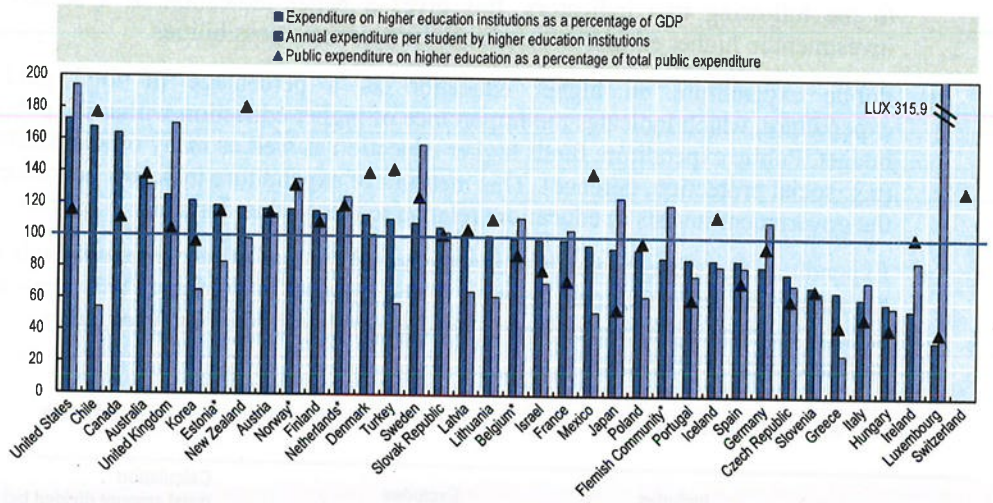
Figure 3.1. Expenditure on higher education (2015)

Selected measures of expenditure on higher education, OECD average = 100



Notes: *Participating in the Benchmarking Higher Education System Performance exercise 2017/2018.
The calculation of the three selected measures of higher education expenditure is summarised in Table 3.1. The OECD average expenditure on higher education institutions as a percentage of GDP is 1.49%, average annual expenditure per student is USD 15 479, and average public expenditure on higher education as a percentage of total public expenditure is 3.04%.
Belgium and the Flemish Community: Data exclude independent private institutions.
Korea: Data exclude expenditure on some educational programmes provided by ministries other than the Ministry of Education (e.g. military academies).
Norway: Educational expenditures are reported as percentage of mainland GDP (excluding off-shore oil and international shipping).
United States: Data include some post-secondary, non-tertiary education that occurs within higher education institutions.
Source: Adapted from OECD (2018[71]), *OECD Education Statistics*, https://doi.org/10.1787/edu-data-en; data provided by the Flemish Ministry of Education and Training.

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The implication of using different measures is very important to keep in mind when assessing the relative position of a country in terms of higher education expenditure. For example, in 2015, Chile spent over one-and-a-half times the OECD average as a share of GDP or public expenditure. At the same time, given that Chile's GDP per capita is below the OECD average, per-student expenditure in this country was only about half of the OECD average. As another example, expenditure per student in Sweden and the United Kingdom was among the highest in the OECD in 2015. However, Sweden's expenditure relative to GDP and the United Kingdom's expenditure relative to total public expenditure were in line with the OECD average.

Box 3.1. Correlates of higher education expenditure

As shown in Figure 3.1, the position of countries can vary considerably depending on which measure of higher education expenditure is considered. This box illustrates some potential drivers of the different measures of higher education expenditure, and shows their statistical association with selected economic and demographic variables across OECD countries between 2012 and 2015 in the table below.

GDP per capita is strongly associated with expenditure per student (r=0.85), but not with the other two expenditure measures. This indicates that, even if countries are willing to invest a higher share of their GDP or public expenditure in higher education, less wealthy countries find it difficult to provide their institutions with the same level of resources as the wealthier ones.

Demographic ratios matter as well. For example, countries with a larger share of the population in the typical age range for enrolment in higher education may have to spend a larger fraction of their wealth on it. In addition, a larger share of young people could put political pressure on governments to prioritise higher education in public budget allocations. The available data suggest that that the share of 18-24 year-olds in the population is positively related to public expenditure on higher education as a percentage of all public expenditure and to the expenditure on higher education institutions as a percentage of GDP.

Finally, higher education's share of total government expenditure is negatively related to the share spent on social protection (including old-age pensions and other welfare transfers) for individuals in old age (i.e., older than the standard retirement age in the country). This reflects the allocation of a limited public budget among different expenditure categories, perhaps also in relation to the age structure of population (as mentioned in the previous paragraph).

Table 3.a. Correlation between selected measures of higher education expenditure and economic and demographic variables (2012 to 2015)

	GDP per capita, PPP USD	Share of the population aged 18-24	Government expenditure on old age social protection as a percentage of public expenditure
Total public expenditure on higher education as a percentage of public expenditure	-0.03	0.65*	-0.48*
Expenditure on higher education institutions as a percentage of GDP	-0.14	0.43*	-0.31
Annual expenditure per student by higher education institutions	0.85*	-0.11	0.05

Note: The correlation coefficients are calculated based on a sample of 33 to 35 OECD countries (96 to 106 observations), depending on the couple of variables. The exceptions are the three correlation coefficients related to expenditure on old age social protection, which are based on a sample of 27-36 OECD countries (100-144 observations). The asterisk indicates results that are significant, at the 5% confidence level, accounting for clustering of the error at the country level.
Sources: Adapted from OECD (2018[7]), *OECD Education Statistics*, https://doi.org/10.1787/edu-data-en; OECD (2018[8]), *OECD National Accounts Statistics*, https://doi.org/10.1787/na-data-en.

Differences in the level of higher education expenditure can be seen in the participating jurisdictions. Expenditure per student in the Flemish and Dutch higher education systems was about 20% higher than the OECD average. When expressed as a percentage of GDP, expenditure on higher education institutions in the Netherlands was also higher than the OECD average, while expenditure was over 10% lower than the OECD average in the Flemish Community.

Estonia spent 1.8% of its GDP on higher education in 2015, about 15% more than the OECD average. Higher education expenditure in Estonia has grown dramatically over the last 15 years; in 2005, it was still close to 1% of GDP, well below the OECD average (OECD, 2016[9]). The current high level of expenditure relative to GDP is mainly due to the financial resources invested by the government (compared to other OECD countries, Estonia has a high level of higher education expenditure as a proportion of total public expenditure) and has been well-supported by international funding through European Union initiatives (see Section 3.3.2). However, expenditure per student in the Estonian higher education system was over 20% lower than the OECD average, consistent with the relatively low level of GDP per capita in Estonia (see Box 3.1).

Norway had one of the highest levels of expenditure per student across all higher education systems in the OECD area. Norway is a relatively wealthy country and its high level of public investment in social services extends to higher education. As a result, Norway spent 4% of its public spending on higher education, one of the highest shares across OECD countries. Due to the relatively small amount of private expenditure on higher education (see Section 3.3.2), Norway ranked lower in terms of the share of GDP devoted to higher education, although still above the OECD average.

3.1.1. Higher education compared to education at other levels

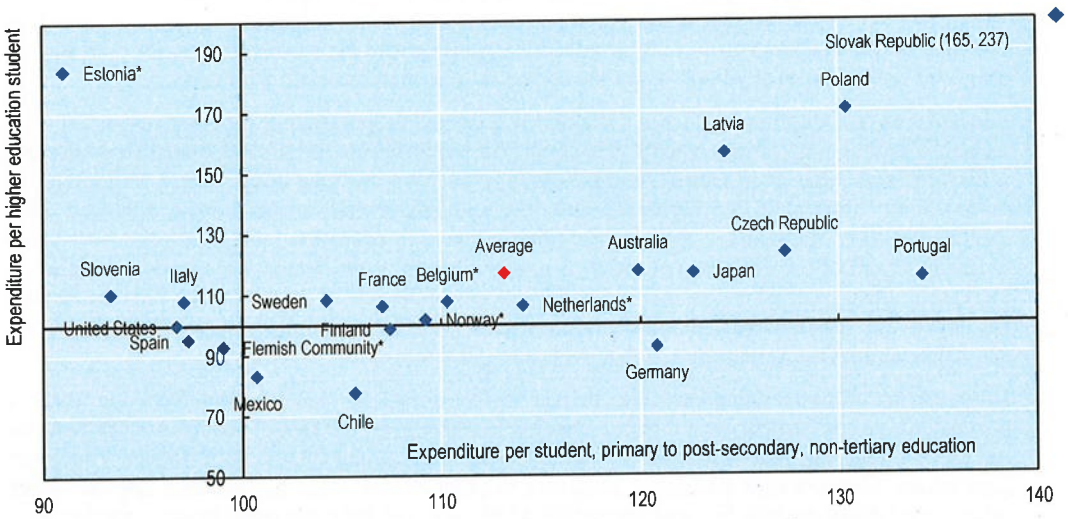
Higher education systems must compete for public funding not only with other policy areas, but also with other sectors of the education system. OECD evidence shows that in the years following the economic crisis of 2008/2009, governments have taken a variety of approaches to distributing expenditure between different levels of education (Figure 3.2).

On average across OECD countries, expenditure per student in higher education and at lower levels of education (excluding pre-primary and early childhood education) grew at a similar pace (about 10% to 15%) between 2008 and 2015. However, this varied by country; for example, in the Slovak Republic, expenditure per student grew by over 60% in this 7-year period for both levels of education, while Iceland saw a contraction by about 20% at both levels. Germany and Korea combined a substantial increase (over 20%) in the expenditure per student at lower levels of education with a decrease in expenditure on higher education.

In Estonia, expenditure per student grew at the highest rate among OECD countries (about 80%) in higher education, partly due to international funding (Section 3.3). However, expenditure per student decreased at lower levels of education. In Belgium, expenditure per student grew at a slower pace in higher education than at lower levels of education, related to the large increase in the number of students and the difficulties to translate this into a concomitant increase in private expenditure (given the low levels of tuition fees) (OECD, 2017[10]). In the Flemish Community, the rate of growth was negative at both levels of education, but the decrease was largest (-7%) at the higher education level.

Figure 3.2. Annual expenditure per student by higher education institutions, 2015 relative to 2008

In equivalent USD converted using PPPs for GDP, by level of education, based on full-time equivalent, 2008=100



Notes: *Participating in the Benchmarking Higher Education System Performance exercise 2017/2018.
Belgium and the Flemish Community: Data exclude independent private institutions.
Estonia: The data sources changed in 2013. As a result, the comparison between 2008 and 2015 must be done with caution.
The Flemish Community: The expenditure in 2008 for primary and secondary education included a prepayment of the operating funds for 2009. Therefore, the 2015 relative level of expenditure in primary to post-secondary, non-tertiary education is underestimated for this jurisdiction.
Korea: Data for education levels below higher education in 2015 include KRW 4.7 trillion carried over from previous years.
Sources: Adapted from OECD (2018[7]), *OECD Education Statistics*, https://doi.org/10.1787/edu-data-en; OECD (2018[8]), *OECD National Accounts Statistics*, https://doi.org/10.1787/na-data-en; data provided by the Flemish Ministry of Education and Training.

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While the per student cost of education increased on average at a similar pace in higher education as in other levels across OECD countries, student enrolments have been increasing much faster in higher education (with notable exceptions such as Estonia, where higher education enrolments have decreased since 2005, based on calculations from (OECD, 2018[7])). This has led to a sharp increase in the overall cost of higher education, which characterised this sector since the 1990s (OECD, 2008[11]). As a result, there has been increased attention on the factors behind the cost of higher education (see Box 3.2).

Almost all OECD countries spend more per student on higher education than at other education levels. On average across the OECD, expenditure per student in higher education is around USD 16 000[1], one-and-a-half times higher than in upper secondary education (Figure 3.3). This difference may seem unjustified, as evidence shows that intervention at lower levels of education are more effective than at higher education for improving individuals' skills and successive life outcomes (OECD, 2015[12]). However, important structural factors make higher education more costly than other levels, two of

which are particularly prominent: spending on research and development (R&D) in higher education and academic staff salaries.

Box 3.2. Potential reasons behind growing costs in higher education

The growth of per student cost in higher education is influenced by various factors, some related to economic context, some partially under the control of governments and institutions.

Education necessarily requires large volumes of qualified labour among its input resources. The scope for productivity improvements in sectors with requirements for advanced qualifications and skills is not as large as in capital-intensive sectors such as manufacturing, where technology is more directly translated into higher productivity and labour can be more easily replaced with capital. However, the salaries of highly qualified workers in education must keep pace with those in other sectors of the economy in order to retain workers in the sector. This leads to a relative increase in the cost of education as productivity grows in the rest of the economy. This theoretical argument, the "Baumol cost disease", is consistent with the growing costs observed in higher education across OECD countries in recent decades (Baumol et al., 2013[13]).

