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Higher Education Funding across the Globe

An Overview on Funding of Higher and Further Education and Research, its Political and Socio-Economic Causes, and some Consequences, across the Globe

Julian Garritzmann
on behalf of Education International
May 2024

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About the author:

Julian Garritzmann

is Professor of Political Science at Goethe University Frankfurt, Germany. He specializes on the politics of higher education and other social investment policies. The over-arching topic of his research is how countries reform their education and welfare systems in response to the transition from industrial to post-industrial knowledge economies.

Julian holds a PhD in political science from the University of Konstanz, Germany. Before joining Frankfurt, he was Senior Researcher at the University of Zurich, Visiting Scholar at Harvard University, Duke University, and at Rutgers, as well as a max Weber Fellow at the European University Institute in Firenze, Italy.

Julian's publications include 5 books with leading university presses and 20 papers in internationally renowned political science and sociology journals. Most important in the present context is his book on the Political Economy of Higher Education Finance. His work has been awarded with awards by the American, the German, and the Swiss Political Science Associations. While his training has mostly focused on the wealthy OECD democracies, his most recent work has increasingly taken a global perspective, comparing countries around the globe.

garritzmann@soz.uni-frankfurt.de

About Education International:

Education International represents organisations of teachers and other education employees across the globe. It is the world's largest federation of unions and associations, representing thirty million education employees in about four hundred organisations in one hundred and seventy countries and territories, across the globe. Education International unites teachers and education employees.

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Executive Summary

This paper offers an overview on funding of higher and further education across the globe. Drawing on the best available comparative data, it shows how education is funded in different ways. It discusses, for example, how much different countries spend on higher education, how spending has changed over time, how high tuition fees and financial student aid are, and to what extent performance-criteria are applied to allocate funding. Moreover, the paper summarises state-of-the-art knowledge on the causes and consequences of these differences, pointing at the political dynamics behind education funding and the far-reaching consequences. The paper offers the following main take-aways:

- A lot of data exists on education funding. Yet, the data quality is higher (and there is more information available) for the wealthy OECD democracies than for the rest of the world.
- Education spending is at the same time a very simple and a very complex phenomenon. On the one hand, numbers are very easy to compare, much easier than other dimensions of education such as didactical styles, teaching contents, or the like. On the other hand, the devil is in the details, as funding is a highly complex and technical field. Understanding some of these details is crucial, though, in order to understand the consequences (e.g. on inequalities) as well as the political dynamics around higher education funding.
- On average, governments around the globe spend 0.83 per cent of their GDP on higher education. Average public spending on higher education has increased in countries around the globe. Globally, the amounts spent on higher education have almost doubled between 2006 and 2018.
- At the same time, there are massive differences across countries. Generally speaking, countries in Nordic Europe and North America spend the highest amounts on higher education, while the lowest amounts are found in (Sub-Saharan) Africa and South East Asia.
- Historically, Europe and North America have spent the most on higher education; more recently, (South) East Asia is "catching up", but most of these spending increases are driven by increases in student numbers. When we look at the amounts spent per higher education student, Europe and North America, as well as Oceania, clearly outspend every other region. Moreover, we find the largest increases in these "high-spending" countries.

- There is change over time, but most changes are incremental rather than radical, and spending is path dependent.
- Most of the money is spent on staff, but there are large country differences. There appears to be a relationship between funding and staff numbers, but we lack strong research to answer to what extent these relationships are causal.
- Private higher education funding plays a major role in some countries but none in others. Private spending is particularly high in North America and parts of Latin America and North East Asia; in most of Europe, especially Nordic Europe, private spending is negligible.
- There are large differences in how much countries spend on research and development (R&D). Generally speaking, those countries that spend much on higher education also spend high amounts on R&D.
- Private R&D spending is (much) higher than public R&D spending in most countries.
- Public R&D spending (relative to GDP) has been constant over the last 40 years in most countries – it has neither decreased nor increased. Private R&D spending (relative to GDP) has increased a lot in several countries.
- Three groups of factors explain the variation in higher education funding: political actors (especially governing parties, unions, and employers); socio-economic factors (such as economic growth, technological change, or labour market change); and institutional factors (such as the political system).
- How exactly higher education is funded has large consequences on many important social, economic, and political phenomena, for example on wage inequality, gender inequality, educational inequality, economic growth, youth unemployment, and patterns of innovation.

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Outline and coverage of this report

Education and skills are the crucial backbone of today's post-industrial knowledge economies. Education and knowledge have several positive consequences for individuals as well as for societies and economies. On the individual level, we know that more educated people tend to earn higher wages (Mincer 1958), are less likely to be unemployed and more likely to be employed in good working conditions (Breen & Jonsson 2005), are politically and socially more engaged (Mettler 2002), live healthier lives – and accordingly also live longer (DeWalt et al. 2004). On the country level, we know that more educated societies tend to have stronger economic growth (Barro 2001), more innovative economies, and more coherent, less polarised societies (Green et al. 2006) – to name but some of the "merits" of education.

Accordingly, *funding* of education and research is a key element of countries' economic and social well-being and a key objective of countries' governments. Yet, there are enormous differences in how countries around the globe fund education and research. This report offers a systematic overview of education and research funding, focusing on the level of higher education and further education as well as on research funding. Given data availability, most of this report focuses on higher education and research funding – much less data is available for further education, arguably not least because further education has quite different meanings in different country contexts, making it much harder to compare.

The report is structured as follows. Using the best available indicators and most recent data, the next section provides a descriptive overview on the different ways countries fund higher and further education, focusing also on changes over time. Particular emphasis is placed on some of the most recent changes during the so-called "poly-crisis", i.e. a time when several crises happen simultaneously or shortly after each other, such as in Europe the 2007 Financial Crises followed by the Great Recession of the late 2000s, the so-called "Refugee crisis" in the mid-2010s triggered by rising refugee numbers and a radicalized political discourse, the Covid-19 pandemic, and the "Russia Crisis" with its war in Ukraine.

A plethora of data on education funding exists thanks to efforts by several international organisations like the OECD, the World Bank, the EU/Eurydice, and UNESCO. High-quality, fine-grained data is especially available for the OECD democracies. While by now data is also available for a wide range of other countries, the data is much less fine-grained and the data quality more questionable. Accordingly, there is a certain trade-off between wide geographical coverage and detail. This report tries to make the best of this data situation by using all these different data sources, offering a worldwide

comparison on more general indicators as well as a more fine-grained analysis of the high-income OECD countries.

After having laid out the main patterns in funding of higher and further education, Section 3 of this report asks how these differences can be explained. What causes variation in education funding? Drawing on a large body of political and social science research, three main groups of explanations are presented, focusing on:

1. socio-economic factors (e.g., demographic ageing or globalisation);
2. political and economic actors (e.g., political parties, trade unions, or employer associations); and
3. institutional settings (e.g., the type of political and economic system).

The way education and research are funded has large-scale consequences. Section 4 of this report sketches some of these consequences, summarising some of the key insights that economists, sociologists, political scientists, and education scholars have produced on this topic. We will see, for example, how the type of education funding is related to patterns of educational and socio-economic inequalities, chances of upward mobility, and academic research output. The report's final section concludes by pointing at a number of blind spots and "black boxes" that future work needs to address.

A comparative analysis of education and research funding across countries and trends over time

A trade-off between generalisation and detail

This section offers an overview of funding of higher and further education and research across countries, focusing also on trends over time. Before delving into the empirics, a note of caution is necessary. At first sight, education funding appears to be a simple phenomenon: it's the money that is spent on education. A closer look reveals, though, a high degree of complexity. Even if we focus "only" on funding of *higher* and *further* education, there is a complex pattern of money flows. Figure 1 illustrates this – but even this typology is far from painting a complete picture of the complexity of education funding.

To start with, education funding comes from different sources, including public and private spenders. Delving deeper, there are several kinds of public sources, including the nation state's central governments, as well as – often several layers of – subnational governments, sometimes also supranational actors. In Germany, for example, besides the German national government there is the regional level (*Länder*), the local level (*Kommunen* and *Gemeinden*), as well as the supranational EU-level. National, subnational, and supranational levels can be simultaneously engaged in education funding, creating a complex web that sometimes even experts find hard to disentangle. This report will mostly focus on the national level of countries, but also shed some light on subnational variation. Regarding private education funding, we need to distinguish money spent by individual persons or households from money spent by companies; the former mainly includes tuition fees, but also donations (e.g. "philanthropy"), the latter includes companies' investment in their workers' skills as well as in research and development.

Going further, money can be spent in many different ways. Public higher education funding, for example, can be spent directly on higher education institutions or it can be spent on students and their households as financial student aid. Each of these types of spending again can come in many forms, for example financial student aid can come as unconditional grants, as subsidised and guaranteed loans, or as tax deductions – to mention

just some examples. Money can also be allocated in different ways and following different criteria; for example, funding can be performance-based (depending on certain input or output criteria), be offered as project-funding, as lump sums, and be distributed according to other formulas. What might sound like technical details in fact has important consequences. Whether funding is offered as grants or loans, for example, has crucial implications for equality of opportunity and upward mobility, as children from lower socio-economic families are much more likely to be incentivised to study by grants rather than loans (cf. Garritzmann 2016).

The following overview and graphs are thus necessarily simplified and can only highlight some of the main patterns. They should be read like a "map" that offers guidance by simplifying reality. Accordingly, I will also focus on the main patterns in the data and not try to describe each and every country's situation in detail.

Public higher education spending in countries across the globe

Let us start by looking at the most general and fundamental indicator: the amounts spent by governments on tertiary education. Given that countries vary a lot in their economic power and number of students, the total amounts are not very informative. The following analysis thus sets the numbers in relation to countries' gross domestic product (GDP) to account for economic power, in relation to purchasing power parity to make them comparable across contexts and over time, and/or in relation to the number of students to account for differences in the size of the student population.

Figure 3 shows public expenditure on tertiary education as a share of GDP for 123 countries, i.e. for all countries where data is available in the UNESCO dataset[1] (readers interested in single countries find the same data in Table A1 in the Appendix). For most countries the data describes the year 2020, for some it is even more recent, or slightly before when the data for 2020 was unavailable. There are three main takeaways from Figures 2 and 3. First, the mean value is 0.83, meaning that on average countries around the globe spend less than one percent of their GDP on tertiary education. While there is no absolute and objective criterion to say whether this is "a lot" or "little", this is clearly below the targets stated by some stakeholders like student unions, teacher unions, or international organisations, to spend at least 1 (or 2) percent of GDP on higher education. Second, as the Figure illustrates, there is huge variation across countries, ranging from 0.02% (in Fiji) to well above 2 percent (in Norway and Denmark) and even an outlier of 3.35% in Sierra Leone. Third, a closer look reveals clear patterns in the data: Most of the "high-spending" countries (values above 1%) are European and North American countries, especially countries in Northern Europe; some Latin

1 http://data.uis.unesco.org/

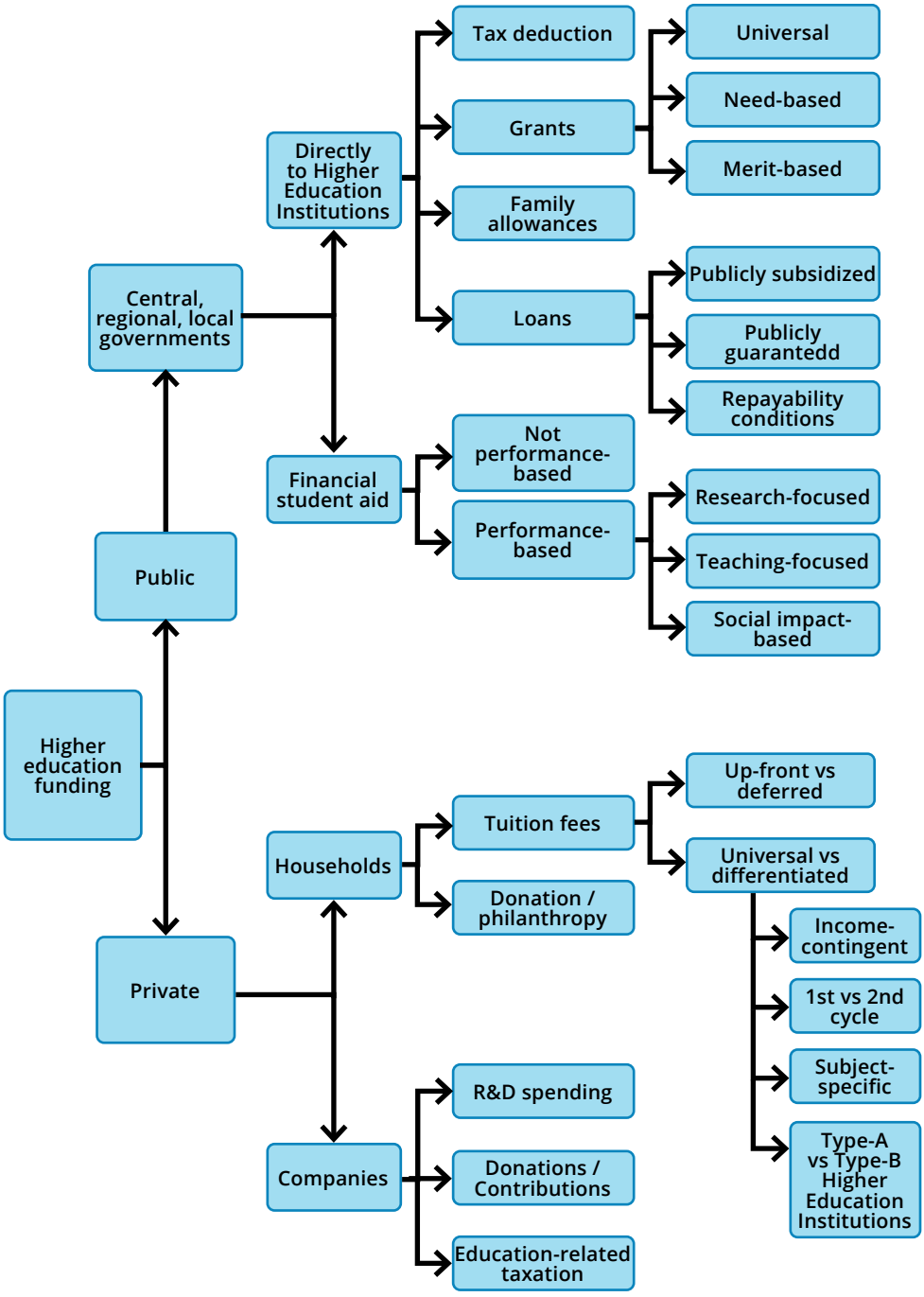

Figure 1. A typology of different types of higher education funding

Source: Garritzmann 2023: 123

American countries (e.g., Chile, Costa Rica, Bolivia) and some Asian countries and territories also stand out (e.g., India, Macao). We hardly find African and South East Asian countries among the top-spenders. Most of these countries appear at the bottom of the distribution, spending very minor amounts on tertiary education. While there are some noteworthy exceptions, we generally see a clear pattern where the rich "Western" countries spend higher proportions on tertiary education than countries in other world regions. Zooming in on the rich "Western" economies, we see that spending is particularly high in Nordic Europe and the Anglo-Saxon countries (US, Canada, UK); the amounts spent are lower in Continental Europe and even lower still in Southern Europe and several of the richer Latin American countries.

