared for EPI by the Department of Education, one for Pell Grants and one for Work-study. Both are for the 2002-03 school year. State grant aid data comes from the 2004 NASSGAP survey (http://www.nassgap.org/researchsurveys/default.htm) and covers the 2002-03 academic year. Data on institutional grant aid comes from the US Department of Education's IPEDS database and covers the 2000-01 school year. Grants per student are derived by dividing total grants by the FTE number. Final figures are based on the author's calculations.

The United Kingdom – Although a maintenance grant is being re-introduced, the UK had no grants for the year in questions. However, based on information from the UK Department of Education, 42.2% of students received full "tuition waivers" and another 18.9% received partial tuition waivers which are counted as grants.

Germany and the Netherlands – Data on incidence and average amount of grants is taken from Vossensteyn (2004).

Sweden - Data on incidence and average amount of grants is from the national student assistance agency as part of a reply to an international survey in preparation for the May 1-2, 2004 OECD-CMEC-Canada Seminar on Student Financial Assistance.

Ireland – Data on incidence and average amount of grants is taken from Appendix 2 of *Supporting Equity in Higher Education: A Report to the Minister for Education and Science,* available at: http://www.education.ie/servlet/blobservlet/sehe_append_2.htm.

Australia – Data is taken from Long and Hayden (2001), which summarizes the results of a national income-expenditure survey. Unlike other countries in this study, therefore, the Australian data is based on survey research rather than administrative data.

France – Data for France is taken from a paper prepared by Jean Jaques Paul, 2002.

Finland – Data is taken from the Social Insurance Institution's *Pocket Statistics* (www.kela.fi).

Austria, Belgium and Italy – Data is taken from the respective *Eurostudent 2000* country reports.

New Zealand – Data is taken from the Ministry of Social Development through *StudyLink* (http://www.studylink.govt.nz/).

Tax Expenditures

Tax Expenditures are not, technically, expenditures at all. The term "tax expenditures" refers to tax income foregone by governments due to any element of the tax code that provides preferential treatment for certain types of income or activity. Tax credits for education typically take the form of deductions or credits for tuition fees, or exemptions of certain forms of education-related income (such as scholarships).

Canada - Tax expenditure data has been taken from a series of provincial profiles compiled by the Canada Millennium Scholarship Foundation as part of its mid-term review. (Available at: http://bm-ms.e-consultation.ca/default.aspx?DN=120,32,Documents.) Tax Expenditure per student was derived by dividing total tax expenditures by FTE students.

United States – Data on tax expenditures is taken from the College Board publication: *Trends in Student Aid 2003* (www.collegeboard.com). Tax Expenditure per student was derived by dividing total tax expenditures by FTE students.

Germany and Ireland – Data was taken from the Center for Higher Education Policy Studies publication: *Student financial support* by Hans Vossensteyn (2004).

Australia - Australian Tax Expenditures Statement 2003, available at:
http://www.treasury.gov.au/contentitem.asp?NavId=022&ContentID=788

Austria, Belgium and Italy – Data is taken from the *Eurostudent 2000* project country profiles.

France – Data for France is taken from a paper prepared by Jean Jaques Paul, 2002.

Finland – Data is taken from the Social Insurance Institution's *Pocket Statistics* (www.kela.fi).

Japan – Data is taken from the National Life Finance Corporation's (NLFC) *Profile* (2001), available at: http://www.kokukin.go.jp/m/13_english/pdf/report2001/profile_2001.pdf.

Loans and Loans per Student

"Loans" is the term given to all repayable assistance to students paid during the school year, and includes loans from national and sub-national (provinces or states) sources.

Canada – Data on loans comes from *The Price of Knowledge (2004)* by A. Usher and S. Junor and is valid for the 2002-03 academic year. All provincial governments provided data directly to the Canada Millennium Scholarship Foundation for this report. Loans per student are derived by dividing total grants by the FTE number.

United States – Data on loans in the United States come from the author's calculations based on data for the 2002 academic year from the National Centre for Education Statistics (NCES) "Digest of Education."

The Netherlands, Germany – Data on loans for these countries come from Vossensteyn (2004).

Austria, Belgium and Italy – Data is taken from the *Eurostudent 2000* project country profiles.

Finland – Data is taken from the Social Insurance Institution's *Pocket Statistics* (www.kela.fi).