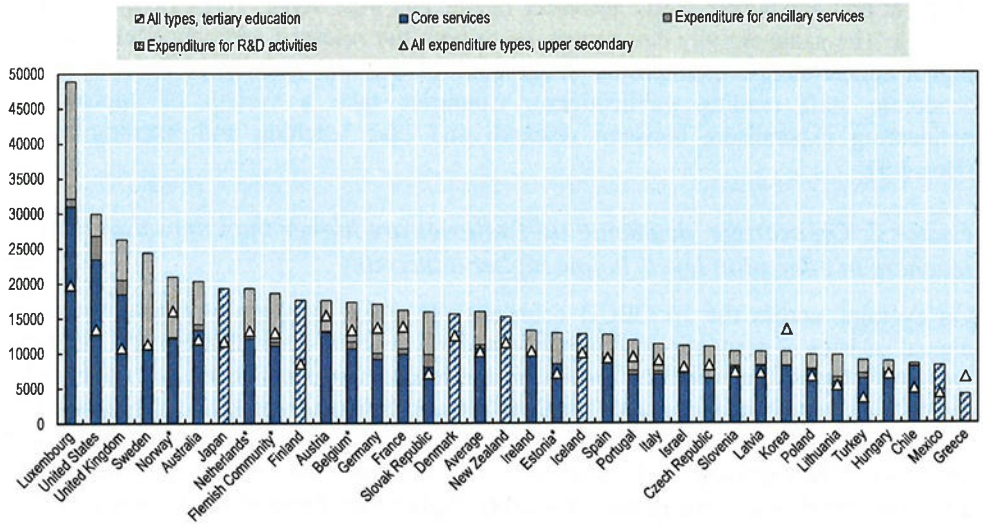
However, not all of the rising costs are attributable to external economic factors. Systemic features also determine cost structures in higher education. For example, the cost of academic staff depends on their career advancement and on their contractual arrangements with higher education institutions. Systems with an ageing academic workforce may incur higher costs due to higher salaries and pension costs. In some countries like Greece and Italy, the majority of academic staff is older than 50. Traditional classroom-based teaching modalities are also expensive, and contribute to rising costs as student numbers grow in many countries. Growing student numbers and the increasing competition among institutions for students and research funding has also contributed to an increase in the demand for administrators and professional staff in higher education, whose costs must also be covered.

Other factors unrelated to staff costs can also influence the growth of per-student cost. For example, there can be inefficiencies in how higher education institutions are run, both within and between individual institutions, such as difficulty adapting their profile in situations of declining enrolments, or redundancy in course offerings maintained by geographically close institutions.

Adapting to these factors to ensure the future sustainability of higher education is one of the key challenges facing governments. Various policy initiatives and systemic reactions have emerged in recent years to mitigate these factors. For example, in the face of increasing staff costs, there is evidence of a casualisation of academic careers, i.e. an increased prevalence of temporary and part-time contracts among academics, which could also lead to changes in the salary cost structure. The future growth in the cost of higher education could also be limited by the increased prevalence of online learning (Deming et al., 2015[2]) and open educational resources. These resources present an opportunity for cost saving, although they can also have substantial development and maintenance costs (OECD, 2015[3]). Governments in many countries are supporting mergers and partnerships between institutions, although there is conflicting evidence regarding the effectiveness of this strategy (Rocha, Teixeira and Biscaia, 2018[14]; Williams, 2017[15]).

Figure 3.3. Annual expenditure per student, by type of services (2015)

In equivalent USD converted using PPPs for GDP, by level of education, based on full-time equivalent



Notes: *Participating in the Benchmarking Higher Education System Performance exercise 2017/2018.
Austria: Data exclude R&D expenditure from sources other than the Federal Ministry for Science, Research and Economy.
Belgium and the Flemish Community: Data exclude independent private institutions.
Czech Republic: Data exclude R&D expenditure from sources other than the Ministry of Education.
Korea: Data exclude expenditure on some educational programmes provided by ministries other than the Ministry of Education (e.g. military academies).
United States: Data exclude funds for federal R&D centres administered by universities; data include some post-secondary, non-tertiary education that occurs within higher education institutions.
Source: Adapted from OECD (2018[7]), *OECD Education Statistics*, https://doi.org/10.1787/edu-data-en; data provided by the Flemish Ministry of Education and Training.

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Factor 1: Higher education spending includes research and development

Distinguishing between R&D and other expenditure in higher education can be difficult (Box 3.3), but it is clear that R&D represents a significant portion of investment in higher education, accounting for around 30% of higher education expenditure on average across OECD countries.

Once R&D expenditure is excluded, the difference in the average expenditure per student in higher education and in upper secondary education is much smaller (around USD 1 000). This is evident also in the participating jurisdictions. For example, in 2015, annual expenditure per student for all services in higher education was close to USD 20 000 for the Netherlands. However, once R&D is excluded, annual expenditure per student for core and ancillary services was approximately equal to USD 12 000 which was slightly below the level of expenditure per student in upper secondary education. Similarly, Estonia spent around USD 8 000 per student (net of R&D costs), close to the annual expenditure per student for all services in upper secondary education (Figure 3.3).

Education and research in many higher education institutions are closely related, complicating the task of distinguishing between education and research expenditure. As

experience shows, "the results of research feed into teaching, and because information and experience gained in teaching can often result in an input to research, it is difficult to define where the education and training activities of higher education staff and their students end and where R&D activities begin, and vice versa" (OECD, 2015, pp. 265-266[16]). The same activity can contribute to both the research and education function of higher education (for example the supervision of doctoral students or the time spent by academic staff reading publications). Countries take a variety of approaches to delineating expenditure between research and core teaching and learning activities (Box 3.3).

Factor 2: On average, academic staff salaries are higher than the salaries of teachers in education levels below higher education

On average, across the 16 OECD countries for which data are available, the average annual salaries of academic staff at public and government-dependent private institutions[2] were 40% higher than those of 25-64 year-old teachers in upper secondary public schools in 2014 (calculations based on OECD (2016[9])). Salaries represent a large part of the overall costs of education institutions, and therefore affect the total cost of higher education. The relatively high salary of academic staff could reflect their qualifications and skills proficiency, which are on average higher than those of teachers at other levels of education (see Chapter 4).

In addition to these two factors, expenditure on ancillary services (i.e. student welfare services such as halls of residence, dining halls and health care; and services for the general public, such as museums) in higher education can play a more important role in certain OECD countries. On average, this accounts for less than 5% of higher education expenditure across OECD countries, a similar fraction as for upper secondary education expenditure. However, in the United States and the Slovak Republic, ancillary services account for a much larger fraction of higher education expenditure (over 10%).

Box 3.3. The distinction between education and research expenditure and other expenditure in the participating jurisdictions

Distinguishing between education (core and ancillary services) and R&D expenditure in higher education is challenging. In principle, labour costs should be allocated to R&D or other functions based on the amount of time spent by each staff member on each function. Other current costs (i.e. the general running costs of institutions) and capital costs should be allocated based on their intended use. However, given the potential difficulties in applying these principles to certain cost items, statisticians may also need to rely on conventions or value judgements (OECD, 2015[16]). As a result, the methods used to identify higher education R&D expenditure versus core education expenditure can differ across countries.

- **Norway** separates R&D and education expenditure based on information collected through surveys aligned with the concepts and definitions described above. Academic staff complete surveys on how they divide their time between R&D and other activities. Statistics Norway uses this information to determine what proportion of labour costs should be attributed to R&D. Other current costs are attributed to R&D or other activities in the same proportion (with a few exceptions). The share of higher education capital expenditure attributable to R&D is based on information collected at the institutional level on the intended use of capital assets.
- In **Estonia**, the information needed to determine the amount of R&D expenditure in

higher education institutions is gathered through an annual survey of all research and education institutions. Both salaries and other costs are allocated to R&D or education by the institutions filling in the survey. The institutions determine the fraction of a cost item that is attributable to R&D or other functions based on their own contextual knowledge, rather than standardised rules or practices at the national level.

- In the **Flemish Community**, higher education institutions are allocated targeted funding for R&D in addition to a block grant, which does not have a specific purpose (see Section 3.6). Statistical units in the Flemish Community calculate expenditure on R&D as the sum of the targeted R&D funding and one-quarter of the block grant. The coefficient of one-quarter is determined at the national level through a survey sent to all higher education institutions in the French and Flemish communities.
- Government funding is allocated to **Dutch** higher education institutions as either research or education funding (see Section 3.6). International statistics on government expenditure on R&D and education in the Netherlands are based on this initial allocation, rather than spending data collected at the institutional level.

3.1.2. Sectoral differences in higher education expenditure

This section examines how expenditure varies across the university and professional HEI subsectors of higher education in the participating jurisdictions. Important differences in the levels of expenditure per student can be observed across subsectors of higher education, which are also likely to be more broadly reflected in other countries (Lepori, 2010[17]). The per-student expenditure in professional HEIs is about half the size of per-student expenditure in universities (Table 3.2). Compared to universities, professional HEIs tend to offer higher education programmes that are less theoretically oriented and more occupationally specific, with a stronger work-based education component (see Chapter 2).

The lower cost per student in professional HEIs can reduce the overall per-student cost in the higher education system. However, to be effective in providing graduates with relevant skills for life and the labour market, it is important that these institutions have adequate resources to support and educate their students. Given the resources required to organise work-based learning and to develop strong links with the world of work and the regional economy, per student costs in professional HEIs may be higher than in universities, exclusive of R&D.

R&D expenditure accounted for a large part of the difference in the cost per student at universities compared to professional HEIs in Estonia, the Flemish Community and the Netherlands in 2015 (Table 3.2). In these three jurisdictions, universities spent about twice as much per student as professional HEIs. When excluding R&D expenditure, universities spent about 40% more than professional HEIs in Estonia, and they spent less than professional HEIs in the Flemish Community and the Netherlands.

While professional HEIs spend much less than universities on R&D in these jurisdictions, they nevertheless carry out some research. In 2015, R&D expenditure in professional HEIs amounted to about USD 200 per student in Estonia, USD 600 in the Flemish Community, and USD 500 in the Netherlands. The R&D expenditure of professional HEIs could increase in the future, given the policies in place in the Flemish Community and the Netherlands to increase the research capacity of these institutions (see Chapter 6).

Table 3.2. Annual expenditure per student by higher education institutions, by subsector (2015)

In PPP USD, based on full-time equivalent

			Estonia	The Flemish Community	The Netherlands
Universities	Total expenditure		14 394	24 321	29 286
		Excluding R&D	9 390	11 137	11 537
Professional HEIs	Total expenditure		6 773	12 787	12 972
		Excluding R&D	6 595	12 173	12 497

Source: Adapted from information provided by the participating jurisdictions. See the reader's guide for further information.

In Norway, the distinction between types of institutions (universities and university colleges) is less relevant, as the differences between them are blurring and they are not considered separate subsectors by the government (see Chapter 2). However, the historical divide between the two is still visible in terms of R&D expenditure per student, which is higher in older institutions traditionally classified as universities (Haegeland et al., 2015[18]).

3.2. Expenditure by resource category

Expenditure on higher education is broadly categorised as either current or capital expenditure. Both categories of expenditure cover fundamental parts of higher education activity, and the ideal mix between the two may vary over time, depending on the different needs of the higher education system in terms of personnel, student services, equipment, new infrastructure, renewal of facilities and infrastructure, and so on.

3.2.1. Current expenditure

Current expenditure is expenditure on goods and services consumed within the current year to sustain the production of higher education services. It covers compensation of personnel as well as other costs such as materials and supplies needed for teaching and other activities, academic staff travel, contracted services such as building cleaning and maintenance, and the payment of rent. Minor expenditure on items of equipment below a certain cost is also considered current expenditure. Current expenditure represents around 90% of total expenditure on average across OECD countries (OECD, 2018[19]).

The distribution of expenditure varies across higher education systems and institutions depending on priorities and organisational structures. For example, some institutions may choose to employ greater numbers of administrative and support staff to ensure academic staff focus on core teaching and research activities. Others may limit the number of support staff, requiring academic staff to undertake administrative tasks. As noted in Chapter 4, the profile of non-academic staff has evolved over time, with increasing numbers of professional staff responsible for various activities. This could result in very different staffing profiles and associated salary costs. Expenditure on personnel, however, can limit the flexibility of institutions to invest in other areas. For example, the entire budget of some universities in Italy is used covering the cost of academic staff (Fiorentino and Sanchirico, 2017[20]).

While salary costs make up the greater part of current expenditure in almost all countries, other current expenditure may play a prominent role in some higher education systems.

For instance, outsourced ancillary services, such as the provision of meals for university students by private companies paid by higher education institutions, are included in other current expenditure.

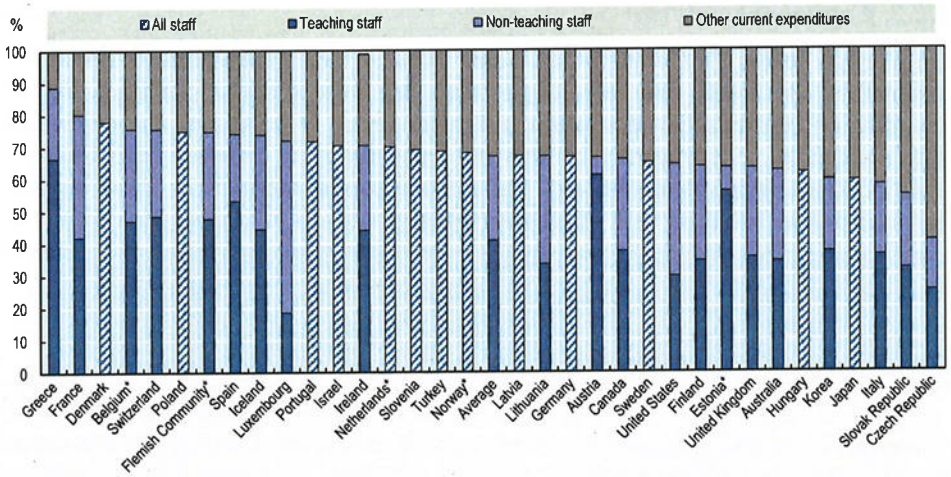
Staff compensation accounts for about two-thirds of current expenditure in higher education, on average across OECD countries (Figure 3.4). About two-thirds of this share is paid to teaching staff (academic staff with teaching duties), while the remaining one-third is paid to other staff. The share of staff compensation in current expenditure ranged from over 80% in France and Greece to around 40% in the Czech Republic in 2015.