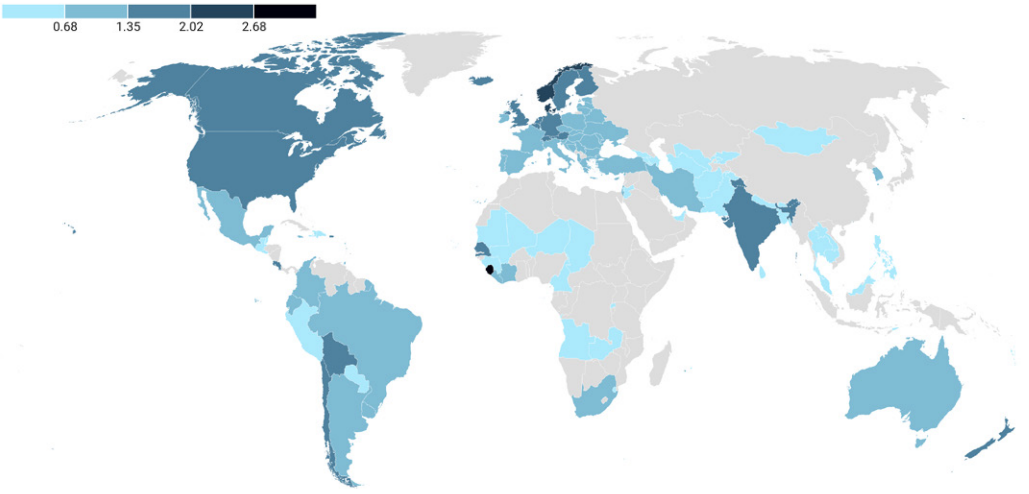

Figure 2. Map of government expenditure on tertiary education as a share of GDP

Source: Own depiction based on UNESCO data, the data describes the year 2020 (+/- 2 years depending on data availability, accessed 27. September 2023

Which governmental level is responsible for higher education funding?

In many countries political authority does not lie only at the national/central level; rather, sub-national political layers can also exist. In these so-called "multilevel governance systems" authority over (higher) education can be decentralised to lower levels, e.g. the regional or local level, or even to the level of individual higher education institutions. This is the case in several federal countries (e.g. Germany, the USA, Switzerland), but also in several non-federal but decentralised states (cf. Garritzmann et al. 2021 for an overview). In order to understand the funding dynamics well, we just need to know which governmental level is the main spender.

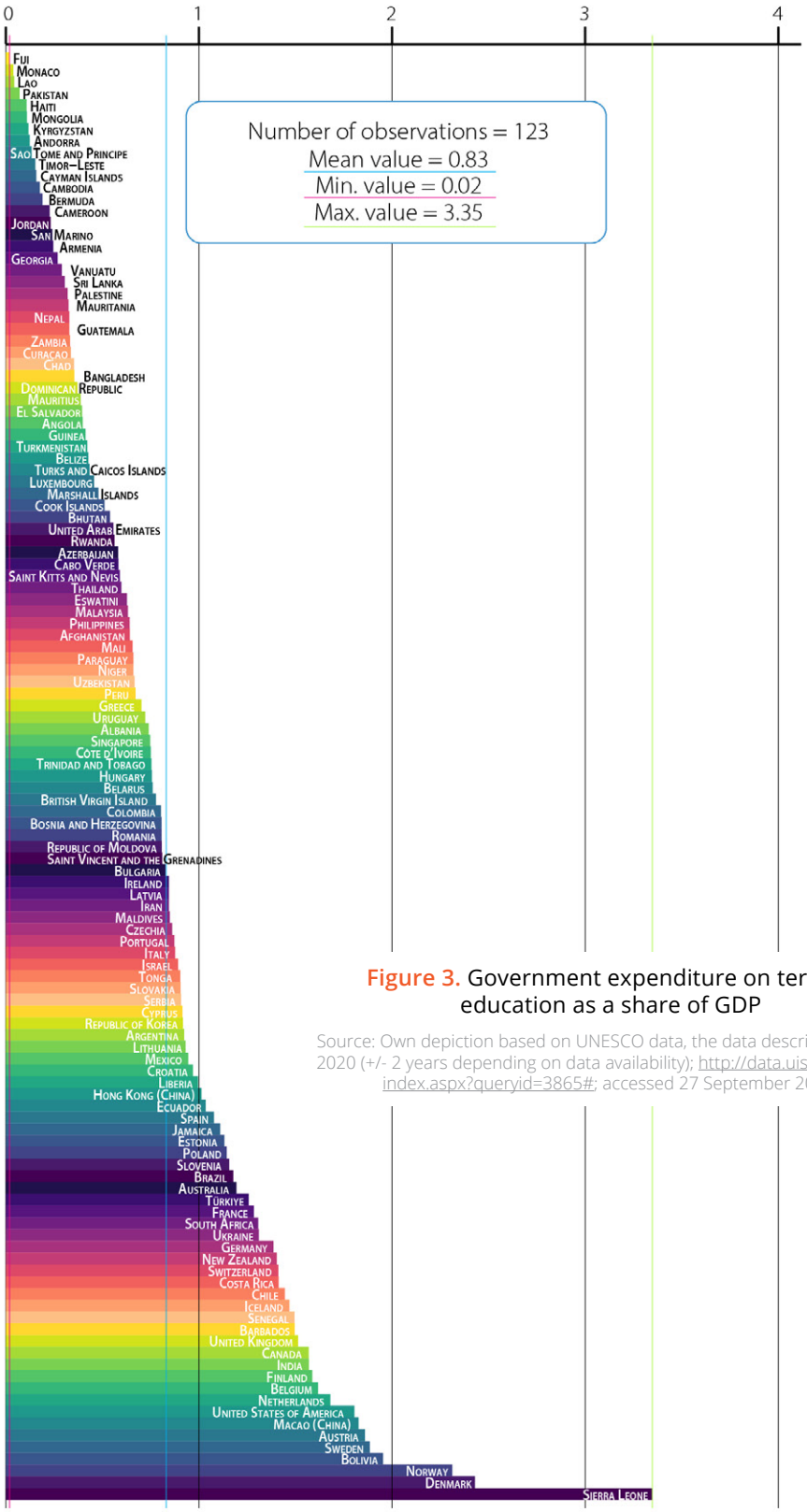

Figure 3. Government expenditure on tertiary education as a share of GDP

Source: Own depiction based on UNESCO data, the data describes the year 2020 (+/- 2 years depending on data availability); http://data.uis.unesco.org/index.aspx?queryid=3865#; accessed 27 September 2023.

Figure 4 shows data on this for the OECD countries, where disaggregation into the central/national, regional, and local level is possible. Figure 4 shows that for most of the countries the central level is not only the most important, but also the only public funder of higher education. There are some countries, though, where the main spending level is the regional level. This is especially the case in some – but not all – of the federal states (Belgium, Germany, Switzerland, and partly in the USA and Brazil), but also in some unitary states (Italy, France) and in semi-federal Spain. In most countries, however, the national level clearly is most important, thereby also justifying a focus on this level in this report. The local level is negligible in all countries where we have data.

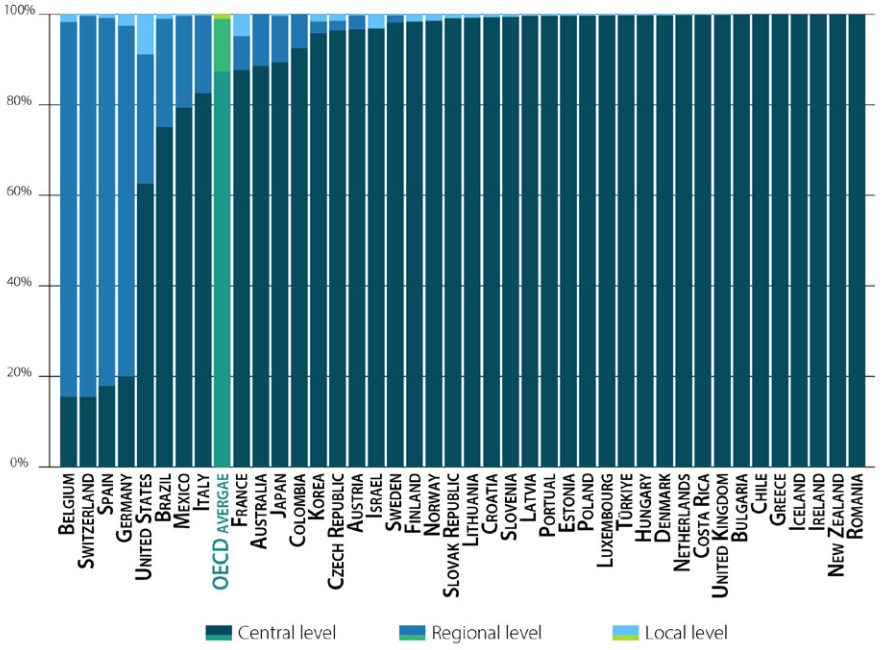

Figure 4. Public tertiary education expenditure (including R&D) by level of government (after fiscal transfers between levels), in 2020.

Source: Own depiction, based on OECD (2023) Education at a Glance data, Table C4.2.

Changes in public higher education funding?

How has public spending on tertiary education changed over time? Has it increased, decreased, or stagnated? Globally, there is a clear trend towards more spending on higher education, in line with the notion that we develop towards a global "knowledge economy". Figure 5 shows the changes in total public spending amounts on higher education between 2006 and 2018, adjusted in purchasing power parity (PPP) so that they can be compared

across countries and time. Globally, the amounts spent on higher education have almost doubled between 2006 and 2018. Thus, governments spend more and more public money on higher education. Below the surface of this general trend towards higher spending, there are large differences between world regions: from a global perspective, Europe and North America are still the group spending the largest share, but their relative global share has decreased from 60% in 2006 to 49% in 2018 (UNESCO 2022: 31). The largest increases appear in (South) East Asia. This region's share of the total global spending has increased from 17% in 2006 to 25% in 2018 (ibid.). In terms of public higher education funding, (South) East Asia is catching up with the "West".

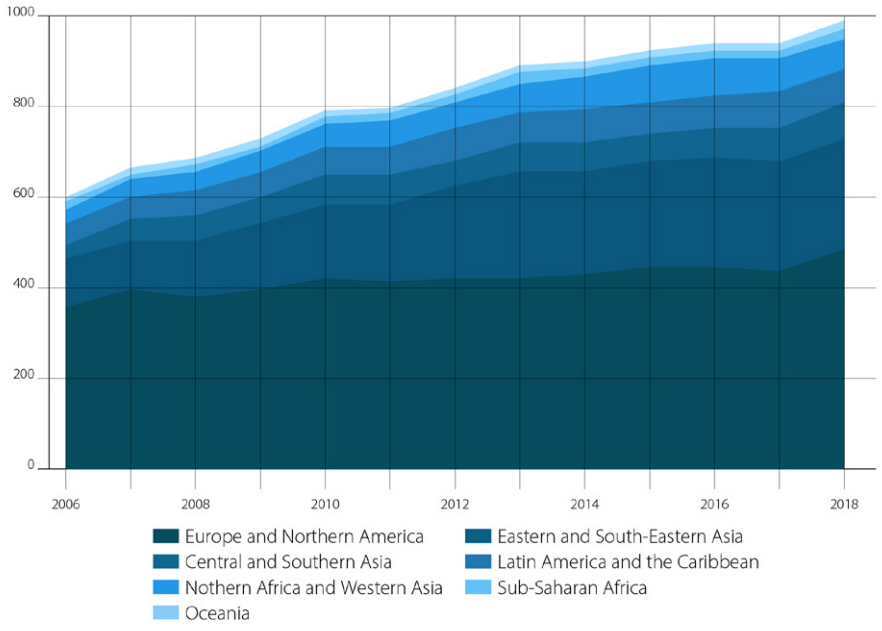

Figure 5. Total public spending on higher education by world region, 2006-2018 (in billions of 2018 US-$, power purchasing parity)

Source: Figure reproduced from UNESCO (2022: 31) Higher Education Global Data Report

These numbers look somewhat differently, though, as soon as we set them in relation to the number of students in these regions (Figure 6). When we look at the amounts spent per higher education student, Europe and North America, as well as Oceania, clearly outspend every other region. Moreover, we find the largest increases in these "high-spending" countries in Europe and North America. But (South) Eastern Asia is also increasing its position in this respect. In other world regions, we see stagnation or even decreases (in Oceania and Latin America and the Caribbean). Thus, it is especially the countries that already spend high per-capita amounts on higher education

that have increased their spending further, while countries in regions with lower spending have not increased or even decreased their amounts. Taken together, Figures 5 and 6 thus show that most of the spending increases in the non-"Western" countries can be attributed to them widening their higher education participation, not (mainly) by spending higher amounts per students. Put differently, while the non-"Western" countries are currently undergoing a large-scale expansion of higher education (towards "mass-education" systems), the "Western" countries underwent this massification earlier and – while enrollment levels are still growing – focus on increasing the quality of higher education by spending larger amounts per student. Again, there is a lot of variation also within these broader country groups (cf. e.g. OECD (2022) Education at a Glance 2022, Figure C1.3).