United Kingdom – Data on incidence and average amount of grants is from the Department of Education as part of a reply to an international survey in preparation for the May 1-2, 2004 OECD-CMEC-Canada Seminar on Student Financial Assistance.

Sweden – Data on incidence and average amount of grants is from the national student assistance agency as part of a reply to an international survey in preparation for the May 1-2, 2004 OECD-CMEC-Canada Seminar on Student Financial Assistance.

Australia – Data on loans are derived comes from a table prepared for EPI by Ian Dobson of Monash University. Based on enrolment data which shows 39% of students in HECS band 1 ($3,680), 53% in HECS band 2 ($5,242) and 8% in HECS band 3 ($6,940). Government data shows that 78% of all students pay HECS after graduation; in the absence of any published data, figures assume that these students are spread equally across all bands.

New Zealand – Data on loans in New Zealand comes from the *Annual Report: Student Loan Scheme* (2004) which is jointly prepared by the Ministry of Education, Inland Revenue, and the Ministry of Social Development.
(http://www.ird.govt.nz/resources/file/eb43f30ca4d8bb9/slsannual2004.pdf)

Japan – Japanese loan data comes from the ministry's website (http://www.mext.go.jp/english/) and the Japan Student Services Organization (http://www.jasso.go.jp).

DATA SOURCES: ACCESSIBILTY

Participation Rate:
Data on the participation rate in "tertiary type A" (higher education) is based on a methodology developed by Herb O'Heron of the Association of Universities and Colleges Canada (AUCC) which uses the 4-year cohort in which each country's youth are most represented in higher education.

Australia, Austria, Belgium, Canada, Finland, France, Germany, the Netherlands, New Zealand, Sweden, the United Kingdom and the USA – The source is a forthcoming publication of the Association of

Universities and Colleges of Canada (AUCC) which uses OECD data (education database) to compile the highest 4-year participation rate for 2001.

Ireland – Using the AUCC methodology, student data used to derive the "highest 4-year participation rate" come from the Irish Higher Education Authority (www.hea.ie), while general population data come from the 2002 census, Central Statistics Office (www.cso.ie).

Italy – Using the AUCC methodology, student data used to derive the "highest 4-year participation rate" come from the "*Ministero dell'Istruzione, dell'Università e della Ricerca*" (http://www.miur.it/scripts/IU/vIU1.asp), while general population data come from the "*Istituto nazionale di statistica*" ISTAT (http://demo.istat.it/pop2003/index.html).

Educational Attainment:
The publication Education at a Glance: OECD Indicators 2004 includes a measure of educational attainment which indicates the percentage of the 25 – 34 year old population has attained "tertiary type A" (higher education) and advanced research programmes in 2002. (See Table A3.4c in Education at a Glance: OECD Indicators 2004). This source is used for all the countries included in the rankings.

Educational Equality Index:
The Educational Policy Institute has constructed the Educational Equality Index (EEI) as a useful lens when looking at comparative accessibility. The EEI, which measures accessibility in terms of distribution of socio-demographic characteristics of university/PSE participants with respect to the general population, is addressed in the EPI publication: *A New Measuring Stick*, available online at: http://www.educationalpolicy.org/pdf/measuringstick.pdf. Two figures are needed to derive the EEI: the percentage of men aged 45-64 who have a university degree, and the percentage of university students whose fathers' have a university degree. (The former divided by the latter, times 100, produces the EEI value.)

Austria, Belgium, Finland, France, Germany, Ireland, Italy, and the Netherlands – Data for the EEI are pulled from the respective *Eurostudent 2000* country reports. Eurostudent project information is available at: http://www.his.de/Abt2/Auslandsstudium/Eurostudent/index.htm.

Canada – As referenced in the Educational Policy Institute's report, *A New Measuring Stick*, Canadian student data is based on the Statistics Canada 2002 Youth In Transition Survey (YITS), while the general population data is based on the 2001 Census.

Sweden – Student data for the Swedish EEI is based on a statistic report entitled "Higher education. Social background among university entrants 2003/04 and first time postgraduate students 2002/03", available at: http://www.scb.se/templates/Publikation____111734.asp. Data for the general population is from Statistics Sweden (http://www.scb.se/default____2154.asp).