Data on other (non-teaching) personnel cannot be further disaggregated, meaning that no internationally comparable statistics are available on the expenditure on administrative staff, researchers who do not teach, and other professionals employed by the higher education institution. The lack of data on other staff categories is a limiting factor in the comparative analysis of human resources in higher education systems (see Chapter 4).

Other current expenditure accounts for one-third of total expenditure, on average across OECD countries.

Figure 3.4. Distribution of current expenditure by resource category (2015)

Distribution of current expenditure on higher education as a percentage of total current expenditure



Note: *Participating in the Benchmarking Higher Education System Performance exercise 2017/2018.
Countries and jurisdictions are ranked in descending order of the share of expenditure on all (teaching and non-teaching) staff.
Belgium and the Flemish Community: Data exclude independent private institutions.
Source: Adapted from OECD (2018[7]), *OECD Education Statistics*, https://doi.org/10.1787/edu-data-en; data provided by the Flemish Ministry of Education and Training.

StatLink https://doi.org/10.1787/888933940531

In the Flemish Community, about half of current expenditure is spent on teaching staff, one of the highest shares across OECD countries. The Flemish government determines the level and growth of staff salaries in public and government-dependent institutions through regulation, although some room is left for institutional autonomy in setting salaries. The government also imposes a requirement that no more than 85% of institutional funding be spent on personnel (see Chapter 4).

Estonian higher education institutions allocated over 50% of their current expenditure to teaching staff, above the OECD average, but spent much less than the OECD average on other staff (less than 10% of current expenditure). Salaries, benefits and other aspects of the working conditions of academic staff are generally not regulated, and are left to higher education institutions (see Chapter 4).

Dutch higher education institutions spend around 70% of their budget on personnel, which is slightly above the OECD average (Figure 3.4). Personnel salaries and benefits are determined through a collective labour agreement between the Association of Research Universities in the Netherlands (VSNU) and the Netherlands Association of Universities of Applied Sciences (VH) representing the institutions, and the trade unions representing personnel. The government has no formal role in the negotiations (see Chapter 4).

Norway's share of expenditure on higher education personnel is in line with the OECD average. The large majority of employees of public higher education institutions are civil servants and are under public law and government regulation for recruitment and dismissal. Collective agreements setting salaries and benefits for civil service have been concluded between the Norwegian government, represented by the Norwegian Ministry of Local Government and Modernisation, and the central trade union confederations (see Chapter 4).

3.2.2. Capital expenditure

On average across OECD countries, some 10% of total expenditure is on capital, i.e. expenditure on assets that last longer than one year (OECD, 2018[19]). It includes spending on construction, renovation and major repair of buildings, and expenditure on new equipment, independently of how this expenditure is financed (e.g. through state appropriations or private donations). The share of capital expenditure varies significantly across countries and time, as it often involves large one-off purchases (Box 3.4).

Box 3.4. Capital expenditure on higher education in OECD countries

The share of higher education expenditure spent on capital assets varied substantially across OECD countries in 2014, from less than 5% to more than 20% (OECD, 2017[21]). The interpretation of this variable is difficult because of its intrinsic volatility. This box uses OECD time series to show that changes in capital expenditure are associated with government expenditure growth, but not with changes in higher education enrolment. This result is in line with previous findings for the United States (Tandberg and Ness, 2011[22]), and suggests that, across OECD countries, investment in higher education infrastructure may depend more on the availability of government funds than on infrastructural needs related to changes in enrolment.

Historical OECD data can be used to calculate the percentage change (at constant prices) of higher education capital and higher education total expenditure over the national average of the three previous years. This yields a sample of 270 data points, covering 30 countries from 1998 to 2011. The standard deviation of this measure of change for capital expenditure is four times larger than its average, and also four times larger than the standard deviation for total expenditure (calculations from OECD (2018[7])). This suggests that capital expenditure within a country can change dramatically from year to year, even when compared to the variation in total expenditure.

The high variability of capital expenditure across countries and time is mainly due to the fact that educational expenditure data are compiled on a cash accounting rather than an accrual accounting basis. This means that expenditure is recorded in the year in which the payments occurred.

Measurement on a cash accounting basis is not ideal for some analytical purposes (e.g. estimating the change in the capital stock), but it offers other analytical opportunities, such as studying the determinants of capital expenditure.

The table below shows the results of a regression of the change in capital and total expenditure (over a three-year average) on the three-year growth rate of higher education enrolment, real GDP and real government expenditure. The results show that total higher education expenditure depends on enrolment and government expenditure growth; although a 1% increase in these two variables translates to an estimated change of less than 1% in total higher education expenditure. In contrast, changes in capital higher education expenditure are associated only with real government expenditure growth. The coefficient implies that an additional 1% growth in government expenditure is associated with a 1.6% increase in higher education capital expenditure.

Table 3.b. Determinants of higher education capital and total expenditure (1998-2011)

Regression coefficients and cluster-robust standard errors (in brackets)

	Capital expenditure, change	All expenditure, change
GDP growth	-0.07 (0.43)	0.15 (0.11)
Enrolment growth	0.09 (0.23)	0.18* (0.09)
Government expenditure growth	1.65* (0.61)	0.38* (0.17)
R^2	0.05	0.14
Observations	270	269

Note: the dependent variables are the ratio between real capital (or total) higher education expenditure and its average value in the three preceding years (the change over the previous three-year average has been chosen due to the high volatility of capital expenditure); the independent variables are the three-year growth rates in higher education enrolment, real GDP and government expenditure. The asterisk indicates results that are significant, at the 5% confidence level, accounting for clustering of the standard error at the country level.
Source: Adapted from OECD (2018[7]), *OECD Education Statistics*, https://doi.org/10.1787/edu-data-en.

3.3. Sources of funding for higher education

3.3.1. Categories of expenditure sources

The activities of higher education necessary to generate education, research and engagement outputs and outcomes are funded through a variety of sources (Box 3.5):

- Government (central, regional or local government)
- Households
- Other private entities (including firms, religious institutions and other non-profit organisations)
- International agencies and other foreign sources.

However, there are considerable differences across OECD countries as to how the costs of higher education are shared among governments, students and their families, and other sources.

In some countries, government provides most of the funding to support higher education. In other countries, higher education institutions are able to generate their own revenue through tuition fees and through various commercial activities. In this case, households and other sources may make a considerable contribution towards the costs.

Box 3.5. Funding sources and transfers between sources

Government (public) expenditure refers to spending by public authorities at all levels of government. It includes direct public expenditure on higher education institutions and transfer of funds to private, non-educational entities.

Private expenditure by households refers to expenditure on higher education by students and their families. It includes payment to higher education institutions for tuition fees and other fees for educational and ancillary services provided by the institutions; costs for the purchase of education goods and services outside higher education institutions, such as books and other supplies, and private tutoring; other expenditure outside education institutions (e.g. living costs) if financed with transfers from the government (i.e. public grants, loans and scholarships). When reporting expenditure on education institutions (e.g. Figure 3.3 and Figure 3.5), the expenditure outside education institutions is excluded.

Private expenditure by other (non-household) private entities refers to expenditure by private businesses and non-profit organisations, including religious organisations, charitable organisations, and business and labour associations. This includes payments to higher education institutions; expenditure by private employers on the training of apprentices and other participants in dual programmes, as well as public subsidies to other private entities for the provision of work-based learning; subsidies to students or households. When reporting expenditure on education institutions, subsidies to students or households are excluded.

International sources of funding include public multilateral organisations for development aid to higher education such as the World Bank, United Nations, and non-governmental organisations. In Europe, a large part of international funding comes from European Union initiatives.

The source (public or private) providing financial resources to higher education may be different from the sector spending them due to **transfers between sectors**. For example:

- A grant awarded by a foundation to a student to pay tuition fees; or
- Development aid received by a regional government from an international organisation to modernise the higher education infrastructure.

Education expenditure indicators can be calculated before or after transfers. For example, in Figure 3.1, total public expenditure is calculated before transfers, meaning that government transfers to households are included in public expenditure. In contrast, expenditure on education institutions (as shown, for example, in Figure 3.5) is calculated after transfers, as the transferred funds are included in the category of household expenditure.

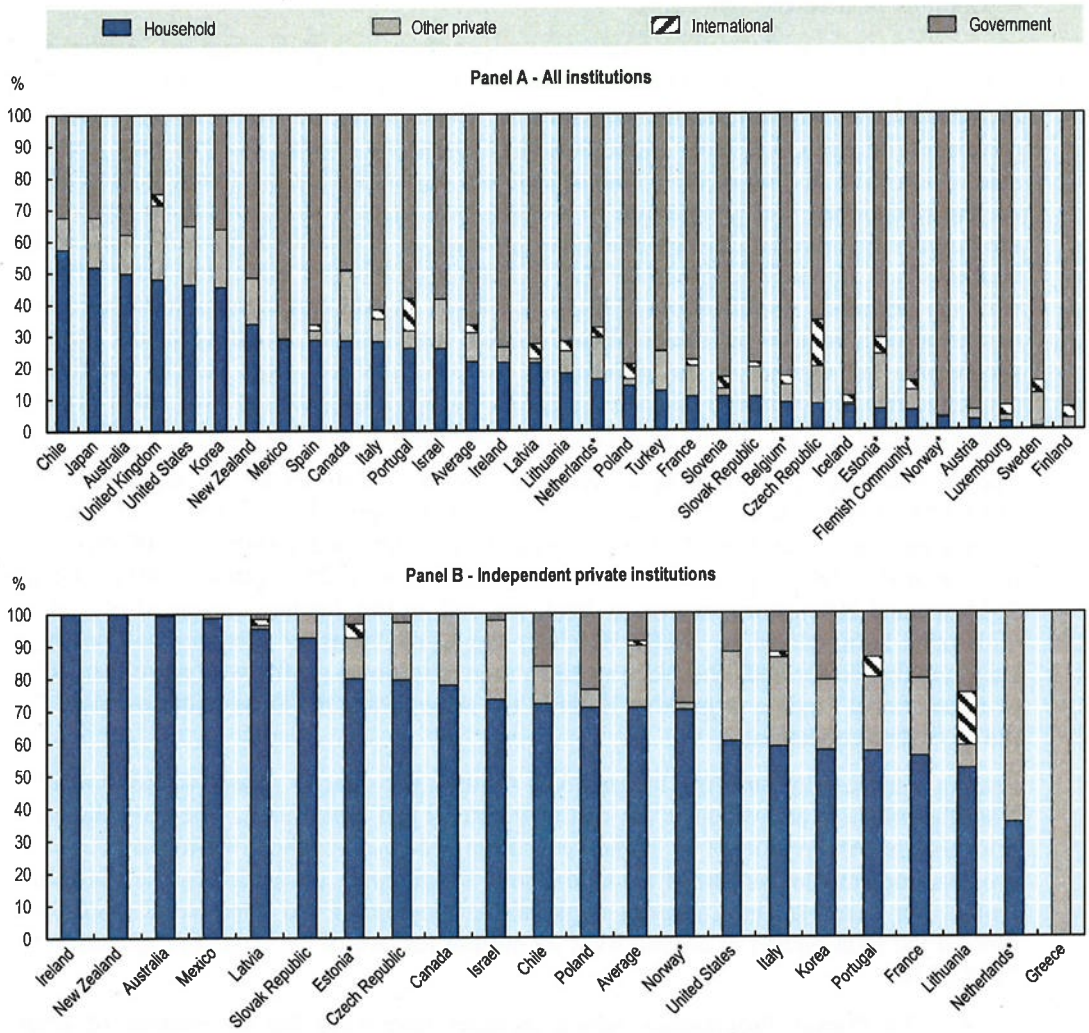
3.3.2. Distribution of funding by source across OECD higher education systems

Higher education is largely publicly funded in OECD countries, although there are substantial differences across systems. For example, in Finland and Norway, almost all expenditure on higher education institutions comes from the government (Figure 3.5) and there are no tuition fees in public institutions (except, in the case of Finland, for students coming from outside the European Economic Area). In other countries, such as Japan, Korea and the United States, the private sector (households and other private sources combined) accounts for around two-thirds of the expenditure on higher education institutions.

On average across OECD countries, household expenditure is the largest non-governmental source of funding for higher education, followed by expenditure by other private entities. The weight of international funding sources is marginal (less than 4% in

2015) in all OECD countries except for the Czech Republic, Estonia, Latvia, Poland and Portugal.

Figure 3.5. Sources of expenditure on higher education institutions (2015)



Note: *Participating in the Benchmarking Higher Education System Performance exercise 2017/2018.
Australia: expenditure from international sources is included in other (non-household) private expenditure. Belgium and the Flemish Community: Data exclude independent private institutions. The share of international sources for the Flemish Community has been assumed to be equal to the share for Belgium.
Source: Adapted from the 2016 UOE data collection; data provided by the Flemish Ministry of Education and Training.

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The distribution of expenditure by source also changes considerably across different types of institutions. While governments mostly fund government-dependent private institutions, independent private institutions rely on the government for less than half of their funding. In 2015, on average across countries with available data, households

accounted for over 70% of the expenditure on independent private institutions, and other private sources contributed about 20%. In Australia, Ireland, Latvia, Mexico and New Zealand, households contributed over 95% of expenditure on independent private institutions, while other (non-household) private sources contributed two-thirds of the expenditure on independent private institutions in the Netherlands and virtually all expenditure in Greece (Figure 3.5).