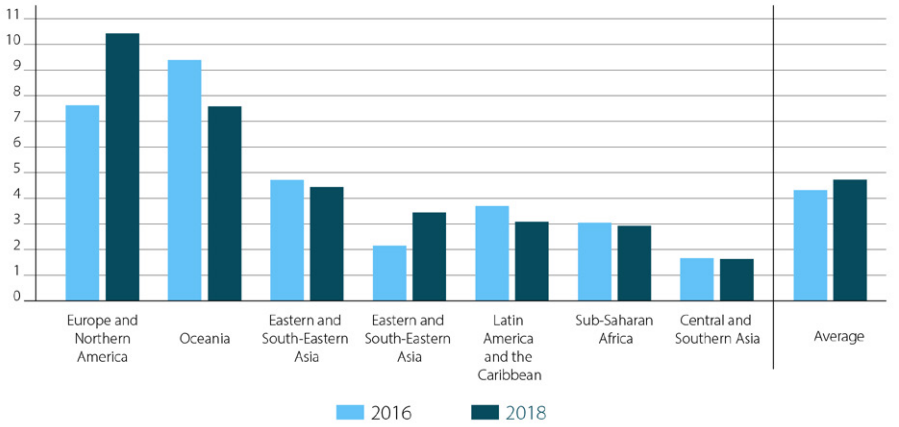

Figure 6. Total public spending on higher education per higher education student by world region, 2006 and 2019 (in thousands of 2018 US-$, power purchasing parity)

Source: UNESCO (2022) Higher Education Global Data Report

Broad global comparisons like these are interesting and reveal important global shifts, but they brush over a lot of intra-regional variation. To get a closer look at this, Figure 7 zooms in on 16 countries that arguably can be regarded as representatives of the different world regions, which are also characterised by different kinds of education and welfare systems (Garritzmann et al. 2022a, 2022b). In America, *Canada* represents the liberal welfare states of North America, *Argentina* and *Brazil* the large and rather wealthy Latin American countries, *Peru* the less advantaged Latin American countries. In Europe, *Sweden* represents the social democratic Nordic European welfare states, *Germany* the conservative continental Europe welfare tradition, Italy the particularistic Southern European welfare system, *Estonia* is chosen for the Baltics' liberal welfare states, and *Poland* for the Visegrád group with their so-called dependent market economies and layered welfare system. *China* and *India* are chosen as the two Asian "mega-states", *Japan* represents the comparatively wealthy North East Asian

countries with their productivist welfare tradition and Indonesia exemplifies South East Asia. For Africa, I selected *Egypt* for the North and *Ghana* and *Kenya* as two large states in the middle of the geographical, but also income distribution in Africa.

For some countries, data on spending as a share of GDP is available already since the 1970s so that we can also investigate changes over the longer term. Doing so is important, because spending might be volatile during certain years (e.g. during crises) so looking at single years or short periods of time might distort our view (see the discussion on Figure 8 below)[2]. Figure 7 shows a number of interesting facts. Let me highlight three. First of all, in many countries there is rather little change even over this long period of 50 years. While the lines are not flat, they are very slowly moving, indicating a lot of stability. It is *not* the case that we see large expansions or decreases in spending here. This phenomenon is well known among scholars of budgetary processes where the best predictor of next year's budget usually is last year's budget. Political scientists have offered a number of explanations for this continuity, the most important one referring to so-called "path dependencies" (Pierson 2000), as explained below in the section on explanations for the spending patterns.

A second noteworthy fact is that while change is happening very slowly, there are systematic observable changes in the data. Most importantly, we see – as already highlighted in the figures above – an increase in public spending in most countries in most years. While the spending amounts are usually not radically increased, the trends point upwards, indicating that countries spend an increasing share of their wealth on higher education. There are also some noteworthy exceptions to this pattern, though, especially Canada (where we witness a gradual decline in spending), but also some retrenchment periods particularly in the three African states. More generally, the trends are less volatile in the richer countries and fluctuate more in less wealthy economies.

Third, changes apart, we once again see rather large differences across countries, as discussed above. The Western and Northern European countries (particularly Sweden) and Canada (despite the declining trend) stand out with comparatively high spending levels; spending levels are much lower in Southern and Eastern Europe, in most of Asia (beside the recent rise in India), Africa, and Latin America (despite some catching-up tendencies).

2 For example, when we analyse the data in relation to countries' GDP (to account for differently strong economies), these shares might change not because of changes in education spending but because of changes in the GDP. If, for example, there was a sudden decline in GDP but education spending remained constant, this would appear as an "increase", although in reality no change might be noticeable for students, educators, and other stakeholders in the education systems.

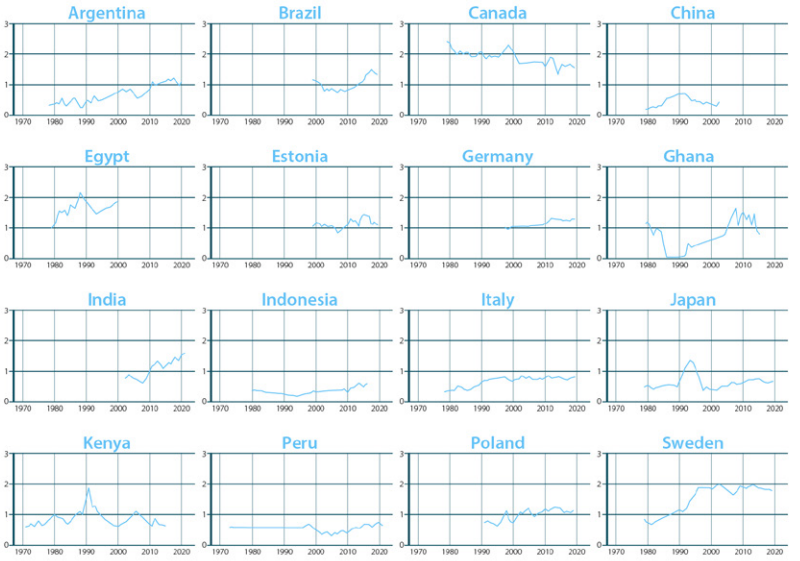

Figure 7. Public tertiary education expenditure as a share of GDP, 1970-2022, in a selection of 16 representative countries.

Source: Own compilation based on UNESCO data.

Figure 8 highlights another aspect of the data by zooming in on the most recent changes in the data, i.e. the changes between 2019 and 2020, using the most recent data published by the OECD in September 2023. A focus on these most recent changes is interesting especially as the Covid-19 pandemic started to hit most countries in late 2019 and 2020, which obviously also had large-scale implications for the provision of education, which in many countries moved to a virtual environment (at least for some time).

Figure 8 shows that between 2019 and 2020, the OECD countries on average decreased tertiary education spending, which might have been due to the fact that priorities shifted to other areas (health care, health prevention, a focus on school education, etc.). In most countries, the changes are, however, rather small. Yet, there are also some more extreme changes, showing increases or decreases of up to 20 percent. These are very significant changes. When interpreting this data, though, a note of caution is in order: when focusing on the analysis of single changes, we always risk drawing incorrect or misleading conclusions. As highlighted in Figure 7, the long-term perspective often reveals quite a different picture than a narrower focus on single years indicates. This should be kept in mind when interpreting Figure 8. More concretely: Figure 8 shows that we saw the largest spending increases in Lithuania, Slovenia, the Slovak Republic, and Canada, partly exceeding 10 percent. This is quite impressive. What the figure does *not* show, though, is that the Slovak Republic, Lithuania, and others had considerably *cut* spending right before 2019, which puts these changes in perspective (see

the comparison of the 2015-2019 data in OECD's 2022 Education at a glance report Figure C4.3). Moreover, Canada's recent increase should be seen against the background of its previous constant decreasing spending trend that we saw in Figure 7. Vice versa, Mexico, the Czech Republic, Romania, and Israel have shown the largest spending cuts in 2020 – but once again, this brushes over trends before this year: for example, the Czech Republic and Mexico had increased their spending amounts for many years and only show decreases very recently, whereas Israel shows a constant decreasing trend for more than 20 years already, and Romania an "inverse U-shaped" trend first with increases until 2008 then subsequent decreases since the Great Recession. In short, we should only very carefully draw conclusions from short-term changes such as the one in Figure 8. While it might be somewhat disappointing and frustrating, we will simply have to wait for more data to be published to see to what extent these changes are durable.

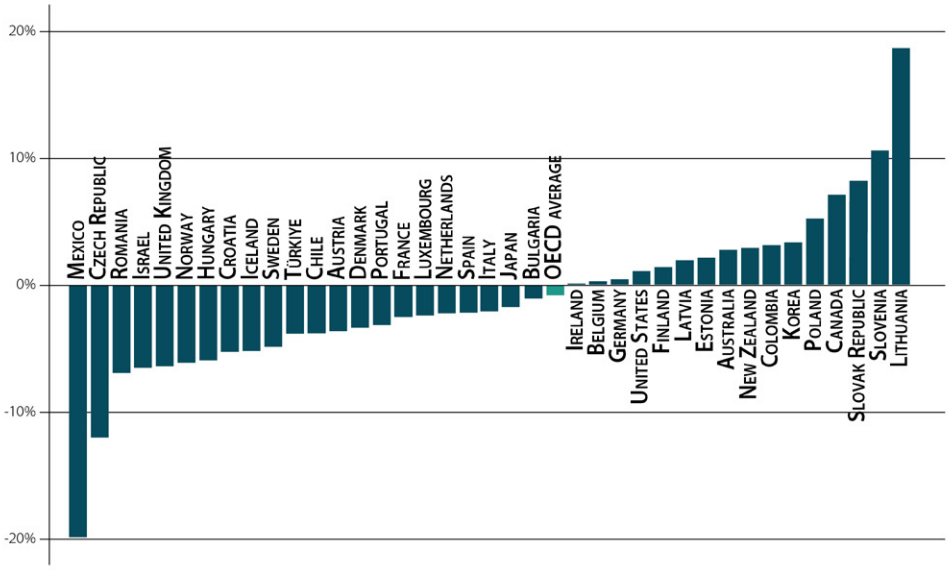

Figure 8. Percentage change in total tertiary education spending per student 2019-2020

Source: OECD Education at a Glance 2023: Table C1.3

What is the public higher education funding spent on?

So far, we have focused on public higher education spending in general. An important subsequent question is what this money is spent on. This is crucial because the very same amount of money can be spent in many different ways (e.g. on buildings, teachers, financial student aid, or research), resulting in quite different consequences (e.g. different patterns of inequality).

To start with, we can analyse what exactly the public money *spent on higher education institutions* is used for. The OECD data allows differentiating between "current" expenditure (in this fiscal year) and "capital" expenditure (referring to investments with longer time horizons than the current fiscal year). The latter category is mainly driven by the construction of new buildings (e.g. in response to enrollment expansions or new research facilities) or the restoration of existing facilities. Empirically, in all countries, more than 90% of the money is in the "current" category, which is why I focus on this in the following. Over time, there is little variation in this ratio on average, but some variation related to changes in the student population (OECD 2022: 320). Current expenditure can then again be differentiated between spending on *staff* (teachers and non-teaching staff, respectively) and on *other* expenditures (e.g. meals, teaching materials, maintenance of school buildings, rental of facilities, and the like).

Figure 9 shows the empirical patterns. The black columns show the share of non-staff expenditure, the rest is spent on staff (teaching staff and other staff). As data for some countries was missing on what kind of staff the money was spent on, some columns do not add up to a hundred; but we can still see what share is spent on staff vs. other expenses. Figure 9 shows that in all countries more money is spent on staff than on other expenses. On average, 67 percent is spent on staff – this is lower than the 78 percent spent on staff in non-tertiary education (not shown in the figure, but see OECD [2022: 312]), which is mainly due to higher costs of facilities and equipment in higher education. There is not much change in this ratio over time (OECD 2022: 314) and the ratios are rather similar in public and private institutions on average even if there are some country differences (OECD 2022: 315), but there is quite some variation across countries in how large the share going to staff is. In Greece, France, and Belgium, more than 80 percent of the public money is spent on staff; in Chile, Italy, and the Czech Republic the relationship is almost 50-50. We find especially countries of North East Asia, Latin America, North America, and Nordic Europe in the group spending a large share on non-staff expenses. These are also the countries that generally appear among the top-spenders in total, as we saw above. There are probably several reasons for this finding, but one is that the high-spenders might be offering more services (e.g. spending more on support services and ancillary services such as meal programs). In order to better understand these dynamics, though, one would need to delve deeper

into the countries' financial accounting, which goes beyond the scope of this overview paper.

Another interesting fact that Figure 9 reveals is that the respective share going to teaching staff (i.e. "personnel whose primary assignment is teaching or research [excluding student teachers, teachers' aides and paraprofessionals]", cf. OECD [2022: 321]) and non-teaching staff (i.e. "other pedagogical, administrative, and professional personnel as well as support personnel", cf. OECD [2022: 321]) also varies across countries: in Austria, the share going to non-teaching staff is below 10 percent, while it is around 40 percent in the Baltic countries, and above 60 percent in Luxembourg. There might be systematic differences behind these differences, for example that some countries offer more non-teaching related services. But some of this variation might simply be explained by differences in accounting practices, e.g. the degree to which countries count staff like principals, guiding counsellors, or others as "teaching" or "non-teaching" (cf. OECD 2022: 315). This is even harder to distinguish in tertiary education (with its complex and intertwined dynamics of teaching, research, and administration) than in primary and secondary education. Thus, one should interpret the data carefully.