Australia –2001 student data for the Australian EEI figure come from a report by Roger Jones, "Identifying Higher Education Students from Low Socio-Economic Status Backgrounds and Regional and Remote Areas." General population data (which contributed to the EEI figure) was based on the Australian Bureau of Statistics (http://www.abs.gov.au/) publication "Yearbook Australia 2003" which cites data from the Survey of Education and Work 2001.

United Kingdom – Student data from the 2002/03 Student Income-Expenditure Survey, based on calculations from author. Data for the general population is based on a special cut of the Labour Force Survey, (2004) courtesy of Michael Greer.

United States – Student data is taken from the EPI publication *A New Measuring Stick*, which takes student data based on the 2000 National Postsecondary Student Aid Survey (NPSAS) and general population data for 2000 from the U.S. Census Bureau.

Gender Parity Index:
Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, the Netherlands, New Zealand, Sweden, the United Kingdom and the USA – According to the UNESCO Education definition, a Gender Parity Index (GPI) is the ratio of "female-to-male value of a given indicator. A GPI of 1 indicates parity between sexes; a GPI that varies between 0 and 1 means a disparity in favour of boys; a GPI greater than 1 indicates a disparity in favour of girls." Within the scope of accessibility of post-secondary education, the GPI is constructed based on the UNESCO Gross Enrolment Ratio indicator. National GPI data (based on the GER for 2001/02) as collected by the UNESCO Institute for Statistics is available online at:
http://www.uis.unesco.org/ev.php?URL_ID=5187&URL_DO=DO_TOPIC&URL_SECTION=201

Other Data Sources:

Gross Domestic Product (GDP) per Capita

Gross Domestic Product per capita data, for all countries included in the rankings, has been taken from the World Bank data on GDP (http://www.worldbank.org/data/databytopic/GDP.pdf) which has total 2003 GDP in US dollars, and from the World Bank's total national population data from (http://www.worldbank.org/data/databytopic/POP.pdf).

Purchasing Power Parity (PPP)

Purchasing power parity data, for all countries included in the rankings, is based on data from the OECD. (http:/www.oecd.org/std/ppp/)

Country Profiles: National Student Context Data

Austria, Belgium, Finland, France, Germany, Ireland, Italy, and the Netherlands – Data for the "national student context" as referred to in the country profiles of this report, are pulled from the respective *Eurostudent 2000* country reports.

Canada – Data for the Canadian "national student context" as referred to in the country profile of this report, are pulled from *The Price of Knowledge (2004)* by A. Usher and S. Junor.

Japan – Data for the Japanese "national student context" as referred to in the country profile of this report, are pulled from *Japan's Education at a Glance 2004*.

United Kingdom – Data for the UK "national student context" as referred to in the country profile of this report, are pulled from the 2002/03 Student Income-Expenditure Survey by C. Callendar.

Appendix 2: Indicator Scoring and Weightings Sensitivity

The purpose if this appendix is to help the reader understand more clearly how the data presented in this report was turned into rankings.

After the data for each indicator was collected and put into a standard measurement format (e.g. $US), the value for the "best" indicator result was found and given a "score" of 100. All other results were given scores in relation to the "best" score. Where a "good" result was a high value (such as those for participation and attainment rates), other values were scored as a fraction of the best result; where a "good" result was a low value (such as the many affordability indicators), other values were scored as the inverse of the fraction of the best score. This process is best described through a fictitious example, as shown in the table below:

Table 27. Example of Scoring

	Cost	Scoring	Score
Country A	$1,000	100	100
Country B	$2,000	100*($1,000/$2,000)	50
Country C	$3,000	100*($1,000/$3,000)	33

For each individual indicator, the rankings are simply a rank ordering of the scores. However, for the composite rankings of affordability and accessibility, each score needed to be weighted according to the weighting scheme shown in Part I of this report. The actual scores for the two sets of composite rankings, based on the data contained in the report, are shown below:

Table 28. Affordability Scores

RANK (of 16)		EC (10%)	TC (10%)	NC (25%)	NCATE (15%)	OOP (25%)	OOPATE (15%)	Total (100%)
1	Sweden	3.12	7.42	18.92	11.35	25.00	15.00	80.81
2	Finland	10.00	8.66	23.24	13.94	4.90	2.94	63.69
3	Netherlands	1.47	7.44	25.00	15.00	5.28	3.17	57.36
4	Belgium (Flemish)	3.44	10.00	15.15	11.01	2.49	1.81	43.91
5	Ireland	2.33	9.85	16.73	10.13	2.75	1.67	43.44
6	Belgium (French)	3.44	9.13	13.71	9.73	2.26	1.60	39.88
7	Austria	2.02	7.18	11.63	9.92	1.91	1.63	34.30
8	Germany	1.32	7.43	11.17	9.82	1.94	1.75	33.42
9	France	1.57	6.69	11.81	7.94	1.94	1.31	31.26
10	Italy	1.26	7.21	10.74	6.45	1.77	1.06	28.49
11	Canada	0.73	5.88	9.60	6.82	1.94	1.44	26.40
12	Australia	0.76	4.83	7.95	4.78	1.88	1.13	21.33
13	United States	0.39	4.10	7.84	4.97	2.18	1.44	20.91
14	United Kingdom	0.83	4.00	6.23	3.74	1.68	1.01	17.48
15	New Zealand	0.63	3.41	5.49	3.30	1.23	0.74	14.80
16	Japan	0.34	3.42	4.89	3.01	0.92	0.57	13.15

Readers will note the size of the gap between Sweden and the other countries in terms of the total affordability "score". This is due to the Sweden's exceptionally low out-of-pocket costs. Because points are given to each country in proportion to the "value" of their indicator to that of the "best" country, extremely low values tend to give distortedly low points values to most countries. Hence, in terms of out-of-pocket costs, even the second-place country (the still very-affordable Netherlands) only got a measly 5.28 points compared to Sweden's 25.

This brings up the question of how sensitive the overall affordability rankings are to the indicator weightings. The answer is that while the point totals of each country can be by moderate changes to the weightings, the ordinal ranking of countries can only be changed by altering the weightings in very drastic ways. Sweden, for instance, can only be knocked out of first place if one increases the importance of the education cost indicator to 50% of the total rankings. Similarly, there does not appear to be a combination of weightings that would take New Zealand and Japan out of the first two positions, or Italy and Canada out of tenth and eleventh spots, respectively. As a result, we feel that the rankings are very robust and give a very good indication of relative affordability among nations. Table 29 shows the raw scores behind the accessibility rankings.

Table 29. Accessibility Scores

RANK (of 13)		Participation (25%)	Attainment (25%)	EEI (40%)	GPI (10%)	Total (100%)
1	Netherlands	18.64	20.16	40.00	10.00	88.80
2	Finland	25.00	16.94	36.42	3.48	81.83
3	UK	15.18	18.55	38.21	3.48	75.41
4	US	12.78	25.00	34.03	2.29	74.10
5	Canada	12.78	20.97	37.61	2.35	73.72
6	Australia	13.85	20.16	35.22	3.33	72.57
7	Ireland	11.96	18.55	37.61	2.76	70.88
8	France	15.87	15.32	32.84	2.96	66.99
9	Sweden	12.22	17.74	32.84	1.48	64.28
10	Italy	20.40	9.68	28.06	2.35	60.49
11	Germany	11.02	10.48	25.67	10.00	57.18
12	Belgium	12.22	14.52	22.09	4.44	53.27
13	Austria	12.22	5.65	22.69	4.21	44.76

Readers will note that the final points gap between the "best" and "worst" countries on the accessibility rankings is considerably smaller than it is for the affordability rankings. This reflects the underlying reality that there is genuinely less difference between countries in terms of accessibility than there is in terms of affordability. However, it also means that there is greater possibility for movement in the rankings based on different weighting schemes.

Having performed sensitivity testing on the accessibility scores, we can confirm that the rankings are relatively insensitive to changes in weightings *provided* that one divides the weightings 50-50 between the two indicators that look at quantity of access (the "how many" indicators) and those that look at the quality of access (the "who" indicators). If one weights the indicators more heavily towards the quantity indicators, then Finland would gain the number one ranking, and Italy and the UK would move up the rankings at the expense of Canada and Italy. Conversely, if the weightings were to become more tilted towards the quality indicators, the Netherlands would extend its lead at the top and Canada, Australia, Ireland and Germany would move forward at the expense of the US, Sweden and Italy. No obviously sensible combination of rankings could move Austria out of last place, so poor are its overall scores.

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