The government contributes the majority of expenditure on higher education institutions in all the participating jurisdictions. In **Norway**, virtually all the financial resources for higher education come from the government. Students pay no tuition fees (except in private institutions), and have access to public loans and grants. Students may also be able to convert a portion of their student loan into a grant if they meet certain conditions such as completing their programme in a timely manner or working in certain regions of the country or in certain professions after graduation. The limited financial burden on households is intended to guarantee the accessibility of higher education for everyone with the necessary qualifications (OECD, 2018[23]). In addition, similar to some other countries with low or no tuition fees, Norway combines this funding model with a progressive tax regime, so the government reaps a relatively large part of the future economic benefits of higher education (OECD, 2016[24]). Expenditure from other private sources is also very low in Norway, as are the levels of international funding.

The share of funding provided by international sources in **Estonia** was among the highest of OECD countries at about 5% of the total in 2015 (Figure 3.5). The share of funding from international sources fluctuates based on the start and termination of different internationally funded programmes. It was much larger in 2013 (around 30%) and in 2014 (around 20%). Furthermore, in 2014, the bulk of this funding supported education with only 20% related to R&D, which is the usual target of international funding. Belgium, the Netherlands and Norway had a more traditional profile with more than 90% of international funding targeted at R&D in the same year (OECD calculations based on the UOE data collection).

Estonia's success in attracting international funding not directly related to R&D results from the effective and efficient use of EU structural and other funds. The government's prioritisation of investment in higher education led to a number of programmes and projects implemented as part of the Operational Programmes co-funded by the European Union. For example, the European Regional Development Fund contributed more than 80% of the joint budget of around EUR 39 million for two of the largest programmes in 2008-2014:

- The Primus Programme, which includes improving the recognition of prior learning and work experience in higher education and the provision of study and career counselling services for students with special needs among its objectives.
- The Dora Programme, which aims, among other things, to improve the awareness of diverse teaching and research practices, and to increase the attractiveness of higher education institutions to international students.

Increasing international funding can help broaden the funding base of higher education. However, it is important to ensure that the activities supported by international funding are aligned with national policy priorities and that they are financially sustainable beyond the duration of the international funding (OECD, 2016[25]). The current allocation of European Structural and Investment Funds to Estonia ends in 2020, at which point

Estonia will have to find alternative sources of funding if it wishes to maintain the same level of resources.

The Netherlands has a relatively large share of funding from private sources other than households compared to many other OECD countries. This has been a feature of the Dutch higher education system since at least the 1990s (OECD, 2008[11]), and is related to government efforts to encourage public-private partnerships in higher education. The research council (NWO), for instance, contributes EUR 275 million annually to the Top Sectors initiative, of which more than EUR 100 million is funded through public-private partnerships, which support the establishment of joint research projects between researchers and businesses.

In **the Flemish Community**, the government contributes the large majority (80-90%) of higher education funding, but higher education institutions are allowed to charge moderate tuition fees and to look for research contracts in the private sector. Private funding therefore plays a larger role in the Flemish Community than in Norway, although it remains less developed than in the Netherlands.

3.4. Household spending on higher education

Household expenditure on education institutions includes tuition fees, other fees charged for educational services (e.g. registration fees and laboratory fees), and fees paid to the institutions for lodging, meals and other welfare services.

In many OECD countries, household spending on higher education can be substantial. Affordability of higher education for students depends both on expenditure on education institutions for tuition and on expenditure outside education institutions (e.g. on books and other items needed for their education, additional tutoring, living costs). For many students, expenditure outside institutions is the largest part of household expenditure on higher education (Hauschildt, Vögtle and Gwosć, 2018[26]; College Board, 2017[27]). However, data on expenditure outside higher education institutions are either not collected internationally or, where national data are available, are difficult to compare. This is a significant data gap in the cross-country analysis of higher education systems.

The burden of household expenditure is reduced in many countries through the availability of support measures such as grants, loans and vouchers. This section examines the tuition fees payable by households in different OECD jurisdictions and the policies and practices that governments have put in place to reduce financial barriers to higher education access.

Grants, loans and tuition fees jointly determine the financial accessibility of higher education. Therefore, governments often combine reforms in tuition fees with reforms in student support (OECD, 2016[9]). For example, governments may increase the availability of student loans to compensate an increase in tuition fees; or they may restrict institutional autonomy on tuition fee setting to prevent institutions from taking advantage of an increase in student aid (Espinoza, 2017[28]; Singell and Stone, 2007[29]).

3.4.1. Tuition fees

The bulk of household expenditure on education institutions consists of tuition fees. In 2016, the average annual tuition fees charged to full-time national students in bachelor's programmes in public institutions ranged from zero (no tuition fees) in around one-third of OECD countries with available data, to over USD 7 000 in Chile and the United States

(OECD, 2018[19]). The level of tuition fees across countries reflects the level of household expenditure on higher education institutions per student reported in Figure 3.6.

Even within the same countries, students can pay very different tuition fees. The requirement to pay tuition fees may depend on the sector (public or private), level of study, nationality of the student, student or family income or other factors.

There are substantial differences in fees between public and independent private institutions in all countries with available data for 2016. In Australia, Hungary, Israel, Italy and the United States, the average annual tuition fee for the bachelor's or equivalent level was over twice as large in independent private institutions as in public institutions. In Japan and Korea, the average annual tuition fee at this level of education was above USD 8 000 in independent private institutions, while it was about USD 5 000 in public institutions (OECD, 2018[19]).

Tuition fees can also differ substantially between national and foreign students (see Chapter 4), affecting both the financial resources of the higher education system and international student flows (OECD, 2017[30]).

In the participating jurisdictions, the proportion of national students paying tuition fees in short-cycle and bachelor's programmes varied from close to 0% in Norway to 14% in Estonia and 100% in the Netherlands and the Flemish Community in 2018 (European Commission/EACEA/Eurydice, 2017[31]).

Table 3.3. Autonomy to set tuition fees, by subsector (2017)

Bachelor's and master's level

Country	Subsector	National/EEA students	Non-EEA students
Estonia	Universities and professional HEIs	No tuition fees for programmes in Estonian	Free to set the level of tuition fees
	Independent private institutions	Free to set the level of tuition fees	Free to set the level of tuition fees
The Flemish Community	Universities and professional HEIs	The level of tuition fees is set by the government	Free to set the level of tuition fees
	Independent private institutions	Free to set the level of tuition fees	Free to set the level of tuition fee
The Netherlands	Universities and professional HEIs	The level of tuition fees is set by the government	Free to set the level of tuition fees
	Independent private institutions	Free to set the level of tuition fees	Free to set the level of tuition fees
Norway	Universities and university colleges	No tuition fees	No tuition fees
	Independent private institutions	Free to set the level of tuition fees (up to a ceiling)	Free to set the level of tuition fees (up to a ceiling)

Notes: In Norway, the Act on Higher Education provides that state allocations and tuition fees should be used for the accredited study programmes concerned and benefit the students. In practice, this means that independent private institutions cannot raise tuition fees above the cost of education.
Source: For universities, Bennetot Pruvot and Estermann (2017[32]), *University Autonomy in Europe III The Scorecard 2017*, www.eua.be/Libraries/publications/University-Autonomy-in-Europe-2017. For professional HEIs and independent private institutions, the OECD collected the information from the Estonian Ministry of Education and Research and from national higher education institution associations (for the Flemish Community, the Netherlands and Norway), based on the instruments developed by the European University Association (Bennetot Pruvot and Estermann, 2017[32]).

Institutions have varied levels of autonomy in setting tuition fees (Table 3.3). In **Estonia**, since the introduction of the higher education reform of 2013, students studying full-time

in the Estonian language do not pay tuition fees. Estonian higher education institutions are, however, free to set the tuition fees for programmes which are not taught in Estonian, part-time programmes, and for students who have recently graduated at the same education level as they are enrolled.[3] Students in full-time programmes taught in Estonian can be charged tuition fees (with a ceiling) if they do not show sufficient progress, excluding students with children and disabled or special-needs students (see Chapter 4). Private institutions are allowed to charge tuition fees to full-time students in programmes taught in Estonian, unless they receive public funding for those programmes.

In the **Flemish Community**, the tuition fees in bachelor's and master's programmes at public and government-dependent institutions are determined by law and support the flexibility of higher education in the jurisdiction. There are two components to the fee structure of bachelor's and master's programmes: a fixed amount of around EUR 230 to be paid upon enrolment, independent of the intended study load, and a flexible component that depends on the number of study credits in which a student enrols (a full-year, full-time study load corresponded to an additional fee of about EUR 890 in 2016). Flemish institutions can charge higher fees (up to a certain limit) for students in "advanced" bachelor's and master's programmes, which require a degree at the same level of education for students to be admitted (see Chapter 2). Institutions are also free to charge higher fees to international students from outside the European Economic Area (EEA). In addition, independent private institutions can choose the level of fees they charge to students.

Tuition fees in **Dutch** public institutions are equal across all full-time programmes and fixed by the government at around EUR 2 000 for full-time students in 2017 (starting from 2019, first-year students will have to pay only half this amount). Some students pay higher fees. For example, students enrolled at "university colleges" (institutional units within universities specialising in liberal arts and sciences programmes) pay a higher fee, even though their fees are still capped by government regulations. Students who have completed a higher education programme at a certain level of education and enrol in another programme at the same (or lower) level of education are also charged higher tuition fees (the "one bachelor, one master" policy), though there is an exception to this rule for students enrolling in programmes in teacher training or health and welfare. Institutions are free to set the tuition fees for foreign students from outside the EEA, and independent private higher education institutions are generally free to charge higher fees to their students. Every student eligible for financial support can take out a government loan (about EUR 165 per month) to pay for tuition fees.

There are no tuition fees in public institutions in **Norway**. In 2016, the average annual tuition fee in independent private Norwegian institutions was about USD 6 000 (OECD, 2018[19]).[4] Students in "experience-based" master's programmes (requiring some work experience for admission) can also be charged tuition fees (see Chapter 5).

3.4.2. Reducing household burden through student financial support

The increasing cost of higher education, combined with restraints on the public budget, has led to more cost sharing in higher education between government and students or their families. This can have significant equity implications, as some potential students may be deterred from participating because they do not have the money to pay for higher education, and cannot borrow it because they have no collateral and no credit history (Baum, 2017[33]).

Grants and scholarships, as well as public (or state-guaranteed) loans, aim at attenuating the problem of student credit constraints by providing the needed liquidity. However, they are conceptually different funding mechanisms that affect student behaviour differently (Boatman, Evans and Soliz, 2017[34]; Joensen and Mattana, 2018[35]); as such, after the brief overview of the cross-country comparative evidence presented in this section, these funding mechanisms are dealt with separately in Box 3.6 (grants and scholarships) and Section 3.4.3 (loans).

On average across OECD countries in 2015, the government spent around USD 1 400 on student loans and a similar amount on grants and scholarships. This compared to a total public expenditure per student of approximately USD 16 000, and an estimated household expenditure on higher education institutions of about USD 3 200, on average across OECD countries.

In two-fifths of the countries with data, the average government expenditure per student on grants, scholarships and loans exceeds the average annual household expenditure on education institutions per student (Figure 3.6). This provides an indication of government efforts to ensure that higher education is affordable for everyone. However, many students are likely to spend more on higher education than they receive in grants and loans for various reasons, including:

Student expenditure on factors other than fees, including costs of living, private tutoring, and other goods and services that are not included in Figure 3.6 but may represent a large part of the costs incurred by students

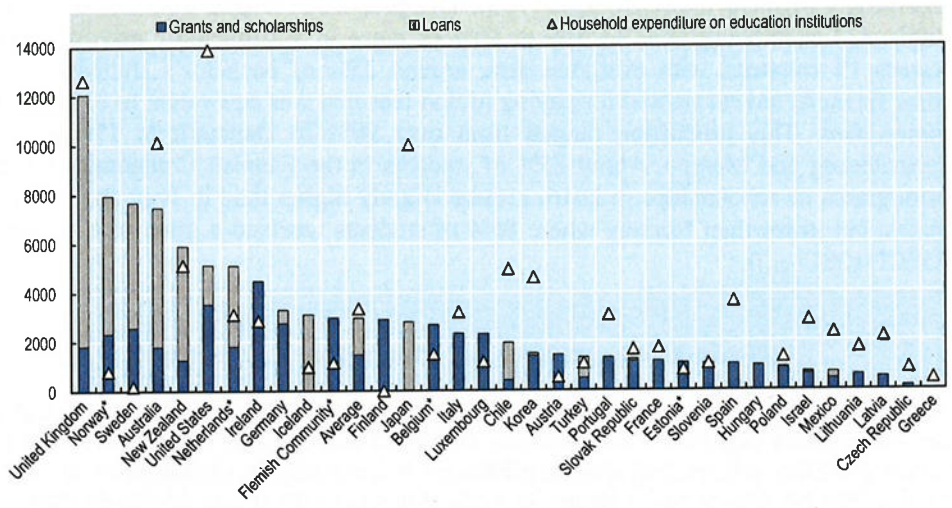
The balance between education-related costs and government transfers differs across students; it can be positive for some students, and negative for others.