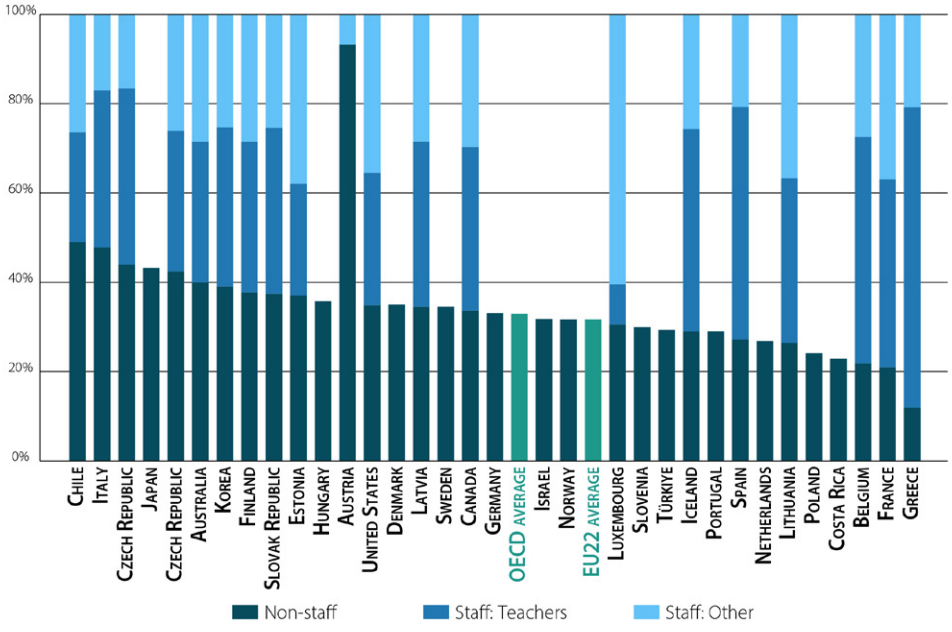

Figure 9. Share of current higher education expenditure on staff (teachers or others) and other expenditure in 2019

Source: Own depiction, based on OECD (2022) Education at a Glance 2022, Table C6.2.

Another important piece of information is how much money is spent directly on higher education institutions and how much is spent on financial student aid. This matters, as different kinds of spending have very different distributive effects (see Section 4 below). Student aid can come in many forms, including grants, loans, tax deductions (to students or their families), family allowances, tuition waivers, meals, housing, public transportation, and several others (see also Figure 1). Focusing on the more general patterns from a global perspective first, a report by the Canadian think-tank Higher Education Strategy Associates (2022) distinguishes between countries of the "Global North" and "Global South" and shows that countries of the "Global North" on average spend higher amounts on financial student aid than countries of the "Global South", in line with the generally higher spending on higher education in these countries we observed above in Figure 3. Figure 10 shows that the shares relative to GDP are about five times larger in the "Global North". In the "Global South" we see slowly increasing rates, though, while the trends in the "Global North" rather point downwards, especially after the Great Recession.

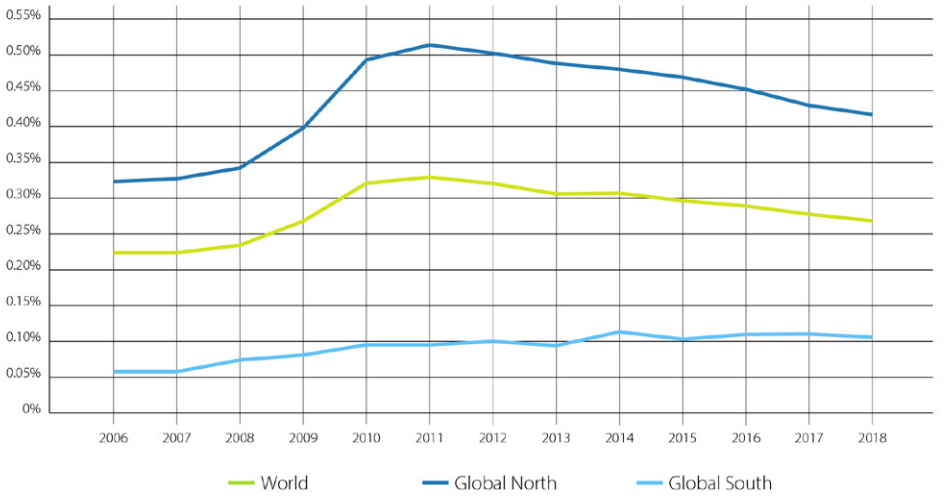

Figure 10. Financial student aid as a share of GDP in the "Global North" and "Global South", 2006-2018

Source: Figure reproduced from Higher Education Strategy Associates (2022: 81).

Zooming in on the rich OECD economies, we see quite some variation within this broader cluster. We can look at the amounts spent on student aid either as a share of GDP or as a share of total public higher education funding and both times find the same country grouping (see Figure 11). It is especially countries of Nordic Europe as well as the Anglo-Saxon countries

that spend more on student aid; spending is much lower in the conservative Continental European welfare states, and even lower in Southern Europe, North East Asia, and Latin America (cf. Garritzmann 2023: 128 for details). As emphasised below, it is important to interpret this data with reference to the respective level of tuition fees, though, as these are substantial in the Anglo-Saxon countries, in North East Asia, and parts of Latin America, and comparatively low or even non-existent in Nordic and Continental Europe. Looking at other indicators, e.g. the share of students benefiting from student aid or the generosity of these benefits creates a similar result (cf. also Figure 13 below). Readers interested in even more detail can find fine-grained data for the OECD countries in the respective "Education at a Glance" reports and the EU's "Eurydice" reports. Elsewhere, in my book "The Political Economy of Higher Education Finance" (Garritzmann 2016) I discuss financial student aid (and tuition fees) in length, offering fine-grained descriptive analysis as well as an explanation for these differences, pointing at the crucial role of political parties that dominated the respective countries during the 1950s-80s (see also Section 3 in this paper below).

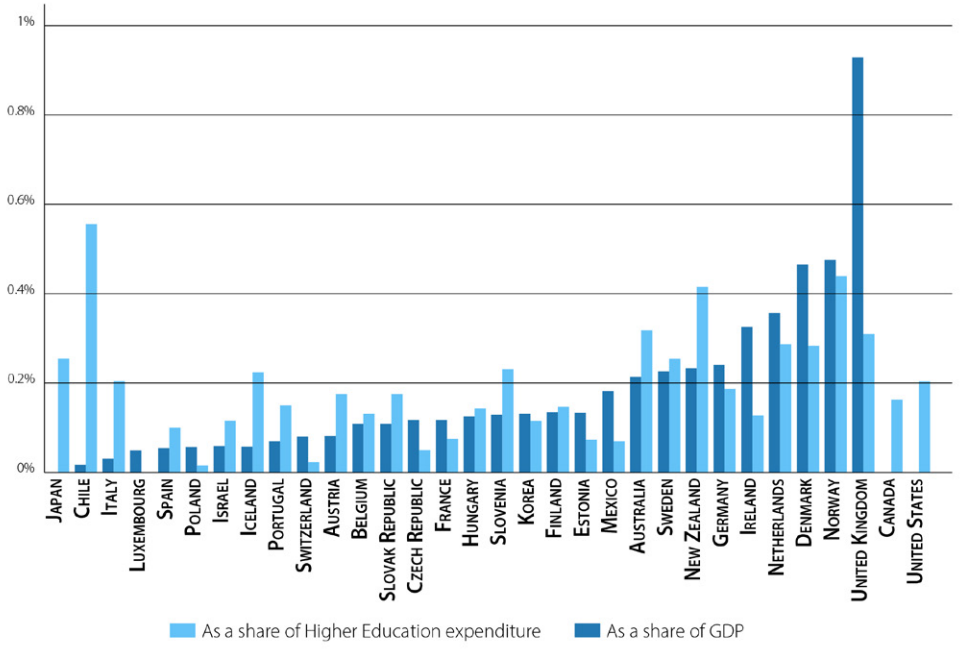

Figure 11. Public spending on financial student aid as a share of GDP and as a share of total public higher education expenditure

Source: Own depiction based on Garritzmann 2016: Figure 2.4.

Is it all performance-based now?

As a final aspect of the way public money is spent, I want to focus on whether money on higher education (in terms of teaching and research) is spent according to some performance criteria or in some other way (e.g. as block grants, line-item budgets, or project-specific funding). So-called "performance-based funding" has recently become a "hot topic" in political discourses, although the actual phenomenon is already much older. There is an ongoing (largely theoretical and normative) discussion on the pros and cons of performance-based funding (e.g., OECD 2020: Section 4.5). While some empirical studies exist, most of these focus on variation within the USA and on some European countries (Jongbloed et al. 2023).

Empirically, the share of funding distributed according to performance criteria is estimated to vary quite remarkably across countries: it likely is about 85% in Denmark, 76% in Finland, 55% in Austria, 30% in Italy, 26% in the Netherlands, ca. 15% in Poland (Jongbloed et al. 2023) – but we lack precise systematic empirical information on this; we even more lack information on changes over time. Otherwise, block grants without ear-marked criteria are common, but project-specific funding is also increasingly important (ibid.).

More specifically, several performance-criteria are common. Some are quantitative, focusing on inputs, activity, outputs, or outcomes, such as the number of degrees awarded, graduate employment, number of awarded PhDs; some are qualitative, focusing on periodic peer-review reports. Table 1 offers a schematic typology to systematise the different kinds of performance-based approaches.

Table 1. A simple typology of types of performance-based funding criteria and some examples of typically used tools

	Inputs	*Activity*	*Outputs*	*Outcomes*
Quantitative indicators	*e.g., number of enrolled students; number of foreign students; ratio of students in Bachelor and Master; number of disadvantaged students*	*e.g., number of courses offered; number of ECTS credits taken by students*	*e.g. number of degrees awarded; number of peer-reviewed publications; sum of external third-party funding; bibliometric indicators; R&D-related intellectual property rights; gender-equality of academic staff*	*e.g., graduates' employment; students' evaluation or feedback*
Qualitative assessments			*e.g. peer-review report on academic output*	

Private higher education funding

So far, this report has focused on *public* spending. *Yet*, private higher education expenditure also plays a crucial role in some contexts. The two main forms of private higher education expenditure are money spent by students and their families (mostly in the form of tuition fees) and money spent by companies on their employees' skills. Figure 12 shows for the wealthy OECD countries with the best data availability the share of tertiary education expenditure by governments (i.e. what this report has focused on so far), but also of private households, other private entities, and non-domestic sources (this latter category includes "direct international payments to educational institutions such as research grants or other funds from international sources paid directly to educational institutions" [OECD 2022: 274] but is empirically negligible).

We see that in most countries public funding is the dominant form of higher education funding – and has been so for many decades (Garritzmann 2016). In almost all countries the public share is above 50 percent; in many it is above 70 or even above 90 percent. Public spending dominates particularly in Nordic Europe and in Western continental Europe. In contrast, private spending is an important funding source in North America, in North East Asia, in the UK, and in some Latin American countries. For some technical reasons the private shares are even somewhat underestimated (as they e.g. include net and not gross amounts, see OECD [2022: 268] for details). Other countries fall in-between these poles, especially those in Central and Eastern Europe and in Southern Europe. Looking at the types of private spending, Figure 12 shows that these are mainly made up from spending by households, i.e. by students' and their families' educational expenses, mostly in the form of tuition fees.

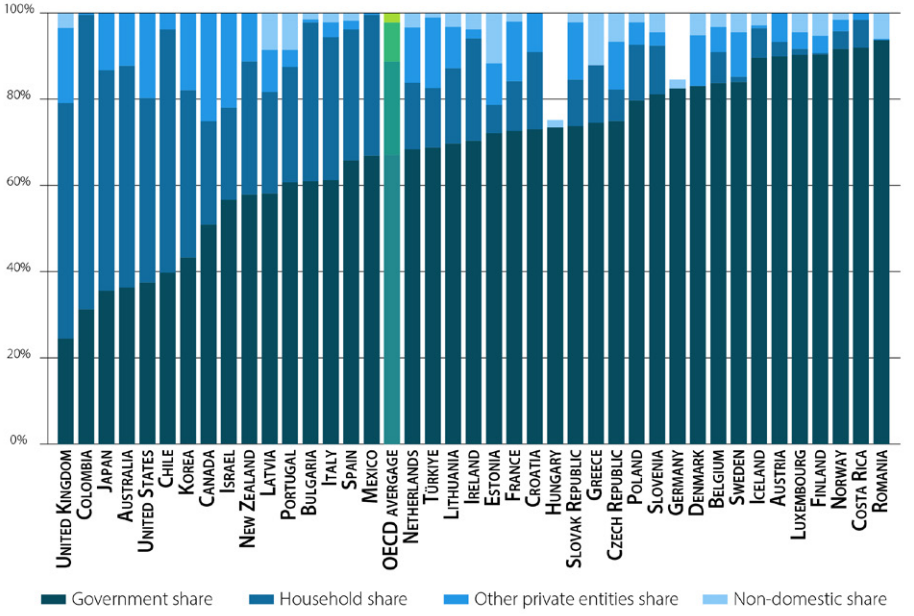

Figure 12. Shares of tertiary education expenditure by government, households, other private entities, and non-domestic sources.

Source: Own depiction based on OECD (2023) Education at a Glance data, Table C3.1

Given that tuition fees are the main form of private higher education funding, Table 2 zooms further in on this. Table 2 shows the average annual tuition fees (adjusted for Purchasing Power Parity (PPP)) for national students in 2019/2020, differentiating further between tuition in public institutions and private institutions, as well as between four levels of higher education studies (ISCED 5-8). The first column in Table 2 shows the share of students in private higher education institutions. Before interpreting this data it is important to highlight that this data only reveals some of the empirical reality. While Table 2 shows the average annual national averages, there is a lot of variation around these means: in many countries tuition varies by region, by higher education institution, by field of study, or even by individual student. Thus, two students in the very same study program might pay quite different amounts (cf. Garritzmann 2016).