In some countries, students contribute a relatively large amount on average to the funding of higher education institutions, which exceeds the average amount of public loans and grants available to them. For example, the per-student household expenditure on educational institutions exceeds the per-student public expenditure on government grants, scholarships and loans by around USD 7 000 in Japan and the United States. In these two countries, the per-student amount of public loans and grants is in line with or larger than the OECD average. However, there is the cultural and political expectation that at least parents who are in a good financial situation will contribute substantially to the higher education of their children (Johnstone and Marcucci, 2010[36]).

The variation between countries in household expenditure on higher education institutions (i.e. tuition and various types of fees), grants and scholarships, and loans is affected by context and cultural norms specific to a region or a country (Johnstone and Marcucci, 2010[36]). In Norway, for example, higher education is considered a public good that fosters inclusiveness and equality in society, and as a result, the majority believe that the cost to participate should be borne by society rather than the individual. On the other hand, in the United States there is a stronger perception that higher education is a private good that leads to individual labour market outcomes and therefore should be funded in part by individual contributions in the form of tuition fees. Societies also differ in their views on whether costs are to be borne by the students or by their families. Countries where it is not considered acceptable that students should depend on their families will tend to make it easier for students to borrow money or to earn income through part-time work.

Figure 3.6. The role of grants and loans in public expenditure (2015)

Public expenditure on grants, scholarships and loans, compared to household expenditure on higher education institutions – in PPP USD per full-time equivalent student



Note: *Participating in the Benchmarking Higher Education System Performance exercise 2017/2018.
Source: Adapted from the 2016 UOE data collection; data provided by the Flemish Ministry of Education and Training.

StatLink https://doi.org/10.1787/888933940569

The United Kingdom has among the highest levels of student loans and household expenditure per student in OECD countries. This is mostly due to three major reforms involving loans, tuition fees and other aspects of higher education from 1998 to 2013. Over this period, the average annual tuition fees at the bachelor's level rose from around GBP 1 000 before 2007, to about GBP 3 000 until 2013, and then to around GBP 9 000. The reforms were motivated by a range of factors including concerns that higher education funding was falling below an adequate level to fulfil its mission and the belief that competition usually raises quality (Browne Review Panel, 2010[37]). To ensure higher fees did not deter the participation of disadvantaged students, public income-contingent loans were made available to all students in 2006. Over 85% of students took out a loan in 2013. The 2013 changes appear to have led to a decrease in the number of students, especially among students who are older than 30. However, the socio-economic background of students has not been substantially affected, and existing inequalities have not been exacerbated (Geven, 2015[38]; Murphy, Scott-Clayton and Wyness, 2017[39]).

The average amount of public expenditure on grants and scholarships and loans per student in the Netherlands was about USD 5 000 per year in 2014 (recent policy developments may change the balance of funding, see Box 3.7 and Section 3.4.3). In Norway, it was around USD 8 000 (this amount includes transfers from the government to students, and excludes every form of repayment). In the Flemish Community, the amount of public expenditure on grants and scholarships is around USD 3 000. These amounts exceed the estimated household expenditure in the Netherlands (around USD 3 000) and in Norway and the Flemish Community (around USD 1 000). The amount of

public expenditure on grants and scholarships is around USD 1 000 in Estonia, similar to the estimated household expenditure in this country.

Student financial aid is also not evenly distributed across students. On average across 16 OECD jurisdictions with available data for 2016, about half of bachelor's students did not receive any financial aid (OECD, 2017[21]). This proportion ranged from less than 10% in England, Luxembourg and Norway to 80% or more in Austria, Italy and Switzerland. Across 13 countries with available data, around 25% of bachelor's students received some financial aid earmarked for paying tuition fees that was equivalent to or higher than tuition fees. This proportion ranged from over 90% in Denmark to 1% or less in Luxembourg and Mexico. About 25% of students in the Flemish Community benefited from grants or scholarships in 2016, a share slightly higher than in Italy and the United States, but lower than Norway where 86% of students received a grant or a scholarship (OECD (2017[21])).

Box 3.6 Student grant schemes in participating jurisdictions

The participating jurisdictions all have grant schemes in place to support students, although there are differences in their design and operation. Grants are usually made available to students with certain eligibility criteria, including academic merit, enrolment in certain fields of study, or coming from households whose income or assets do not exceed a certain threshold (means-tested grants).

In **Estonia**, students can apply for a means-tested grant. The government also provides some special grants to disabled or special-needs students. In addition, a number of scholarships are reserved for students in particular fields or with good academic results (see Chapter 4).

While **the Flemish Community** does not have a public loan scheme, the amount spent per student on grants is among the highest in the OECD area (Figure 3.6). Grants were not available for students in short-cycle tertiary programmes in 2017, with the exception of programmes in nursing (but they will be available from the academic year 2019-2020). Students who are eligible for a means-tested grant pay a lower fee (a fixed sum of EUR 105). Students who do not qualify for a means-tested grant, but have household income and assets below a certain threshold, also pay lower tuition fees. In addition, several categories of students (e.g. some asylum-seekers, job seekers, detainees and disabled people) qualify for a partial or total exemption from tuition fees in short-cycle programmes.

In 2016, the grant-based **Dutch** student support scheme was replaced by a loan scheme. Students from lower income families (with an upper income threshold of around EUR 50 000 in 2016) are entitled to a supplementary grant from the government.

In **Norway**, all students can receive the "basic support" from the State Educational Loan Fund for a maximum of eight years. The basic support is a loan, but up to 40 % of it can be converted into a grant under specific conditions (see Section 3.4.3). The financial support system also includes some special grants and loans for students in exceptional circumstances (see Chapter 4).

3.4.3. Student Loans

Student loans can be arranged on the private market at prevailing lending conditions, or they can be subsidised or regulated by public authorities ("public loans"). A variety of public loan types is observed across countries (Chapman, 2016[40]).

- Government-guaranteed bank loans: commercial loans between a student and a bank, where the government guarantees to repay the debt if the student defaults

on payment. The government may also subsidise these loans in other ways, for example by paying the interest rate while the student is in education.

- Mortgage-style public loans provided directly by the government: government loans with a fixed repayment. The government may apply special clauses and conditions to help ensure students repay the loan (e.g. lower interest rates, conditions for remitting the debt in case of bad health, etc.)
- Income-contingent public loans: loans provided either by the government or by banks (with a government guarantee) where repayment depends on the income of the borrower. Students or graduates do not have to make payments when their earnings are below a certain threshold. In addition, repayments are usually capped at a certain proportion of income.

Students can usually take out a public loan on better conditions than those available in the market. A key feature of public loans in a recent OECD analysis of countries with available data for 2016 was the relatively low interest rate set by government. In New Zealand, there was no nominal interest rate on graduate loans, while in other cases the interest rate was linked to indexes lower than market rates (Table 3.4). For example, in some countries (Japan, the Netherlands and Sweden), the interest rate paid by graduates was equal to or lower than the cost of government borrowing; in others, it was equal to or linked to the inflation rate (Australia, Chile, Turkey, United Kingdom). In Luxembourg, Norway and Poland, the interest rate was indexed to the market rate, but it was cheaper. Governments may also defer the loan repayments until after students have completed their studies in some countries (e.g. Canada, Japan, Norway, Turkey) (OECD, 2016[9]).

Table 3.4. Indexing of the interest rate on graduate loans (2016)

No nominal interest rate	Interest rate equal to the inflation rate	Interest rate equal to or lower than cost of government borrowing	Indexed to (but cheaper than) the market
New Zealand	Australia, Chile (inflation + 2%), Turkey, United Kingdom (inflation + 0% to 3%)	Japan, Netherlands, Sweden	Luxembourg, Norway, Poland

Note: Since the changes to the loan system in 2017, the interest rate in Norway is set at the lower bound of the market rate (average interest rate of the lowest five market mortgage rates offered in the country minus 0,15%).
Source: Adapted from the INES ad-hoc survey on tuition fees and financial support to students.

Most countries with public student loan systems have schemes to reduce or forgive student debt. Student debt can be reduced or forgiven for personal circumstances such as death, disability or a low income. Many countries forgive debt after a certain number of years or by a certain age. For example, in England, any outstanding amounts on loans are forgiven after a certain number of years (25 to 35 years after the first student loan) or once the borrower reaches 65 years of age, depending on when students took out the initial loan. The proportion of graduates whose debt is estimated to be reduced or forgiven is about 70% in England, 15% in the Netherlands and lower in other countries with available data (Table 3.5).

Governments may also use debt relief or forgiveness to help drive public policy. For example, under the Teacher Loan Forgiveness Program and the Public Service Loan Forgiveness Program in the United States, graduates working in some professions may be eligible under certain conditions for the forgiveness of some of their loans (up to a

specified amount). In Australia, the government provided an incentive to graduates from certain fields of study to take up related occupations or work in specified locations by reducing their student loan repayments under the HECS-HELP Benefit programme, which ceased in 2017. In Colombia and Japan, good academic results can qualify students for the reduction or forgiveness of part or all of their student loan debt (OECD, 2016[9]).

Table 3.5. Debt from public loans of higher education graduates (2016)

Country	Graduates with debt (% of all graduates)	Average debt at graduation (PPP USD)	Length of typical repayment period (years)	Average annual amount of repayment (PPP USD)	Average annual income of graduates, 1-3 years after graduation	Graduates whose debt is reduced or forgiven (%)	Loans that are not repaid (% of value)	Repayments as a % of all loans
Australia			9		35 801			35.7
Canada		12 856	9.5		43 524		12	
England (UK)			30		30 915	70	40-45	
Estonia	5		4 to 18	2 263	23 703	0.1	0.2	
Finland	50.3	9 033	5 to 15	1 449	39 594	0	1	
Japan		32 172	15	2 207		0		28.9
Latvia	0		5 to 10			1.2	3	
Netherlands	66.7	18 413	15	1 145		15	10	40
New Zealand	78	22 671	8 to 9	1 878	29 843	0 to 0.3		
Norway		26 257	20	1 691		1.2	4	66.3
Poland	5	10 105		1 684		14	0 to 1	
Slovak Republic	1	5 944	7	942	22 731			14.6
Sweden	77	21 432	25	873	33 987	1.5	7	
United States		24 900	10 to 30		34 522			

Notes: The table includes only jurisdictions with data for at least three variables. The reference year is 2015 for New Zealand, 2014 for Australia and Canada, and 2012 for the United States. Additional information can be found in OECD (2018[19]).
Australia, Canada, New Zealand and Sweden (average annual income of graduates); Japan (all variables); New Zealand and Norway (average annual amount of repayment): Data refer to bachelor's graduates.
Canada: Data only include information on the federal portion of student financial assistance, which represents 60% of student loans provided in the provinces participating in the Canada Student Loans Program (CSLP) and excludes the province of Quebec. Data on average debt at graduation exclude short-cycle programmes.
Canada, Estonia and Finland: Data refer to government-guaranteed private loans.
Canada, New Zealand and Sweden (average annual income of graduates): Data refer to bachelor's graduates.
England, Estonia, Finland, Korea, the Netherlands, Poland, Slovak Republic and United States: Data include all higher education graduates.
England and Sweden: Data include only graduates from the EEA and Switzerland.
Japan: Data include interest-free loan amounts only.
Poland: The proportion of graduates whose debt is reduced or forgiven excludes disabled and special-needs graduates.
Source: Adapted from OECD (2018[19]), *Education at Glance 2018: OECD Indicators*, https://doi.org/10.1787/edu-data-en; the Indicators of Education Systems (INES) ad-hoc survey on tuition fees and financial support to students.

In 2016, the average debt from public loans at graduation among borrowing bachelor's students across countries with available data ranged between about USD 6 000 in the Slovak Republic to about USD 32 000 in Japan. It was about USD 18 000 in the Netherlands and about USD 26 000 in Norway. The debt cumulated during studies can be substantial, also relative to the income of recent graduates: for example, in Estonia, New Zealand, Sweden and the United States, the average debt was over one-half of the annual

gross income of recent graduates. In absence of mechanisms to reduce or reschedule the repayment, these amounts are an economic burden for some graduates who are less successful in the labour market.

Income contingency[5] and schemes for the reduction or forgiveness of student loans can be important tools to ensure that the level of debt is manageable for graduates. The debate on how to manage student debts have gained prominence in public policy debates, particularly in the United Kingdom (Clark, Hordósy and Vickers, 2017[41]) and the United States, where student loans have been growing steadily as a component of household debt over the last 15 years (Baum, 2017[33]; OECD, 2016[42]).

Because of the conditions described above, public loans can be costly for governments. There are currently no internationally comparable data to measure the actual cost of loans to governments. However, for a few countries it is possible to calculate a measure of the loan system cash flow: the amount of government revenue from the repayment of existing loans, expressed as a percentage of the government expenditure on public loans. This proportion would be 100% in a self-financing loan scheme, i.e. in a loan scheme where the debt repayments of graduates completely finance the loans taken by students. In the existing loan systems, revenues from graduate debt repayments amount to less than two-thirds of government loan expenditure (this percentage is 29% in the Netherlands and 40% in Norway).

Since 2016, the majority of student financial support in **the Netherlands** has been channelled through loans, which have largely replaced grants. As a result, households now bear a greater part of the cost of higher education. The Dutch parliament agreed that the additional income generated by the replacement of grants with loans was to be invested in higher education to improve the quality of teaching and learning (De Boer et al., 2015[43]).