Ignoring these details for now, let me highlight three take-aways from Table 2. First, we can distinguish two larger country groups: in some countries, average tuition amounts are zero or rather negligible. This is the case in Nordic Europe and Western continental Europe, confirming the patterns observed in Figure 12. In a second group of countries, substantial tuition amounts are due. These are the highest in the Anglo-Saxon countries, in North East Asia, and in parts of Latin America. Here, average amounts

between $5000 and $13000 are common – and given that these are averages, the maximum amounts that some individuals pay are much higher, often around $40,000 or $50,000 annually. Second, Table 2 shows that the average tuition amounts are significantly higher in the private sector, which usually is dependent on tuition-funding. This also implies that countries with higher shares of private providers or trends towards more privatisation witness higher average tuition amounts. We also find that while no tuition

Table 2. Average annual tuition fees (in US-$, PPP) for national students in 2019/20.

Source: Own compilation based on OECD (2021) Education at a Glance 2021, Table C5.1.

	% of students in independent private institutions	Public institutions				Independent private institutions			
		ISCED 5 (Short-cycle tertiary)	ISCED 6 (BA or equivalent)	ISCED 7 (MA or equivalent)	ISCED 8 (Doctoral or equivalent)	ISCED 5 (Short-cycle tertiary)	ISCED 6 (BA or equivalent)	ISCED 7 (MA or equivalent)	ISCED 8 (Doctoral or equivalent)
Denmark	**0**	0	0	0	0				
Estonia	**8**	None for full-time students in programs in Estonian					9161	10994	10994
Turkey	**8**	0	0	0	0	0	0	0	0
Norway	**10**	493	0	0	0		5742		0
Sweden	**10**	0	0	0	0	0	0	0	0
Finland	**48**		0	0	0		0	0	
Germany	**15**		148				5187		
Belgium - French community	**0**		191	808					
France	**21**	0	233	333	520				
Austria	**21**		952	952	952				
Belgium - Flemish community	**0**	1239	1239	1239	620				
Spain	**20**	0	1768	2580			10342	11672	
Italy	**15**		2013	2252	522		7338	9183	2747
Netherlands		2652	2652	2652					
Israel	**12**		2753	3720			9004	10052	
Hungary	**5**	2540	3834	8096		2717	4284	10643	
Lithuania	**10**		4048	7947	14540		3773	5109	12332
New Zealand	**10**	3264	4584	5904	4931	4653	4376	6042	
Latvia	**24**	3221	4768	4953	6493	3221	5243	5748	6669
Korea	**80**	2698	4792	6157	7140	6920	8582	11506	12511
Australia	**22**	3428	5024	8993	208	7357	9226	12487	1623
Canada			5060	8965	5539				
Japan	**78**	3742	5177	5173	5172	6787	8798	7832	5824
Ireland	**3**		8304	9667	8676				
Chile	**71**	3766	8317	11531	9707	4137	7368	11172	8678
United States	**26**	3313	9212	12171		15727	31875	25929	
England (UK)			12330						

is due in public institutions in North-Western Europe, private institutions in these countries charge considerable fees, e.g. around $9,000 in Estonia, and $5,000 in Germany and Norway. Third, Table 2 shows that tuition usually increases in the more advanced study programs, i.e. average amounts in the MA-programs exceed those of the BA-programs. While this might seem like a technical detail, this is one of the reasons contributing to the persistence of educational inequality, since children from lower socio-economic strata are more likely to only study in short-term programs (see Section 4 of this report).

While tuition amounts might be high, we should always look at them in comparison to the type of financial student aid. Thus, going one step further, Figure 13 combines the information on average tuition amounts with some information on financial student aid (here, the share of students benefitting from grants or subsidised student loans). The figure shows what I have called the "Four Worlds of Student Finance" (Garritzmann 2016). In most continental European countries with their conservative welfare states, tuition is rather low, but there is also rather little financial student aid: the low-tuition—low-subsidy countries. In a second group of Nordic European countries with a generous and inclusive welfare tradition, no tuition applies but most students receive generous aid: the low-tuition—high-subsidy regime. In a third cluster, tuition is high but there is also quite a lot of financial student aid available, especially in the form of subsidised and guaranteed loans; we find this high-tuition—high-subsidy regime in the Anglo-Saxon countries typical of the liberal welfare state. Finally, we also find the high-tuition—low-subsidy combination, as countries in North East Asia and parts of Latin America charge considerable tuition amounts but hardly offer student aid.

A comparison over time (Garritzmann 2016, 2023) shows that these country differences are highly stable. The best predictor for countries' level of tuition fees in today's time is whether they had established tuition already in the 1960s-70s. Hardly any country (England being the noteworthy exception as it introduced tuition fees in 1997 and subsequently increased them substantially) has shifted paths: countries that charge tuition fees never abolish these but keep increasing them, whereas countries that charge no fees or very low amounts are very likely not to introduce any fees (for regular students)[3]. This is no coincidence, but based in political dynamics, as sketched out in Section 3 and explained in detail in Garritzmann (2016). Accordingly, while there have been some shifts during the pandemic (e.g. as international student mobility decreased; cf. OECD 2021: 41) this has not structurally changed the country grouping.

3 The analysis and arguments here focus on "regular students". There is more variation when we take a broader view. For example, some countries (even in tuition-free Scandinavia) have recently introduced substantial fees for students from non-EFTA (European Free Trade Association) countries and some countries charge students when they enroll in a program after having completed a first Master program already.

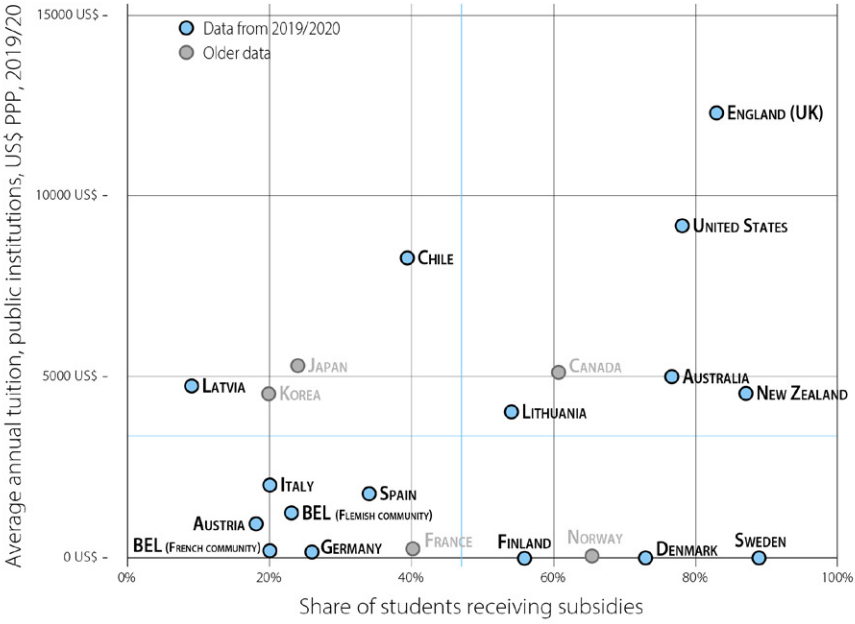

Figure 13. The Four Worlds of Student Finance: Tuition fees and subsidies.

Source: Author's compilation based on OECD (2021, 2022, 2023) Education at a glance reports. Note: All data is for the year 2019/20, except countries in grey, where there is slightly older data.

R&D expenditure

Closely related to higher and further education is a related spending category: expenditure on research and development (R&D). Only some of this money benefits the higher education sector, but it is an important revenue source especially for more research-focused institutions and for some schools of applied sciences. R&D expenditure can come from both public and private sources. Figure 14 shows two of the main sources: gross domestic expenditure on R&D by governments, on the one hand, and by business enterprises, on the other hand, each as a share of GDP to facilitate comparisons. Figure 14 shows the data for the most recent time point (the year 2019, 2020, or 2021, depending on data availability) while Figure 15 displays the longer time trends since 1980.

Before delving into the details, a look at the scale is interesting: the average total R&D spending across countries is almost 2 percent of GDP – a considerable amount, especially when compared to the average amounts spent on higher education as a share of GDP shown in Figures 3 and 7. The average of the public spending across countries is 0.56 percent of GDP, the companies' R&D spending is about twice that much at 1.10 percent. Overall,

the private sector is thus the main spender on R&D across countries. Figure 14 also reveals remarkable differences across countries, especially regarding engagement of the private sector. While the public share varies between 0.07 and 1.12 percent of GDP, the private share lies between 0.05 and 3.75 percent and thus shows much more variation. A closer look exposes a country grouping that we have also seen above in some of the other data: public R&D spending is particularly high in North East Asia (especially Korea, but also Japan) and in North-Western Europe (Scandinavia, Germany, Switzerland, Austria). At the bottom of the list we find the Latin American countries and most Central and Eastern European countries (except Estonia, which spends considerably more, in line with its focus on a high-skill service economy). Private R&D spending is also particularly high in North East Asia, but also in the United States and Israel, and some European countries (Germany, Belgium, Switzerland). In contrast, rather low private amounts are spent once again in Latin America and Central and Eastern Europe. In a few countries (Argentina, Chile, Greece, Latvia, Mexico, Norway, Russia, South Africa) the public amounts even exceed the private amounts.

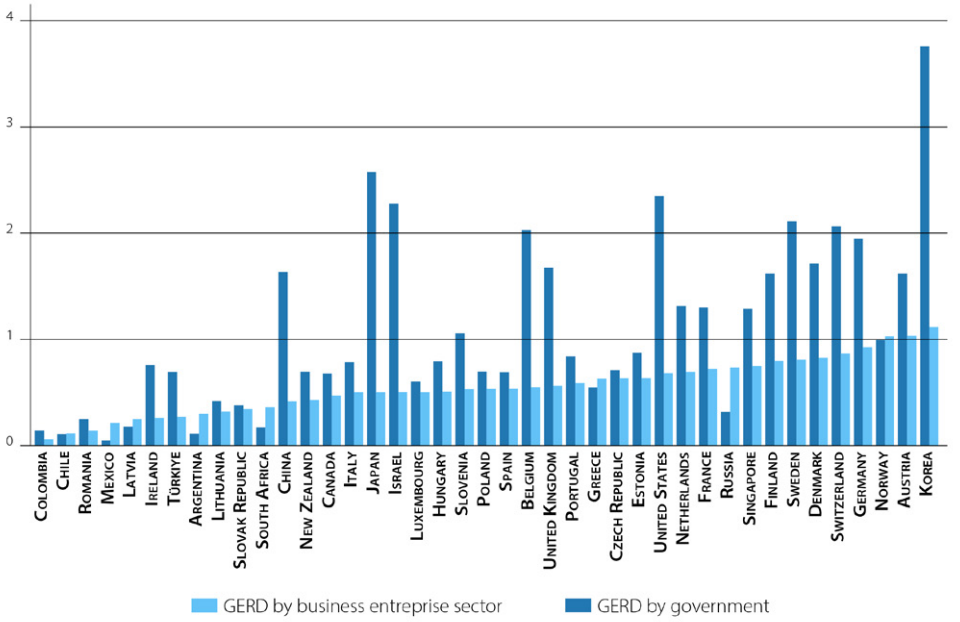

Figure 14. Gross domestic expenditure on R&D by government and business sector as a share of GDP, in most recent year (2019, 2020, or 2021)

Source: Own depiction based on OECD 2023 MSTI database. Note: This data needs to be analysed with some caution, as the definition of the spending categories differs to some degree between countries and as some values are based on estimations (see the primary source for details).

Figure 15 allows for comparisons over time, starting for some countries as early as 1980. Some facts appear noteworthy. First, just as with many other types of spending (discussed above), most of the lines for R&D spending are rather flat, indicating hardly any or only very slow change and rather strong

path dependencies. Some countries, however, display remarkable changes, especially in private-sector spending – the public shares have hardly changed over the last 40 years in most countries (a noteworthy exception is South Korea). Almost all of these countries indicate increases in spending. Upward trends are particularly strong in North East Asia, Nordic Europe, Israel, and the United States – as well as, more recently, in China. In Japan, for example, the amounts doubled over the last four decades and in Korea they even tripled. A closer look at the data (this is harder to see visually in the Figure) shows some recent declines after the Great Recession – and some of the countries (e.g. France, Italy, Spain) have not recovered the pre-Recession levels.

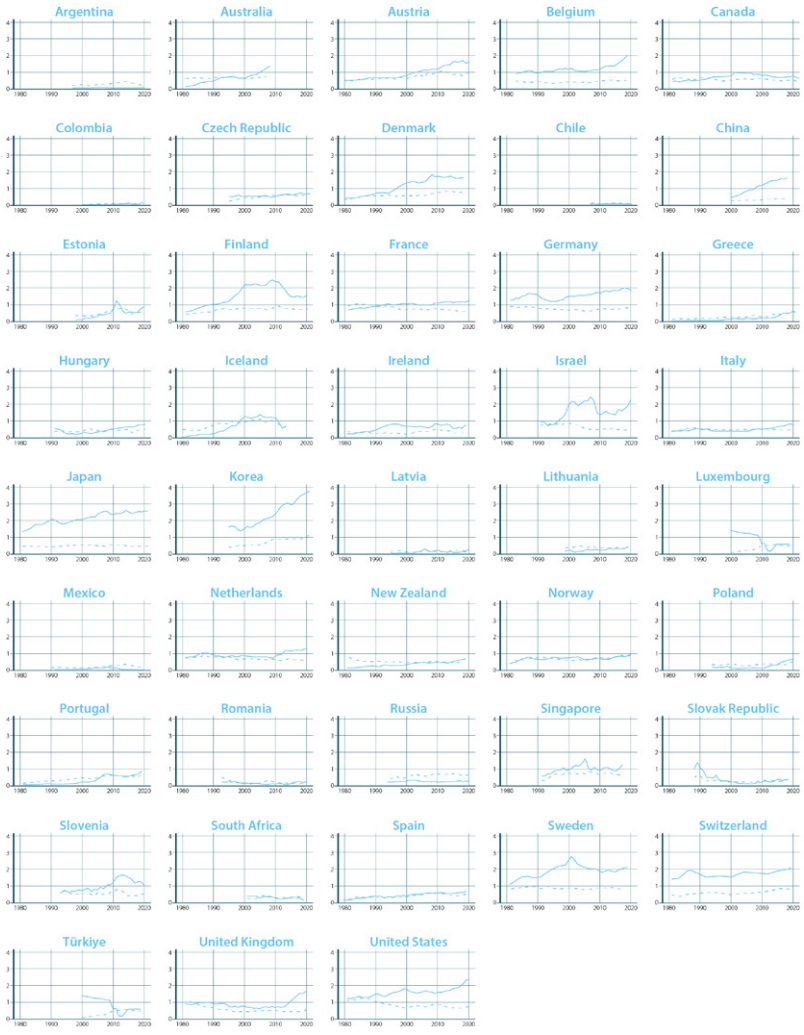

Figure 15. Gross domestic expenditure on R&D by government and business sector as a share of GDP, 1980-2020.

Source: Own depiction based on OECD 2023 MSTI database.

What explains variation in (public) education funding? A brief summary of what we know about the political, economic, and social causes

The descriptive data presented above has revealed some considerable country differences in funding of higher education, as well as some interesting patterns of change (and continuity) over time. What explains this variation? By now, a sizeable body of scholarly literature exists in political science, sociology, and economics, exploring determinants of (public) higher education funding. Less focus in the literature lies on determinants of R&D funding, but some of the arguments apply equally. We can identify three groups of explanations: socio-economic factors, political and socio-economic actors, and institutions. Next, I briefly summarise the state-of-the-art literature answering these questions. It is also important to mention that most of the scholarly literature on this topic focuses on single world regions, often either variation within the United States (across states or higher education institutions) or the rich, established OECD democracies. There is much less systematic work on the politics of higher education expenditure in other regions, especially in Africa and South East Asia. In addition, most existing work focuses on the dynamics in democracies rather than autocracies.

Socio-economic factors

The first group of explanations points to socio-economic factors. A crucial factor here is *demographics*, i.e. characteristics of countries' population especially with regard to age, but also other factors such as geographical distribution (e.g. urbanisation). A main finding in the literature (e.g. Busemeyer 2009; Iversen & Soskice 2008) is that the age structure matters: the higher the share of young people, the higher the (public) higher education funding. An obvious mechanism is simply demand for education. But there are other, more indirect mechanisms as well. For example, the older a country's population, the more public spending is tilted towards that age group, focusing more on pensions and health care than on education and other investments. Pensions, in particular, thus "crowd out" social investments like higher education. Moreover, political behavior scholars point out that older people on average tend to vote more for conservative

parties, thereby indirectly also affecting the party politics of higher education, as older societies also tend to have stronger conservative parties (see next section).

Besides demographics, countries' *economic prosperity* matters. An old theory ("Wagner's law") predicted that as countries grow richer, they will also increase public expenditure, including (higher) education. Empirically, the relationship is less straightforward (Ansell 2010; Garritzmann & Seng 2016), not least because education can also contribute to economic prosperity. But there is evidence that public higher education funding follows the size of the general budget: as countries' total budgets increase, they also spend more on higher education (Busemeyer & Garritzmann 2017, 2018; Garritzmann & Seng 2016).

Relatedly, countries' *public debt* situation also plays a role. Several economists (e.g., Johnstone 2011; Jongbloed 2004; Vossensteyn 2009) expected that as public debt levels rise, budgets will be squeezed, leading to less public spending and a shift towards private funding. Empirically, there is some evidence for this, as private education spending tends to increase when public debt levels are high and/or are increasing (Garritzmann 2016). More generally, we know that in times of fiscal austerity investments are more likely to be cut than other types of spending (Breunig & Busemeyer 2012; Jacques 2021). This is one of the main reasons why higher education funding is also affected by socio-economic crises that challenge public budgets (like the Great Recession or the Covid-19 pandemic).

Fourth, structural socio-economic change matters, especially the crucial *shift from industrial to post-industrial knowledge economies* (Garritzmann et al. 2022a, 2022b; Jensen 2011). As countries deindustrialise and transition to a larger dependency on high-skill sectors, their demand for more academic skills grows, increasing political and socio-economic demand for more higher education funding. While this association exists empirically, it is far from deterministic, though, as not all countries have chosen a high-skill social investment-focused growth strategy (Garritzmann et al. 2022a, 2022b; Hassel & Palier 2021). But it helps to explain why countries that have deindustrialised earlier and to larger extents (e.g. Nordic Europe) have expanded their higher education enrollment rates and funding levels more than countries with slower deindustrialisation processes (e.g. Germany, Slovakia, or Poland).

Another "mega-trend" with crucial implications has been *globalisation*, i.e. the increasing internationalised flows of goods (trade), money (finance), and people (migration). Early optimists believed that globalisation would spread the value and importance of (higher) education in all countries around the globe, contributing to a liberal, democratic, peaceful "world society". This has not materialised. The main reason is that the relationship between globalisation and higher education funding differs across contexts: in general, more globalised economies tend to spend more; but more advanced

economies tend to shift their focus towards higher education, whereas less advanced economies shift towards a focus on primary and secondary education to increase their respective international comparative advantages: roughly speaking that is high-skill based production in more advanced economies and more low-skill based production in less advanced countries where additional skill investments might thus be (perceived as) redundant (Ansell 2008).

Last but not least, there is an important gender aspect in higher education funding. In most countries around the globe, women have historically been systematically disadvantaged in their access to education and labour markets; access to higher education was for a long time only open for boys and men. This began to change in the 1960s and is very much related to the expansion of the higher education sector. Since then, women have finally been able to "catch-up" in their access to higher education. Girls and women can and do benefit in several respects from increased (higher) education funding. First of all, they benefit as *students*, as increased funding and widened access gave them a chance to participate and to catch-up with the historically male privilege. Second, *women* benefit from education spending as mothers, because empirically in essentially all countries there has been a gendered division between paid work (mostly male) and family work (mostly female) in the so-called "male breadwinner model". This began to change with widening educational expansion, as children stayed in school longer and started earlier (e.g. in preschools or early childhood education and care). Third, women can benefit from increased education funding *as labourers*, since the educational expansion and widening of educational enrollment has created many jobs in the public sector that often gave career chances to women (as males dominated the private market). Therefore, it makes sense that public higher education funding is related to *female labour force participation*, i.e. the share of women in the labour market (Busemeyer 2006, 2009), as well as to the share of women in Parliament (Iversen & Stephens 2008). To illustrate, the female labour force participation rates in Sweden has been much higher than the ones in Southern Europe, arguably very much related to the higher spending levels in Nordic Europe, too.

Actors

Besides socio-economic factors, political and socio-economic actors play a crucial role in the politics of (higher) education funding. The most important actors are political parties, trade unions (including teacher unions), employer associations, and some interest groups and international organisations (like the OECD or the World Bank). Student unions might also play some role, but they remain understudied, arguably with the implicit assumption that they are not a powerful political voice (but they might be, especially in countries where they cover large parts of the student population).

Governing political parties arguably are the most pivotal political actors. They can shape and (re)design countries' higher education policies, including funding. One of the most established theories in political science, Power Resource Theory, focuses on the difference between leftwing and rightwing parties, arguing that these have different electorates and different ideologies, which should result in different policy results: leftwing parties should favour public education spending and oppose private funding, as education can contribute to socio-economic upward mobility and equality of opportunity (Castles 1989; Schmidt 2002). This might be all the more true in today's globalised economies where classical Keynesian demand-side policies are increasingly infeasible for governments, shifting their focus to supply-side policies like education (Boix 1998). Moreover, leftwing parties – at least in the richer economies – might increasingly shift their focus to public higher education funding, as a means to stretch electorally out to the middle class, particularly the urban educated middle class (Busemeyer 2009).

At the same time, we know that children from more advantaged socio-economic strata (SES) have a higher likelihood to attend higher education than those of poorer or less educated backgrounds (Becker & Hecken 2009). High-SES children are also more likely to study in more prestigious universities and often longer-term programs, making them the main beneficiaries of higher education spending. Consequently, although higher education of course can contribute to upward mobility, public higher education spending can also reinforce or increase existing inequalities, since tax-funded higher education is more likely to be used by higher socio-economic groups – a pattern called "negative redistribution" or the Robin Hood paradox. Unsurprisingly, Karl Marx (1978 [1890/91]) was one of the first to notice and criticise this fact. Accordingly, some have argued that political rightwing parties have a higher interest in public higher education spending, as their traditional electorate is more likely to benefit (Jensen 2011).

This puzzle can be resolved, though, when distinguishing different kinds of higher education funding. Over-simplifying to some degree, leftwing parties are particularly interested in enhancing the opportunities of their electorate to participate in higher education. Thus, they focus on policies that aim at this goal, especially widening enrolment levels, increasing financial student aid to disadvantaged students, and limiting or abolishing tuition fees (Garritzmann 2016). For example, the Democrats in the United States have introduced several kinds of financial student aid to facilitate access to higher education, such as the G.I. Bills or the Pell Grants. Similar bills have been passed under Social Democratic leadership in Scandinavia (e.g. through generous grants, housing allowances, and the like), as well as in Germany under the social democratic government in the 1970s. Rightwing parties, in contrast, were initially in favor of expanding access to higher education as it was mostly their electorate that benefitted during the 1950s-70s (Ansell 2010), but have

more recently shifted focus to the quality of higher education as well as to an efficient use of money and a particular labour market focus.

Research has shown that parties were particularly powerful in the immediate post-World War II period: The crucial period was the expansion period of the 1950s-70s, where parties had substantial leeway in designing higher education systems and used this to shape the systems (Garritzmann 2016). As a consequence, today's higher education systems largely mirror the respective partisan predominance of the 1950s-70s: where social democrats and other left parties dominated, we see a clear focus on public spending and inclusive higher education systems; where right-leaning parties dominated we see a clearer focus on private expenditure and/or more limited expansion of higher education (Garritzmann 2016). As discussed below, parties can still shape policy today, but their political leeway for large, transformative change has become smaller.

All of the above cited studies focus on established democracies where we have a "programmatic linkage" between voters, parties, and policy-making. This is less straightforward in less robust democracies or in the presence of clientelism or corruption. In clientelist systems, the relationship between parties and policy is different. We know, for example, that (higher) education funding is sometimes used for clientelistic purposes in some countries, i.e. to "buy votes" (Chen & Kitschelt 2022).

Besides parties, we know that trade unions (especially teacher unions) and employer associations play a big role in the politics of education. For example, we cannot understand the kind of school system and kind of vocational education system that countries have, without paying close attention to the "social partners" (Thelen 1999; Culpepper 2011; Busemeyer & Trampusch 2012). There are also good reasons to expect that these actors matter for higher education, especially as higher education has become the crucial backbone of today's knowledge economies. Unfortunately, though, this link has not yet been studied empirically in a systematic way. I am not aware of a single study that explores the influence of unions and employer associations on higher education funding. Iversen and Stephens (2008) come the closest to studying this, as their analysis includes a measure of the strike intensity ("working days lost per 1000 workers"), which could be interpreted as a measure of the strength of unions. They find that public higher education spending tends to be higher as strike intensity grows, but we should be careful with causal interpretation of this finding. Before coming to another actor, it also deserves mentioning that union density is lower in higher education institutions than in other educational institutions.

Finally, in some countries *interest groups* and *international organisations* play an important role. A striking example are banks (and their associated lobby groups) in countries with high tuition fees. Here, student loans can become a lucrative business for banks, particularly when they are guaranteed and/or subsidised by the government. In the U.S., for example, student loans

have been a highly lucrative investment for banks, which made fortunes handing out loans and accordingly lobbied heavily for any change in this system (Hannah 1996; Skocpol 1997; Mettler 2009, 2010; Garritzmann 2016). Other important actors may include international businesses like Bertelsmann, international organisations like the OECD, IMF, or World Bank, and associations of university presidents. A review of higher education funding in Africa, for example, points at the systematic influence of the World Bank and other multilateral actors (Teferra 2013). For example, the World Bank advised most African countries to focus on primary and secondary education expansion and funding, rather than on tertiary education (ibid.). More generally, international organisations can matter even when they lack material resources as they can exercise "soft power" on policy-makers (e.g. by providing information, benchmarking countries, offering best-practice examples, or through other means) (Bieber & Martens 2011; Vögtle et al. 2011).

Institutions & path dependencies

A third group of explanations for variation in higher education funding points to the role of institutions. From a global perspective, the first crucial institution is *democracy*. In autocracies, public spending is often targeted towards the autocrats' "selectorate", i.e. people that are relevant for regime survival. Access to education, particularly higher education, is thus not open to all groups of society, but limited to certain groups. Accordingly, political democratisation could also be related to a "democratisation" of access to education. Empirically, that is indeed the case: Ansell (2008) found that the ratio of public spending on tertiary education compared to primary education is higher in autocratic systems – globally, democracies tend to spend more on primary and secondary education rather than higher education, since they seek to "democratise" access to these educational levels.

Another important institution is *federalism* or rather the type of multilevel governance system, which is the technical term to describe the distribution of political authority in countries with multiple political layers. When the power to decide over education policy is decentralised to subnational levels, these – rather than the national level – become relevant in deciding over higher education funding. This is the case in many federal states, but also in some non-federal but decentralised countries (Garritzmann et al. 2021). Research shows that on the national and the subnational level, leftwing parties tend to increase public higher education spending more than rightwing parties (ibid.). But there are also some more complicated dynamics, as public spending is higher in those regions that have the same governing parties as those on the national level, a phenomenon called "alignment effect" (ibid.).