Dutch students pay an interest rate of less than 1%. Loans must be paid back within 15 years but are income-contingent, with payments due when the graduate's income reaches around USD 17 000 for an individual living alone. After 15 years, the loan is remitted. The government estimates that some 10% of the loan value is not repaid, as compared to 40-45% in the United Kingdom, 7% in Sweden and 4% in Norway. Student financial support is limited in duration in the Netherlands to encourage students to graduate within the expected time (see Chapter 4). Students older than 30 and part-time students are not entitled to the same financial support that is available to other students. However, since 2017 they have been able to borrow up to five times the legal tuition fee through the "lifelong learning credit", with similar repayment conditions to other students.

Estonia also has a public loan system, which is available to all national higher education students (Estonian citizens or individuals with a long-term or permanent residence permit), even if enrolled abroad. However, the interest rate is relatively high (5% in 2016) and loans are not very common (5% of graduates had some debt in 2016). Take-up rates have decreased since the implementation of the new funding system in 2013, which eliminated the need to pay for tuition fees for most students. Before the revision of public expenditure following the economic crisis of 2008/2009, the student debt was reduced or forgiven in a number of cases, including for graduates who became parents or were employed for at least one year in a central or local government authority (including public agencies and higher education institutions).

In **Norway,** all students admitted to accredited higher education programmes can receive the "basic support", which in 2017 amounted to up to around NOK 110 000 per year for a

maximum of eight years, excluding exceptional circumstances (see Chapter 5,). The basic support is a loan, but part of it (up to 40%, depending on the student's income and assets) is converted into a grant for students who live away from their parents and complete their programme within the expected time (OECD, 2018[23]). The yearly interest rate paid by Norwegian graduates on their student loans was relatively low in 2016, but it has increased in 2017 and it is now higher than 2%. Norwegian graduates repay their debt over a relatively long period (20 years), as compared to 15 in the Netherlands and 9 in Australia and Canada.

3.4.4. Other types of student support

Governments may also use other means of reducing the burden on households, such as tax allowances or other benefits, family allowances, or education vouchers. Vouchers are direct subsidies paid to students to enrol in education (Box 3.7).

Most OECD countries have in place some form of tax allowances for education and training costs, although some conditions usually apply. For example, in almost all countries with tax allowances for education and training costs, these allowances are only available if the training is related to, or even necessary for, work. In addition, minimal thresholds or caps for the cost to be deducted are often in place (OECD, 2017[10]). In Estonia, costs for training provided by higher education institutions can be deducted from taxable income up to a certain ceiling, independently of whether the training is job-related.

In the Netherlands, education costs are tax deductible for people who are not entitled to student financing. The Netherlands Bureau for Economic Policy Analysis (CPB) (2016[44]) evaluated this policy tool, concluding that it is used more often by individuals with a high level of education and income, and that other policy tools (e.g. vouchers) could be more effective in stimulating participation by other individuals. It is important that taxation policies and tax deduction allowances be clear for students, and that incentives be well aligned with the priorities of the government (e.g. encourage timely completion and enrolment in areas relevant to the labour market) (OECD, 2017[10]).

Besides tax allowances, higher education can be indirectly subsidised through a variety of other tax benefits. For example, in all OECD countries (with the exception of Denmark and Iceland) some form of tax relief is available for income earned from grants and scholarships. In Belgium, Denmark, Finland, Norway, and the United States, interest on student debt is tax-deductible (OECD, 2017[10]). In addition, in Belgium (both the Flemish and the French Community), the income threshold above which income tax is paid is increased for families with students living at home and enrolled full-time in higher education.

Family allowances are financial transfers from the government to the parents of higher education students. They usually depend on the number of children enrolled in education and not necessarily on the household's income, expenditure or assets. In 2017, 14 European countries, including France, Italy, Germany and Poland, had some form of family allowances in place to subsidise higher education students' households (European Commission/EACEA/Eurydice, 2017[31]). In the Flemish Community, households receive a family allowance for each student who does not work more than a certain number of hours.

Box 3.7 Experiments using vouchers in the Netherlands and the Flemish Community

Vouchers can be a cost-effective way to increase participation in higher education for under-represented demographic groups (Netherlands Bureau for Economic Policy Analysis, 2016[44]; Adviescommissie "Flexibel hoger onderwijs voor werkenden", 2014[45]; OECD, 2017[46]). In the Netherlands, they can target categories of individuals (like the unemployed or temporary workers) who are less integrated in the Dutch adult training system, which is mostly financed by firms and provided by social partner organisations (OECD, 2017[46]). Several voucher schemes, often of a temporary or experimental nature, have been introduced, including:

- Employees in the private sector can use up to eight vouchers (each worth EUR 1 250) to enrol part time in modules in certain programmes in universities of applied sciences or private independent institutions. Higher education institutions receive no further funding from the government for these students, but may charge a tuition fee of up to EUR 3 750 for a student enrolling in modules equivalent to half of the full-time workload. This experimental funding scheme aims to encourage modular and part-time education among mature students and create a level playing field for funding conditions between public and independent private institutions.
- A maximum of EUR 2 500 was made available in 2017 to unemployed or self-employed individuals and for employees looking for a different job. This voucher could be spent on qualifying education programmes for occupations with high demand in the labour market, for example, environmental inspector, electrical equipment designer, hearing care professional, and German language teacher.

In Flanders and the city of Brussels, vouchers are available for employed individuals undertaking some education or training (including at the higher education level) for professional purposes outside their working hours. The vouchers are directed towards people with at most upper secondary education or to higher education graduates in a "career guidance trajectory" (a type of re-training programme). They have a value of EUR 250, of which half is paid for by the government, and the other half contributed by the individual.

3.5. Higher education funding from other private sources

Higher education institutions can attract financial resources from sources other than the government in a variety of ways, including private donations and the commercialisation of knowledge and research outputs (see Chapter 6). These resources can help ensure not only the financial sustainability of the higher education system, but also its relevance to stakeholders who are called to contribute.

Information on the source of other (non-household) private funding is not available at the national level in an internationally comparable format, but can be found on datasets built at the institutional level. This section uses data from the European Register of Tertiary Education, which only covers European countries, to look at two types of non-government revenue (private third party funding and non-government core funding, Box 3.8) in universities and professional HEIs.[6]

Box 3.8. Third party funding and non-governmental core funding

Private third party funding consists of revenue from private sources (e.g. businesses, religious and non-profit organisations, business and labour associations) that is earmarked for specific activities and institutional units. It includes funding earned through contracts for the provision of research and education.

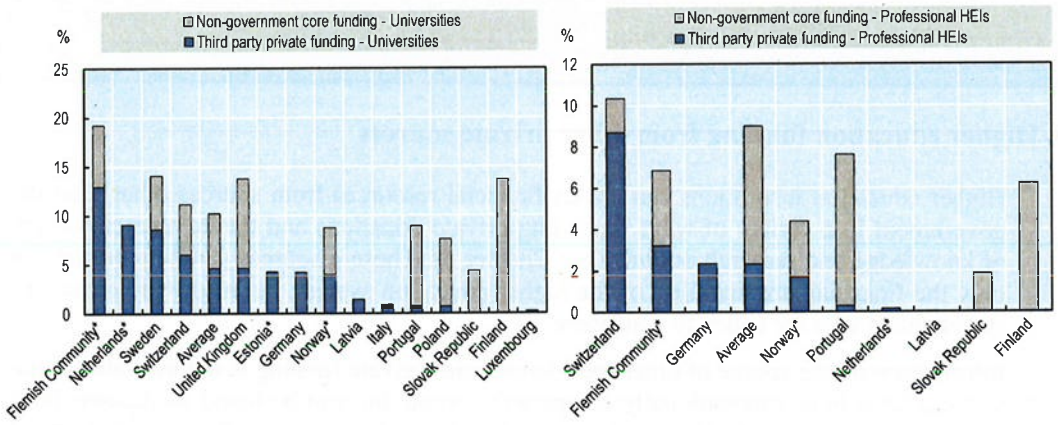
Non-government core funding is defined as funding coming from sources other than the government, which is not earmarked for specific activities. It includes revenue from financial and other assets, donations, and sales from commercial activities.

Revenue of an extraordinary and non-repeating nature (e.g. large donations for the purchase of capital assets) are excluded from both private third party funding and non-governmental core funding (Lepori et al., 2017[47]).

On average across countries with available data, private third party funding accounts for 4% of current revenues of universities, and non-governmental core funding for 6%, with a large variation across countries. For example, while the share of private third party funding accounts for over 8% of current revenues in the Flemish Community, the Netherlands and Sweden; it is close to 4% in Estonia and Norway, and it is marginal in the Slovak Republic (Figure 3.7).

Figure 3.7. Revenue of higher education institutions, by subsector and type of revenue (2015)

Shares of current revenues



Notes: *Participating in the Benchmarking Higher Education System Performance exercise 2017/2018.
Estonia: The data come from the Estonian Ministry of Education and Research, instead of ETER.
France: Data on third party private revenues include only research-related revenues
Hungary and Italy: Data on other core funding are excluded from the chart since it includes some public funding
Source: European Tertiary Education Register (ETER) (2019[48]), *ETER Database*, www.eter-project.com.

StatLink https://doi.org/10.1787/888933940588

For the seven countries with available data on professional HEIs, only Switzerland had a larger share of private third party funding in professional HEIs than in universities. The

share of non-governmental core funding is also smaller in professional HEIs than in universities for all countries.

Philanthropic donations as a source of income for higher education may also be included in non-governmental core funding or in private third party funding (if they are linked to a specific purpose or institutional sub-unit), except if they are large non-recurring donations. However, despite the importance of this type of funding in some higher education systems (see Chapter 6) there is no internationally comparable data available. Some indicators on philanthropic donations have recently been developed in the area of development and co-operation (Benn, Sangaré and Hos, 2018[49]; OECD, 2018[50]).

The ability of higher education institutions to raise third party or core funding depends, at least in part, on their financial autonomy. Higher education institutions have varying levels of financial autonomy with regard to their ability to borrow money, keep a financial surplus and own their buildings in many countries (Bennetot Pruvot and Estermann, 2017[32]). Institutions that are able to keep any financial surplus they generate and spend it in later years may have a greater incentive to find new sources of revenue. Institutions that are able to own their buildings could possibly generate income from them. Renting out unused facilities could not only generate revenue, but it also make more use of higher education spaces. Institutions are in a better position to generate non-government revenue if they have the legal status of public corporations (with the ability to execute contracts, dispose of property, etc.) than of public agencies bound by civil service regulations (Johnstone and Marcucci, 2010[36]).

Overall, the European University Association (EUA) rates the financial autonomy of Estonian, Flemish and Dutch public universities as "medium high" (as compared to other European public universities). In general, public universities in these three countries are allowed to keep their financial surplus, to borrow money, and to own and sell buildings (Bennetot Pruvot and Estermann, 2017[32]). The same is true in these three countries for other subsectors with available information (public professional HEIs in the Flemish Community and the Netherlands, and independent private institutions in the Netherlands, see Table 3.6). However, in these jurisdictions there are restrictions on the ability of higher education institutions to set tuition fees (Section 3.4.1).

The financial autonomy of Norwegian public universities is rated as "medium low" by the European University Association. Norwegian higher education institutions cannot borrow money. They do not own buildings and properties; most of the properties they use are owned by the government and managed either by the higher education institutions or by a public sector administration company (*Statsbygg*); and the remaining part of the properties are rented on the private market. Public higher education institutions can keep financial surplus, but only up to a certain amount (Bennetot Pruvot and Estermann, 2017[32]). The same constraints apply to government-dependent and independent private institutions (see Table 3.6).

Table 3.6. Elements of institutional financial autonomy (2017)

Ability of higher education institutions to:

		Borrow money	Keep surplus	Own and sell buildings
Estonia	Universities	Yes	Yes	Yes
	Professional HEIs	No	Yes, with some restrictions	No
Flemish Community	Universities	Yes	Yes, with some restrictions	Yes, with some restrictions
	Professional HEIs	Yes	Yes, with some restrictions	Yes, with some restrictions
Netherlands	Universities	Yes	Yes	Yes
	Professional HEIs	Yes	Yes	Yes
	Private institutions	Yes	Yes	Yes
Norway	Universities	No	Yes	Only with external approval
	University colleges	No	Yes	Only with external approval
	Private institutions	Yes	Yes	Yes

Note: Most universities and university colleges in Norway do not own their buildings, but they may be granted authorisation by the government to sell the buildings they use.
Source: For universities, Pruvot and Estermann (2017[32]), University Autonomy in Europe III The Scorecard 2017, www.eua.be/Libraries/publications/University-Autonomy-in-Europe-2017. For other relevant groups of higher education institutions, the OECD collected the information from the Estonian Ministry of Education and Research and national associations (for the Flemish Community, the Netherlands and Norway), based on the instruments developed by the European University Association (Bennetot Pruvot and Estermann, 2017[32]).

3.6. The allocation of public funding to higher education institutions

3.6.1. Dimensions of higher education funding allocation

The means by which public funding is allocated to higher education institutions can have an impact on the outcomes achieved. Well-designed funding mechanisms provide incentives to institutions, students and others to implement policies or change practices. They can be used by governments to ensure that the system is efficient in meeting the strategic goals with the given resources. Governance issues and funding systems are therefore closely connected (Jongbloed, 2010[51]).

The use of different funding mechanisms can also be closely tied to increased autonomy and accountability in higher education (see Chapter 2). As institutions are afforded greater autonomy, governments may have fewer mechanisms at their disposal to steer the system. Funding mechanisms that require institutions to spend the funds of specific activities or are dependent on performance can help governments steer institutions to meet strategic goals. Greater autonomy is therefore often accompanied by a more a robust accountability framework for institutions.

Three key dimensions are involved in the allocation of funding in higher education:

- the allocation mechanism used
- the basis for the allocation
- the level of autonomy in spending allocated funds.

There are three key allocation mechanisms used in higher education: line item budgets, block grants and targeted funding (Table 3.7).

Line item budgets specify how higher education institutions can spend funds received from government authorities or intermediate agencies. In other words, institutions need to

spend the budget in accordance with the expenditure items specified in the "line item" budget. In response to a prevailing view that line item budgets, while the most efficient to allocate, do not encourage higher performance, or indeed allow for performance to be objectively measured (OECD, 2008; World Bank, 2016), recurrent[7] public funding provided through line item budgets, has been replaced by block grants in most OECD countries in recent decades.

Block grants consist of financial transfers from the government to higher education institutions to cover several categories of education or research expenditure, and provide institutions with a certain amount of freedom in how they can spend allocated money.

Targeted funding is funding that is earmarked for a particular purpose, often tied to current strategic goals for the system, and may be dispensed in addition to line item budgets or block grants.

The amounts allocated through funding mechanisms can be determined through a variety of methods (basis for allocation), including:

- Historical trends: The amount allocated is based on the amount of funding that has been provided in previous years, which may vary annually according to certain parameters.
- Formula funding: An amount calculated through one or more formulas based on a set of predefined parameters and indicators. Formula funding can use input indicators to measure activity (e.g. number of students enrolled in bachelor's programmes) or output and outcomes indicators to measure performance (e.g. completion rates, publications per academic staff).
- Negotiations between government and higher education institutions: The amount allocated is an agreed sum negotiated between government and higher education institutions. The negotiations may be set out in performance agreements or funding agreements.

Governments may apply each of these methods individually, or combine the elements above. Block grants, for instance, may have components based on historical trends, formula funding and negotiations between institutions and government. This can lead to a large variety of block grant allocation systems across countries (Bennetot Pruvot, Claeys-Kulik and Estermann, 2015[52]). In the case of targeted funding, funds are also often awarded through a competitive process where proposals are made by institutions and assessed by peers or experts.

The third dimension involved in the allocation of funding deals with the level of autonomy institutions have in spending their allocated funds. Higher education institutions often have a large degree of autonomy in spending block grant funding (Bennetot Pruvot, Claeys-Kulik and Estermann, 2015[52]). This recognises institutional autonomy and enables institutions to set and realise their own strategic aims.

Table 3.7. Allocation of public funding to higher education institutions

Allocation mechanism	Basis for allocation	Level of spending autonomy
Block grant	• Historical trends • Funding formula • Negotiations between government and HEIs	Autonomy varies from no restrictions on the allocation of funding, to requirements to adhere to broad expenditure categories or requirement to adhere to legal restrictions on internal allocation
Targeted funds	• Funding formula • Competitive process • Negotiations between government and HEIs	Funding must be spent on identified purpose
Line item budget	• Historical trends • Funding formula • Negotiations between government and HEIs	Funding must be spent on identified purpose

While block grants generally have introduced more freedom in the internal allocation of funds than have line item budgets for institutions, the level of freedom can vary across different higher education systems. Block grants can also be provided with various restrictions, including restrictions on the ability of institutions to move funding between different categories of activity (e.g. between education and research). The European University Association (EUA) Autonomy Tool (Bennetot Pruvot and Estermann, 2017[32]) has defined four categories to measure the levels of autonomy in spending block grants:

- Block grant with no restrictions on the allocation of funding
- Block grant is split into broad categories (e.g. teaching, research, investments and operational costs) and there are no or limited possibilities to move funds between these
- Block grant with internal allocation possibilities limited by law
- Block grant with other restrictions (for example, in Ireland part of the block grant must be spent on widening access for disadvantaged socio-economic groups).

There are no restrictions on how institutions can spend the funding allocated through block grants in any of the participating jurisdictions, giving them a high degree of financial autonomy against this indicator (Bennetot Pruvot and Estermann, 2017[32]).

Targeted funding and line item budgets are allocated for specific purposes and institutions are required to spend the funds on those purposes only.

3.6.2. Basis for allocating block grants

The participating jurisdictions combine historical trends, formula funding and negotiations to determine block grant amounts allocated to higher education institutions (Table 3.8 and Table 3.9). These methods have changed over the last decade in the four jurisdictions, along with other elements of the funding system (Section 3.6.4).

Table 3.8. Basis of allocation of total block grant in participating jurisdictions (2017)

Proportion of total block grant amount

	Historical trends	Funding formula	Negotiations between government and HEIs
Estonia	73%	24% (performance indicators) 3% (achievement of goals in performance agreements)	0%
The Flemish Community	0%	100%	0%
The Netherlands	47% (universities) 12% (professional HEIs)	50% (universities) 88% (professional HEIs)	3% (universities) 5% (professional HEIs)
Norway	68%	32%	0%

Notes: Estonia: research "baseline funding" is included in block grant funding.
The Netherlands: the reference year is 2014; funding earmarked for research schools in universities is excluded from block grant funding; funding earmarked for "practice-oriented research" in professional HEIs is excluded from block grant funding.
Source: Adapted from OECD (2018[23]), *Higher Education in Norway: Labour Market Relevance and Outcomes*, http://dx.doi.org/10.1787/9789264301757-en; information provided by the participating jurisdictions. See the reader's guide for further information.

Table 3.9. Basis of allocation of education component of block grant in participating jurisdictions (2017)

Proportion of education component of block grant amount

	Historical trends	Funding formula	Negotiations between government and HEIs
Estonia	80%	17% (performance indicators) 3% (achievement of goals in performance agreements)	0%
Flemish Community	0%	100%	0%
The Netherlands	31% (universities) 12% (professional HEIs)	63% (universities) 82% (professional HEIs)	6% (universities) 6% (professional HEIs)
Norway	No distinction between education and research components		

Note: The Netherlands: the reference year is 2014.
Source: Adapted from information provided by the participating jurisdictions. See the reader's guide for further information.

Block grant funding based on historical trends

Providing funding to higher education institutions according to historical trends ensures a degree of financial stability for institutions over time. Historical trends account for about 70% of block grant funding in Estonia and Norway, and about 45% in Dutch universities (there are no allocations based on historical trends for Dutch professional HEIs)

(reference year: 2017 for Estonia and Norway; 2014 for the Netherlands). In each of these countries, the allocation of this amount is based on different factors.

Estonian, Flemish and Dutch universities receive two separate components of block grant funding for education and research (see Box 3.1).

- In **Estonia**, the historically determined allocation received by each institution is based on the average amount of the education component of block grant funding for the last three years. The education component accounted for about 90% of all block grant funding for higher education in 2017.
- In **the Flemish Community**, both components of the block grant are assigned through formula funding.
- In **the Netherlands**, for each of these two components, a part of the total amount is negotiated between the government and each university based on past allocations (the combined share of the two historically determined allocations over the combined block grant funding is about 47%). Professional HEIs receive a much lower share (12%) of block grant funding based on historical trends.

In **Norway**, the amount of funding that each higher education institution receives though the fixed portion of the block grant is decided based on a long history of specific priorities determined by the parliament (*Storting*) and the government over the years, without direct negotiation with the institutions. Some institutions get additional funding due to maintenance of buildings or special national responsibilities, such as running museums or certain study programmes (particularly at the doctoral level).

Block grant funding based on a formula

In some OECD countries, a portion of the block grant is allocated through formula funding to reward past performance and motivate improvement. The proportion allocated through formula funding can be part of an open or a closed-end budget, which affects the incentives provided to institutions (Box 3.9).

Formula funding accounts for a proportion of block grant funding paid to higher education institutions in all of the participating jurisdictions, but the formulas are different in each case, and may include measures of throughput, output or the volume of education activity (Table 3.11).

Box 3.9. Open-end or closed-end budgets

The amount of overall funding allocated to higher education institutions through formula funding can be decided in advance by the government (closed-end budget) or it can be open depending on how well institutions perform against the indicators (open-end budget). Governments can choose to impose a closed-end budget for some indicators, and leave an open-end budget for others.

When a closed-end budget is chosen, the formula acts as a distributive mechanism to allocate a fixed amount of the budget across institutions. The allocation rewards individual performance but is based on the relative performance of institutions and is therefore a zero-sum game.

With an open-end budget, individual institutions are financially rewarded for good performance against the indicators in the formula, regardless of how well they perform in relation to other institutions. For example, their funding will increase as they increase the number of students enrolled or the number of graduates.

Both closed-end and open-end budgets provide incentives to institutions to improve their performance in terms of the relevant indicators. However, while open-end budgets guarantee an increase in funding to all institutions showing improvement on the indicators, closed-end budgets focus on relative performance, as institutions can increase their share of funding only by performing better than others. This could further stimulate competition among institutions.

Formula funding accounts for 17% of the education component of block grant funding in **Estonia**, and it is explicitly performance-oriented and related to the government's Estonian Lifelong Learning Strategy 2020. It is a closed-end budget that uses six indicators to calculate a proportion of the block grant funds for each institution:

- the share of students enrolled in certain institution-specific fields of study
- the share of foreign students and of students who are studying abroad
- student completion rates within the nominal time
- the ratio of public to private funding from education activities (including tuition fees and other revenues related to education provision)
- the proportion of graduates in employment or further study.

The proportion of students graduating within the nominal time has the biggest weight (35%), which encourages universities to help students complete their studies on time. The weighting on the other indicators reflects additional government priorities: proportion of graduates employed or continuing to master's or doctorate (20%), proportion of students enrolled in fields of study identified as part of the university's mission or area of responsibility (15%), foreign students (10%), revenue from education activities (10%) and outgoing mobile students (10%).

In addition, up to 3% of the block grant funding for universities and professional HEIs is based on the achievement of goals in performance agreements or directives with the institutions. The government negotiates a set of agreed goals in performance agreements with universities and evaluates the achievement of these goals qualitatively. As professional institutions are state agencies directly administered by the Ministry of Education and Research, their block grants are allocated through the "performance directive" of the Minister, which delineates the goals and responsibilities for each institution.

Universities in Estonia also receive block grant funding related to their research activity. A small part of this (5%) is related to research of national significance in the area of the humanities. The remaining part is allocated through a formula based on the number of high-level publications, the number of patents and patent applications, the amount of third party public and private funding, and the number of doctoral graduates.[8]

In the **Flemish Community**, the entire block grant funding amount for each institution is determined through funding formula with a closed-end budget. This is divided into a general component (for all institutions) and a research component (for universities only). The indicators used in the education component include:

- study credits, weighted by field of study and student condition (institutions receive more funding for disabled and special-needs students, working students or those who are beneficiaries of a means-tested grant)[9]
- the number of bachelor's, master's and doctoral qualifications awarded
- the number of publications and citations
- the gender diversity of the institution's research population.

The research component of the block grant in the Flemish Community is allocated through the Special Research Fund (BOF) and the Industrial Research Fund (IOF). The amount of funding allocated is currently based on several indicators (different for the BOF and the IOF) such as the number of master's and doctoral degrees; the share of women in academic staff; the number of publications and citations; the revenue obtained from licencing of research-related output and EU competitive research programmes; and the number of patents and spin-off companies.

To receive funding from the BOF, each university must document the rules for the internal allocation of resources from the BOF. In addition, every five years it must submit a strategic policy plan that outlines how the resources from the BOF will be spent, as well as the university's general research strategy. The strategic policy plan must show how the university will ensure:

- quality control and adequate evaluation of research
- good governance mechanisms for research policy
- adequate representation of women and immigrants in the research workforce
- adequate support to the career development of all researchers
- dissemination of the results.

Universities, as well as associations between universities and professional HEIs (see Chapter 2), must report annually on how they used the BOF and the IOF. In addition, the two funds are evaluated every five years by the government. The evaluations look at what the universities (or associations) have achieved with the funds, the role of these funds in the broader policy landscape and how the current policy regulations of the funds can be improved.

In **the Netherlands**, 63% of the education component of the block grant to universities is based on a funding formula (6% on performance agreements and 31% on historical trends). For the professional HEIs, funding formula determines 83% of the block grants, while 12% depends on historical trends and the remaining 5% is negotiated through performance agreements. The education component is determined by:

- the number of students who complete their programmes within the expected duration of study (three or four years for a bachelor's or short-cycle programme; one to three years for a master's programme, depending on the programme)
- the number of short-cycle, bachelor's and master's qualifications awarded.

Both enrolment and degrees are weighted by field of study, reflecting the different cost per student in different disciplines within higher education (Table 3.10).

Table 3.10. Weights for students and degrees in different fields of study in the funding formulas used in the Netherlands (2017)

Fields of study	Universities	Universities of applied science
Low weighting: economics, law, social sciences, humanities	1	1
High weighting: education, agriculture, technology and health	1.5	1.28
Top weighting: medicine	3	1.5

Source: Adapted from information provided by the participating jurisdictions. See the reader's guide for further information.

The research component is only allocated to universities in the Netherlands and is based on the number of bachelor's, master's and doctoral qualifications awarded. Universities receive twice as much for a master's qualification awarded than for a bachelor's. The formula funding is closed-end with respect to all indicators. Universities used to receive a fixed sum for each doctorate awarded, but the budget for this indicator became closed-end in 2017. Professional HEIs receive a small allocation for applied research, amounting to about 3% of block grant funding.