Finally, as mentioned already above, current policy-making is very much shaped by policy-making in the past; that is: there are strong path

dependencies in (higher education) funding. This is for several reasons. An important political dynamic is that, once established, policies create so-called "positive feedback effects" (Pierson 2000) as beneficiaries of the policy build political support and make future retrenchment unlikely. These *path dependencies* have also been identified in the case of (higher) education, where today's systems can be explained quite well with political decisions made in the 1950s-70s (Garritzmann 2016; Garritzmann & Garritzmann 2023; Hearn 2001 for the U.S.). Accordingly, radical policy change is uncommon; continuity or gradual reform is much more likely, but can come in many forms and in the long run add up to significant change (Mahoney & Thelen 2010).

So, what are favorable conditions for public spending on higher education?

Summarising the above discussion, we can reflect under what conditions calls for increased public spending on higher education are most likely. The most likely scenario is one where we have a strong and growing economy, a relatively young population, low public debt levels and no fiscal austerity, a focus on a high-skill post-industrial knowledge economy, leftwing parties in office (on the national and relevant subnational levels), strong inclusive trade unions, and a weak legacy of private investment. In contrast, public spending on higher education is least likely to increase in the reversed scenario, i.e. in countries with weak or declining economies, in times of recession, under fiscal austerity and/or high public debt levels, in demographically older societies, in countries with a heavy focus on an agrarian or an industry sector, under conservative (or even radical right populist) governments, when unions are weak or scattered in conflicting interests, and where there is a strong legacy of private educational investments.

Does education funding matter? A brief summary of what we know about the consequences of education funding on inequalities and employment/staff

The report so far has described variation in the existing higher education funding systems and explained the causes of these differences. This final section looks at some of the consequences, summarising state-of-the-art research on the effects of different higher education funding systems on (in)equality, academic output, and employment conditions. Does it matter how higher education is funded?

The brief answer is: yes. The type of higher education funding has considerable implications for a range of important outcomes. To start with, a larger literature explores the implications for educational outcomes, e.g. enrolment rates, educational inequality, study competition rates, or other outcomes. The relationship between funding and educational outcomes is an old topic and has become very prominent since Nobel prize winner Heckman's (2006) studies on investments. I focus here on some of the most recent work that has explored whether there really is a causal link between public education funding and outcomes. In his reviews and analyses, Jackson (2018; Jackson et al. 2021) concluded that, generally speaking, education expenditure is related to better outcomes in the sense of increasing completion rates, increasing test scores, and increasing continuation to higher educational levels. For higher education, a number of evaluation studies showed that the type of higher education spending has fundamental consequences (see the reviews in Curs et al. 2007; McPhersson & Shapiro 1991, 1998, 2006). We know, for example, that higher private tuition amounts increase educational inequality (Hilmer 2001; Coelli 2009; Hanley 2010) while generous financial student aid – especially in the form of grants targeted to low-SES children – decrease educational inequality (Dynarski 1999; Nielsen et al. 2010; Steiner/Wrohlich 2012). The type of higher education funding thus has considerable consequences for educational outcomes and (the persistence of) educational inequality.

A second group of studies explore effects of higher education and R&D funding on academic output, for empirical reasons mostly understood in terms of quantifiable measures such as number of publications or bibliometric analyses. Most of this work is focused on the U.S. or other

English-speaking countries, but increasingly also other world regions are covered. Generally speaking, most scholars find a relationship between funding and output. While earlier work offered simply correlational analyses (McAllister & Wagner 1981; Teodorescu 1994; Wang et al. 2012) this is also confirmed in more sophisticated panel fixed-effects analyses (Uyar et al. 2022). Heng et al. (2020) also replicate these findings for "Global South" countries, both on the national level as well as on the level of individual higher education institutions. The strength of the identified effect generally differs across disciplines, though (Zharova et al. 2023).

Several evaluation studies have also focused on particular types of funding and explored, for example, the effects of performance-based funding. While the jury is still out, many studies and meta-analyses find null-effects on study completion rates (e.g. Bell/Fryar/Hillman 2015; Ortagus et al. 2020), indicating that performance-based funding probably does not really live up to its promises. Moreover, several unintended consequences exist, e.g. that higher education institutions have in their admission processes focused on students that are more likely to graduate on time (biasing against disadvantaged groups), researchers might have become more risk-averse focusing on projects that are more likely to produce outcomes, and higher education institutions have used means to "game the system" (Bell et al.; Ortagus et al. 2020; Jongbloed et al. 2023).

Funding and employment in academia

The type of funding obviously also has important implications for those employed in academia (in terms of salaries, job security, etc.). To start with, studies reveal a positive relationship between the levels of research funding and the number of researchers (Leydesdorff/Wagner 2009). Related work has shown that under-funding also has consequences: Negash et al. (2019) show that low salaries in Sub-Saharan Africa led academics to focus on undertaking non-research activities. Unfortunately, to the best of my knowledge there are hardly any studies that allow for causal interpretation of the findings and the evidence remains correlational. Empirically, we can look at the number of academic staff and their respective positions (senior, intermediate, junior) as well as at the employment conditions.

As the simplest indicator, we can simply look at the number of academic staff employed in higher education. Figure 16 shows the average number of academic staff for up to 228 countries from 1975 until 2015. We see a steady increase, especially steep since the turn of the millennium. While we cannot interpret this evidence causally based on the figure alone, Figure 16 together with the previously presented Figures show a correlation between increasing public funding of higher education (and R&D) and increases in the number of academic staff. The Eurydice reports confirm these patterns for the EU

countries, as shown in Figure 17. Most countries have increased the number of academic staff between 2000 and 2015, sometimes by 175% - only a few countries (Czech Republic, Estonia, Finland) have (slightly) reduced the number of academic staff.

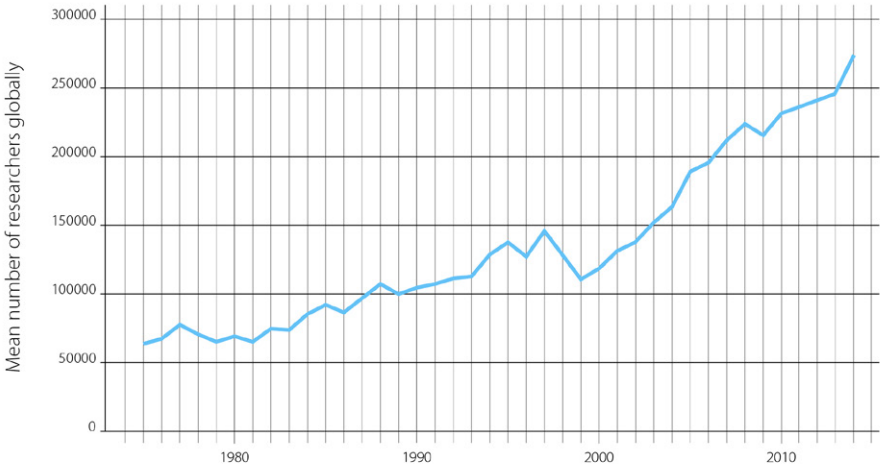

Figure 16. Average number of academic staff in up to 228 countries around the globe, 1975-2015.

Source: Own depiction, based on UN data "Academic staff in tertiary education (ISCED 5-8"; http://data.un.org/Data.aspx?d=UNESCO&f=series%3aT_56).

Figure 17, moreover, sets this data in relation to the number of changes in student enrollment numbers during the same period (2000-2015). We see that enrollment numbers have increased in all countries, except Latvia. We also see some correlation between both developments (Pearson's r=0.59) as staff and student numbers on average seem to go hand in hand. Yet, there is quite some variation across countries: in some, staff and student numbers have witnessed roughly similar magnitude of change (e.g. Germany, Belgium, Hungary); in some, student numbers have increased (much) more strongly than staff numbers (e.g. Cyprus, Czech Republic, Estonia, Finland, Romania, Slovakia) indicating a worsening staff-to-student ratio; yet, in many countries the percentage increases in academic staff have outpaced those of student increases (Italy, Latvia, Malta, Norway, Poland, Slovenia, Spain, UK). In these latter countries, the staff-to-student ratio has improved, at least as far as this aggregate data tells us.

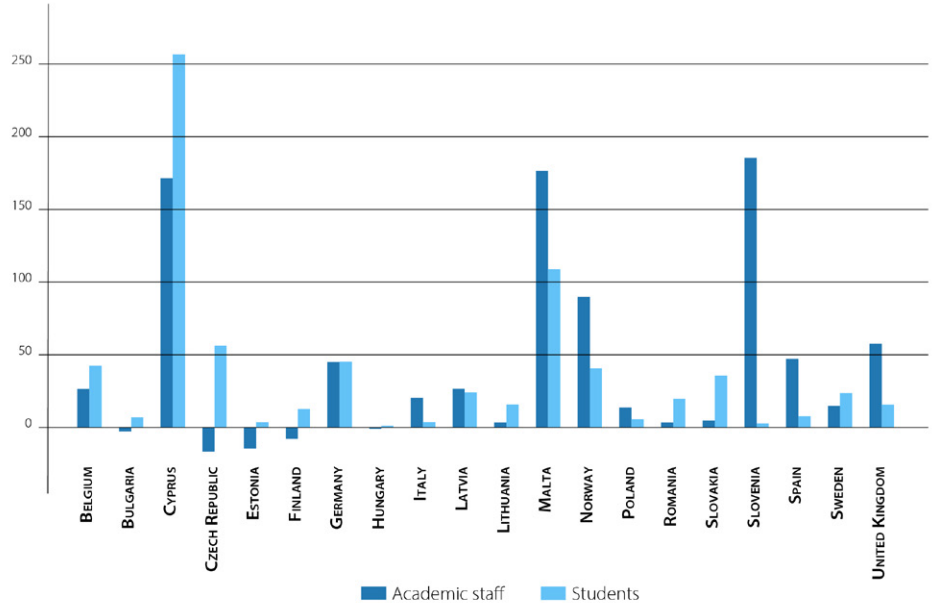

Figure 17. Percentage change in the number of academic staff and number of students, 2000-2015

Source: Own depiction based on Eurydice [2017]: 19-20.

Not all academic staff are in the same position. Some are more junior or more senior; some have full-time positions, others part-time; some hold permanent positions, others temporary. The OECD and Eurydice (2017) data allow digging deeper into these dynamics. Figure 18 shows the respective share of "senior", "intermediate", "junior", and "other" academic staff in 2020. We observe quite some variation. In some countries the share of senior staff is very low, mostly below 20 percent, often below 10 percent. In Korea, in contrast, the majority of academic staff is coded as senior. Also noteworthy is that in some countries the share of junior staff is very large. This is most extreme in Germany (where hardly anyone is "intermediate"), but also in Costa Rica, Poland, and Hungary. Other countries have very low shares of junior staff, especially in Australia and the Slovak Republic. The link to spending patterns is not straightforward: on average, senior staff earn higher wages, thereby a larger share of senior researchers should be related to higher spending. Yet, it depends on the respective combination of senior, intermediate, and junior staff. To take one extreme case, public spending in Germany is below the OECD-average, yet it still manages to have rather high academic output. Part of the reason is that much of this productivity is made "on the backs" of temporally employed junior scholars, who make up a large share of Germany's higher education system, competing for rather few more senior positions. Generally speaking, it is not the case that we find all high-spending countries at one end and the low-spenders on the other, for example. There is also no obvious link to public-private differences or the like.

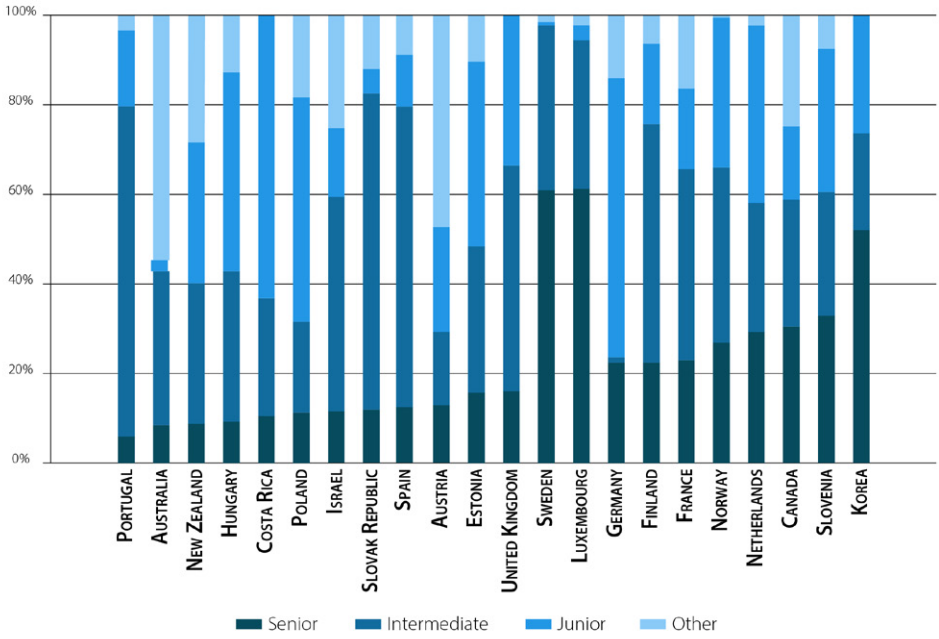

Figure 18. Academic staff by seniority level, 2020.

Source: Own depiction, based on OECD 2022: http://stat.link/lz1w80.

A related piece of information are the concrete employment conditions, especially whether academics are employed on *permanent or temporary/ fixed-term contracts*. We find information on this in the OECD's (2021) "Academic Precarity report", in the EU's Eurydice reports, as well as in an ILO (2018) report on employment terms and conditions in tertiary education. A first important finding from these studies is that we witness an increasing share of academic staff in non-standard employment (OECD 2021: 30). Part of the reason is a move away from "basic/core funding" to more competition-based and project-based funding, which by definition is temporarily fixed. "De-standardisation" and "dualisation" are general labour market trends, not specific phenomena of the academic contexts (Emmenegger et al. 2012): in many countries about 1/3 of all workers work in non-standard employment. Yet, this is an even larger phenomenon in academia (Boman 2017; Teixeira 2017).

Despite this general trend, substantive country differences exist. In Europe, all countries use permanent and temporary contracts in academia, except Latvia and Slovakia where only fixed-term contracts exist. According to Eurydice, the highest share of permanent contracts appears in France, Malta, and Turkey, where more than 80 percent of academic staff are permanently employed. In contrast, in Austria, Estonia, Finland, Germany, and Serbia less than 30 percent have permanent contracts. Put differently, the large majority of academic staff in these countries' higher education systems are

temporarily employed. Generally, job security tends to be higher among more senior staff, which largely follows because of selection effects.

Again, there are links to the types of funding, but once again in non-trivial ways. While the shift towards more project-funding and competition-based funding is part of the explanation why we see an increasing de-standardisation in higher education, this is by far not the only cause, as these types of contracts were already common before this shift in funding (but again there is a lot of country variation in this). Moreover, the employment patterns are not directly linked to the spending patterns.

For the European countries we also have information on the respective shares of workers employed *full-time and part-time*. Before showing this data, it should be noted that there are several kinds and even more reasons for part-time employment (e.g. voluntary vs. involuntary part-time work). Two countries showing similar values might thus still have very different underlying dynamics. Also, there is an important gender dimension here, as usually women are much more likely to work part-time.

Table 3 shows the share of academic higher education staff working part-time. We see enormous variation. In some countries (Italy, Romania, France, Turkey, Luxembourg), essentially nobody is working part-time, whereas this is the norm in the German-speaking countries (Austria, Germany, Switzerland), Liechtenstein, parts of the Baltics (Latvia and Lithuania). There are also many countries with more mixed patterns. Table 3 also shows that in most countries, these shares have hardly changed over the last ten years. But noteworthy changes are visible in Greece, Hungary, Cyprus, and Latvia (all showing increases) as well as in Slovenia (showing a decrease), which might be related to an increasing feminisation of the workforce and more flexible career patterns. Again, there certainly is some relationship with spending patterns, but not in a straightforward way, since we do not observe any similar country clustering as in the spending figures shown above.

Table 3. Share of academic staff in higher education (ISCED 5-8) working part-time, 2013-2021.

Source: Own depiction, based on Eurostat data, dataset "EDUC_UOE_PERD05".

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Italy			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Romania	0.3	0.6	0.3	2.0	2.1	2.0	0.5	1.4	1.2
France				7.9	6.8				
Turkey	8.1								
Luxembourg			2.0	2.9	10.2	5.6	4.5	6.0	7.1
Poland	4.8	4.4	4.2					8.9	10.2
Serbia	11.0	10.9	10.4	10.5	11.4	11.5	12.3	11.3	11.6
Slovakia	15.1	15.5	15.0	14.2	14.7	15.4	15.5	15.2	15.9
Greece		0.0	8.8	18.5	19.2	9.2	24.4	10.5	23.6
Sweden	29.3	28.9	28.7	29.4	29.2	28.9	29.2	29.2	30.9
Hungary	30.1	29.8	28.8	29.5	31.0	32.9	32.6	35.1	37.1
United Kingdom	39.5	39.7	38.2	38.0	37.9	38.4	33.9		
Spain	32.7	33.2	33.9	33.8	34.8	35.3	35.7	35.9	36.3
North Macedonia	2	0	3.4	24.7	20.8	34.5	36.4	36.9	33.5
Estonia		39.5	40.1	37.8	37.2	39.4	36.6	36.6	35.4
Norway	31.2	33.4	35.3		37.5	36.9	37.9	37.2	37.8
Bulgaria	39.5	38.9	40.7	37.6	37.6	38.1	38.0	37.6	37.9
Croatia	42.2	41.5	39.6	41.0	39.7	39.2	40.0	40.0	41.1
Denmark		39.9	43.1	43.9	42.6	42.8	42.4	40.7	39.0
Portugal	40.9	39.9	39.2	40.7	41.5	42.6	44.3	43.0	43.7
Bosnia and Herzegovina							47.3		
Netherlands			55.9	56.3	40.5	50.3	47.8	47.9	47.7
Albania									47.9
Malta	51.2	54.7	54.5	53.6	54.4	55.9	52.7	54.3	52.5
Belgium	44.3	49.9		51.6	52.5	53.2	53.7	53.9	54.1
Cyprus	39.5	47.2	49.1	55.4	54.8	57.1	57.6	67.6	68.0
Germany	59.7	60.7	61.4	61.5	61.5	61.5	63.3	63.0	62.9
Lithuania	59.7	59.3	60.5	62.9	63.4	63.4	63.8	65.1	67.6
Austria	66.6	66.5	66.9	65.1	65.6	67.0	67.8	66.4	65.1
Slovenia	70.1	69.0	69.4	69.4	69.5	68.1	69.3	69.4	55.7
Switzerland	70.0	70.6	70.6	71.5	71.2	73.0	73.7	73.7	73.6
Latvia	72.3	78.9	81.0	80.3	79.3	82.2	84.8	81.7	82.6
Liechtenstein	81.1	78.6	83.2	84.2		93.3	86.4		

Conclusion & recommendations for future research

This report aimed to provide a concise overview of funding of higher and further education research in countries around the globe. Section 2 of this report presented data from countries around the globe and partly going back in history to the mid-20th century to outline variation across and within countries as well as over time. The goal was to find a balance between global coverage and in-depth analysis, identifying the most important patterns and trends. Section 3 of the paper summarised some key findings on the political and socio-economic causes of higher education funding and Section 4 discussed some consequences. Needless to say, one could easily spend several hundreds of pages delving further into the details and complex relationships, but that would simply exceed the goals of this report.

A couple of avenues for future research and analysis should have become clear during the paper. First of all, while huge progress has been made over the last years in terms of data availability and quality, we still need much more and better data to really be able to analyse the patterns well. On the one hand, the data availability is still much better for the wealthy OECD countries than for the rest of the world. There is a high need for high-quality comparable data especially for countries in Latin America, Africa, and Southeast Asia; this is even more true for autocracies, where our information is generally much worse. On the other hand, several indicators still remain too broad-brushed so that more fine-grained data would be extremely helpful. In particular, data on further education and adult education is still quite sketchy, as it is for important elements like performance-based funding. Relatedly, while this report has tried to shed light on the most recent developments during the "poly-crisis" (Great Recession + pandemic + "refugee crisis" + Russia crisis + others), we will be much better able to evaluate the consequences of these once more time has passed and more data has become available.

Second, while by now a number of high-quality evaluation studies exist, we still need a much better understanding of the causes and consequences of higher education funding. In particular, studies allowing for causal inference would be very welcome. Particularly relevant in this context: we still know surprisingly little about the role of unions, teacher unions, and student unions in higher education policy and research policy. Another avenue for future research appears to be the relationship between funding and academic employment (conditions), where some patterns seem to exist but have not been systematically assessed yet.

Third, scholars and policy-makers agree that funding is an important dimension of higher education policy – as is governance. Analyses of governance structures are crucial, because we need to know how higher education systems are steered and managed. Many of the elements and phenomena discussed here (e.g. increases in enrollment numbers, privatisation, performance-based funding, and many others) are obviously linked to governance questions (Who steers? Who decides? Who implements? Who evaluates?). Yet, the bodies of literature on funding and governance still remain quite distinct from each other (Jungblut et al. [2023] is one of the only comparative studies combining analyses of funding and governance). Future work should better analyse the interactions between patterns of higher education funding and patterns of higher education governance.

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Appendix

Table A1: Government expenditure on tertiary education as a share of GDP (Source: Own depiction based on UNESCO data, the data describes the year 2020 (+/- 2 years depending on data availability, accessed 27. September 2023)

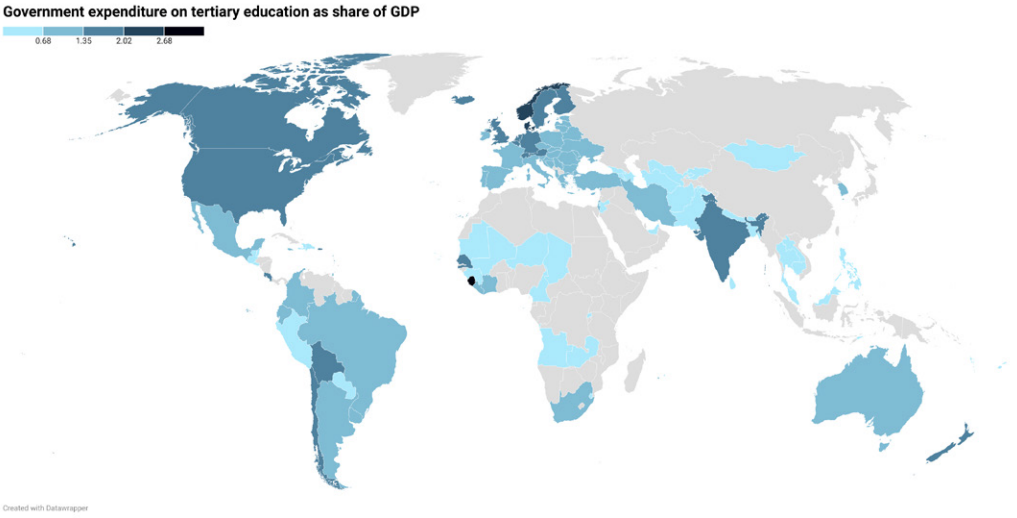
Country	Government expenditure on tertiary education as share of GDP	Data referring to year
Sierra Leone	3.34779	2021
Denmark	2.42957	2020
Norway	2.31173	2020
Bolivia	1.95354	2020
Sweden	1.8848	2020
Austria	1.85949	2020
Macao (China)	1.82731	2021
United States of America	1.80505	2020
Netherlands	1.6803	2020
Belgium	1.61698	2020
Finland	1.58668	2020
India	1.56936	2021
Canada	1.56866	2020
United Kingdom	1.51377	2020
Barbados	1.49603	2022
Senegal	1.49514	2022
Iceland	1.46798	2020
Chile	1.44513	2020
Costa Rica	1.41252	2020
Switzerland	1.41093	2020
New Zealand	1.4029	2021
Germany	1.38622	2020
Ukraine	1.31053	2020
South Africa	1.30651	2022
France	1.28447	2020
Türkiye	1.25782	2020
Australia	1.19409	2020
Brazil	1.17735	2020
Slovenia	1.15676	2020

Country	Government expenditure on tertiary education as share of GDP	Data referring to year
Poland	1.14424	2020
Estonia	1.13202	2020
Jamaica	1.1099	2021
Spain	1.078	2020
Ecuador	1.03524	2022
Hong Kong (China)	1.01335	2021
Liberia	.99569	2021
Croatia	.96902	2020
Mexico	.94416	2020
Lithuania	.93104	2020
Argentina	.92327	2021
Republic of Korea	.9169	2020
Cyprus	.91448	2020
Serbia	.90706	2021
Slovakia	.90485	2020
Tonga	.90339	2022
Israel	.89215	2020
Italy	.87649	2020
Portugal	.87246	2020
Czechia	.8611	2020
Maldives	.8496	2022
Iran	.84481	2020
Latvia	.84436	2020
Ireland	.8443	2020
Bulgaria	.82634	2020
Saint Vincent and the Grenadines	.8102	2022
Republic of Moldova	.8073	2021
Romania	.80675	2020
Bosnia and Herzegovina	.80672	2019
Colombia	.80302	2020
British Virgin Islands	.77775	2021
Belarus	.76083	2021
Hungary	.75697	2020
Trinidad and Tobago	.75389	2022
Côte d'Ivoire	.75049	2022
Singapore	.74754	2021
Albania	.73958	2020
Uruguay	.72211	2022

Country	Government expenditure on tertiary education as share of GDP	Data referring to year
Greece	.70245	2019
Peru	.67169	2022
Uzbekistan	.66685	2022
Niger	.66059	2018
Paraguay	.66037	2021
Mali	.65669	2021
Afghanistan	.64208	2021
Philippines	.64101	2022
Malaysia	.63248	2022
Eswatini	.62774	2021
Thailand	.59807	2022
Saint Kitts and Nevis	.59001	2022
Cabo Verde	.58304	2021
Azerbaijan	.58139	2021
Rwanda	.56228	2023
United Arab Emirates	.55715	2021
Bhutan	.5389	2022
Cook Islands	.51136	2022
Marshall Islands	.47914	2022
Luxembourg	.45656	2020
Turks and Caicos Islands	.43368	2022
Belize	.42686	2022
Turkmenistan	.42164	2020
Guinea	.41242	2018
Angola	.39808	2022
El Salvador	.39421	2021
Mauritius	.38704	2022
Dominican Republic	.37043	2019
Bangladesh	.35459	2020
Chad	.35304	2021
Curaçao	.3366	2020
Zambia	.33254	2017
Guatemala	.32833	2022
Nepal	.32832	2022
Mauritania	.32479	2022
Palestine	.31966	2021
Sri Lanka	.30558	2022
Vanuatu	.28934	2020

Country	Government expenditure on tertiary education as share of GDP	Data referring to year
Georgia	.26839	2021
Armenia	.24533	2022
San Marino	.24074	2021
Jordan	.23186	2022
Cameroon	.227	2022
Bermuda	.19011	2023
Cambodia	.17615	2021
Cayman Islands	.15415	2022
Timor-Leste	.15297	2021
Sao Tome and Principe	.1333	2022
Andorra	.12379	2022
Kyrgyzstan	.11669	2022
Mongolia	.10914	2022
Haiti	.10731	2021
Pakistan	.07091	2022
Lao	.04324	2022
Monaco	.037	2021
Fiji	.01584	2021

The table turned into a map as visible as Figure 2 of this document on page 6.



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Julian Garritzmann
on behalf of Education International

May 2024

Education International
Internationale de l'Education
Internacional de la Educación
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Head office
15 Boulevard Bischoffsheim
1000 Brussels, Belgium
Tel +32-2 224 0611
headoffice@ei-ie.org
www.ei-ie.org
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