In **Norway**, formula funding accounts for about 30% of block grant funding, with similar indicators to the general component in the Flemish Community (except for the indicator on gender diversity). However, the Norwegian formula also includes the number of international exchange students and the amount of funding from the Norwegian Research Council, the EU and public and private third party funding.

Norway uses a combination of open and closed-end budgets for the block grant components based on funding formula. Funding awarded on the basis of the number of credits awarded, the number of graduates, and the number of international students is an open-end budget, and can therefore increase as volumes increase. The remaining indicators, i.e. the number of publications and revenue from the Norwegian Research Council, the EU and private sources is a closed-end budget, so higher education institutions can only increase their share of revenue by performing better than other institutions.

Table 3.11. Formula funding indicators used in the four participating jurisdictions (2017)

Indicators	Estonia	The Flemish Community	The Netherlands	Norway
Enrolments			Yes (only students within expected duration of study)	
Credits		Yes		Yes
Degrees (including doctoral)	Yes (only doctoral)	Yes	Yes	Yes
Enrolment/credits/degrees in specific fields of study	Yes (institution-specific)		Yes	
Extra weight for enrolment/credits/degrees for particular categories of students (e.g. under-represented socio-economic background)		Yes		
Foreign or international exchange students	Yes			Yes
Completion rates	Yes			
Graduates in employment or education	Yes			
Publications and citations	Yes (universities)	Yes		Yes
Funding from private sources or commercialisation of research output	Yes	Yes (universities)		Yes
Gender diversity among researchers		Yes		
Funding from EU and national research council	Yes (universities)	Yes (universities)		Yes
Patents	Yes (universities)	Yes (universities)		

Source: Adapted from information provided by the participating jurisdictions. See the reader's guide for further information.

Block grant component based on negotiation or performance agreement between government and institutions

Some countries also determine a proportion of the block grant through a negotiation between the ministry and individual higher education institutions. The agreements can be in the form of performance agreements or funding agreements. They may use funding formula or other methods to determine the allocations. Two of the participating jurisdictions use this method: Estonia and the Netherlands.

As noted above, universities and professional HEIs in **Estonia** may receive up to 3% of the block grant funding based on the achievement of goals outlined in performance agreements or directives. The government negotiates a three-year performance agreement with each university, which specifies the goals for the university, the associated funding and other obligations (e.g. the fields of study in which a university cannot open full-time programmes; targeted funding assigned by the government to the university). The agreement reflects the mission and objectives of the university and the strategic goals of the government, and takes into account the needs of the labour market and the interests of local government and registered professional associations. Performance agreements are contracts under public law and the associated funding is delivered through a funding agreement between the ministry and university.

For the period 2013-15, the Estonian government negotiated goals individually with each university, resulting in a large number of specific goals included in performance agreements. The subsequent round of performance agreements, covering the period 2016-18, included a set of more general and broad goals (Table 3.12). The government evaluates the fulfilment of the goals qualitatively.

Table 3.12. Examples of goals in the 2016-2018 performance agreements: Estonia

Provide academic staff with opportunities for training and self-development on new teaching methods and digital skills
Provide teaching career opportunities to professionals from outside higher education
Develop evaluation systems for academic staff
Increase the international mobility of students and academic staff
Increase the number of graduates in information and communication technology and related disciplinary areas
Cooperate with secondary schools to make higher education more accessible (e.g. through online courses for secondary school students)
Provide opportunities for flexible study provision and lifelong learning, particularly for students from under-represented demographic groups
Develop admission procedures which take into account the motivation of applicants
Reduce the number of students leaving higher education without a degree
Use reports on labour market skills needs (OSKA reports – see Chapter 5) to improve the labour market relevance of study programmes
Collaborate with other higher education institutions and other stakeholders for the development and improvement of education programmes

Source: Adapted from information provided by the participating jurisdictions. See the reader's guide for further information.

Performance agreements were introduced in **the Netherlands** in 2012 to cover the period 2013-16. This model is being replaced by "quality agreements" (Box 3.10) from 2019. The 2013-16 performance agreements provided the basis for around 6% of the education component of block grant funding. The block grant allocation in the performance agreement was determined through two separate processes:

1. attainment of seven "quality and study success" mandatory indicators (Table 3.13) and additional goals (both quantitative and qualitative) proposed by the institutions themselves: around 70% of the total amount allocated
2. competitive process: around 30% of the total amount allocated.

Table 3.13. Mandatory "quality and study success" indicators in the 2013-2016 performance agreements: The Netherlands

1	Completion rate within the expected graduation time (plus one year) in bachelor's programmes
2	Share of students leaving the institution without completing a programme one year after beginning their studies
3	Share of first-year students switching to another programme in the same institution
4	Quality in teaching and learning, measured by one of the following indicators: ▪ share of students in excellence tracks (see Chapter 4) ▪ student satisfaction scores ▪ share of programmes evaluated as "good" or "excellent" by the Dutch/Flemish Accreditation Organisation (NVAO)
5	Face-to-face contact hours with academic staff per first-year bachelor's student per week
6	Qualifications of teaching personnel: academic staff holding a teaching qualification (for universities) or academic staff holding a master's or doctoral degree (for professional HEIs)
7	The share of overhead costs over total expenditure

Source: Adapted from information provided by the participating jurisdictions. See the reader's guide for further information.

Box 3.10. The transition from performance agreements to "quality agreements" in the Netherlands

The Netherlands introduced performance agreements in 2012 to achieve three broad strategic goals: improve education quality and completion rates; enhance differentiation and profiling in education and research; and enhance the transfer and exchange of knowledge.

The performance agreements were evaluated in 2017 and, following extensive consultation with higher education institutions and other relevant stakeholders, are to be replaced by "quality agreements" for the period 2019-24. The quality agreements will use the additional funding available following student financial aid reforms, which resulted in the replacement of most student grants with loans after 2016 (Box 3.6).

While the 2013-2016 performance agreements were contracts between the government and individual institutions, the quality agreements will be negotiated between the executive board of higher education institutions and their student and staff representatives. The following procedure underlies the establishment and evaluation of quality agreements:

- The executive board of institutions, students and staff jointly draft the quality agreement in line with the government's strategic agenda. Other stakeholders (e.g. local governments) may also be involved.
- The accreditation agency (NVAO) ensures compliance with the relevant procedures for drafting the agreement, and ensures that the agreement is in line with the government's strategic agenda.
- The NVAO will periodically check the progress of institutions in meeting their goals. Funding tied to the quality agreement will be allocated to institutions if they perform well against the goals. Institutions not progressing satisfactorily will be given additional time to improve performance. If the progress continues to be unsatisfactory after this additional time, the funding for the institution will be reduced.
- At the end of the period covered by the agreements (2024), the NVAO will provide a final assessment of performance in terms of how well institutions have met their goals. If the assessment is negative, the funding tied to the quality agreement is converted into competitive funding through the Comenius Fellowship program (see Chapters 4 and 5). Academic staff and administrators from under-performing institutions can apply for this funding with proposals to improve learning and teaching in the institution.

A review committee established by the Dutch government assessed proposals for the performance agreements to evaluate their feasibility, alignment with the government's strategic goals and ambition (De Boer et al., 2015[43]). This committee monitored the progress and outcomes of the performance agreements based on information provided in university and professional HEI annual reports; and published a yearly report on progress at the system level (European Commission, 2018[53]). Those institutions that did not reach the goals set out in the performance agreement in 2016 had their funding reduced. This affected six out of 37 professional HEIs.

Institutions also competed for additional funding to support projects to meet the strategic goals set out in the performance agreements. The Centres of Expertise (Section 3.6.4) were established through this component of the performance agreements.

3.6.3. Targeted funding

Targeted funds refer to amounts of money awarded by government authorities or intermediate agencies (e.g. funding councils and research authorities) to higher education institutions that are allocated for a particular purpose – e.g. improving teaching quality, fostering better management practices and encouraging partnerships with the private sector.

Targeted funds can be aimed, for instance, at funding specific items or services (e.g. costs of building a research lab). Alternatively, governments may provide targeted funding intended to achieve a specific goal, without specifying the services of items to be used to achieve it. For example, from 2008 the Dutch and Flemish governments provided funding to institutions to improve study outcomes (e.g. completion and graduation rates) among students from certain demographic groups. The institutions had the freedom to use these funds through a variety of projects that were aimed to reach this goal. These funding schemes were terminated in 2013 (the Netherlands) and 2014 (the Flemish Community), and no funding has since been allocated to these specific initiatives.

In **Estonia**, targeted funding is used to achieve the government's strategic objectives for higher education. A component of targeted funding is included in the yearly funding agreement signed between the government and institutions. For example, funding has been provided to open university libraries to the wider public; to increase admission to nursing and teacher training programmes in certain institutions; and to support a merger between a public university and a private institution. In addition, targeted funding is used to allocate capital expenditure through the "research infrastructure roadmap" (see Chapter 6).

The **Flemish** government awards annual funding to institutions that must be spent on three activities: student facilities, other infrastructure ("investments"), and teacher education. Institutions can spend the funding for teacher education as they see fit, without many administrative requirements. The criteria for the utilisation of the targeted funding for investments and student facilities are specified in the law. Institutions must prepare an expenditure plan and report on spending for student facilities and investments.

Another example was the decision by the Dutch ministry, in its 2015 strategic agenda, to allocate EUR 20 million per annum from a special budget (*Studievoorschot*) for facilitating digitalisation and improving digital teaching infrastructure in higher education.

Governments may also provide targeted funding to other organisations in the higher education system to achieve certain aims. For instance, in **Norway**, funding is provided to student welfare organisations providing ancillary services (e.g. housing, meals, sport and health services) at a subsidised price (see Chapter 4). All higher education institutions (except vocational colleges, which are excluded from the analysis of this section) must have an arrangement with a student welfare organisation to provide these services.

Competitive funding

Targeted funding is often awarded on a competitive basis, as governments try to improve performance and steer institutional behaviour in higher education, on the basis that competition drives quality. Competitive funds are usually attached to a project or are targeted towards the achievement of specific objectives or priorities defined by the funder (Bennetot Pruvot, Claeys-Kulik and Estermann, 2015[52]). Institutions submit an application, usually assessed by an external panel of experts.

Competitive funding plays an important role in government research funding (see Chapter 6), but can also be used for a range of different projects in education. For example, competitive funding has been used to stimulate innovative digital and online learning projects in the Netherlands and Norway (see Chapter 5).

In the **Netherlands**, the Comenius Fellowship awards competitive grants for projects stimulating innovation in teaching (see Chapters 4 and 5). The grant amount can be EUR 50 000 (for individual modules), EUR 100 000 (for projects at the programme level) or EUR 250 000 (for innovations at the institutional level). The Comenius Fellowship scheme started in 2017 with a budget of EUR 500 000 for 10 grants for innovation at the module level, and will gradually expand to around 110 grants and a budget of around EUR 20 million in 2022.

3.6.4. Changes in the higher education funding systems of the participating jurisdictions from 2000 to 2018

The funding systems of the participating jurisdictions have gone through major reforms in the last two decades, reflecting the broader shift across the OECD in recent years towards a greater focus on autonomy and performance (OECD, 2008[11]). This section provides an overview of the funding allocation mechanisms used at the time of the 2002-2008 OECD Thematic Review of Tertiary Education, as well as subsequent changes, to show how they have evolved over time.

In **Estonia**, in 2006, most government funding of higher education was allocated as a block grant based on the number of government-commissioned study places in each higher education institution (Estonian Ministry of Education and Research, 2006[54]). The number of commissioned study places depended on the forecasted need for graduates in each discipline, as determined through a consulting process by the government, higher education institutions and other stakeholders. Students qualifying for commissioned study places could enrol for free, while others had to pay tuition fees.

Estonia introduced a new funding system in 2013, which intended to use formula funding to determine a large share (70-75%) of the block grant amount. The formula included a number of input indicators (e.g. the number of entrants and full-time students), output indicators (e.g. the number of graduates in different fields of study) and indicators related to national performance goals (e.g. the proportion of foreign students, the proportion of graduates employed or enrolled in higher education). In addition, more grants and scholarships targeted students demonstrating economic need, whereas previously they were mostly based on academic merit. In 2017, the funding model was revised further to reduce the performance element to 20% and provide greater stability compared to the previous model, which led to sudden fluctuations in funding (European Commission, 2018[55]) causing a reduction in the funding level for some institutions.

In the **Flemish Community**, the main change in the higher education funding system over the past two decades has been the phasing out of the historically determined funding allocation (Flemish Ministry of Education and Training, 2006[56]). This passed from 100% of funding in 1996, to 20% in 2000, to 0% in 2008. In addition, the indicators set in the formula determining the research component of the block grant have been expanded between 2007 and 2017 to include funding from private sources or commercialisation of research output, gender diversity among researchers, and funding from EU and national research council and patents.

In the **Netherlands**, the biggest change in higher education funding since 2006 has been the replacement of the grant system with a loan system (Box 3.6). This could have resulted in significant savings for government, but the government agreed to allocate these funds to higher education to improve the quality of learning and teaching. The funds generated by the replacement of grants with loans are allocated to institutions through performance agreements (Box 3.10). Loans have been made income-contingent to help graduates manage their debt, whereas in 2007, repayments were mostly of a mortgage type (OECD, 2008[11]).

There have not been significant changes in how block grant funding is allocated between 2007 and 2017 in the Netherlands, but there have been some changes to the indicators used in the funding formula. For instance, the funding formula in 2007 included the number of first-year students (OECD, 2008[11]; De Jonge and Berger, 2006[57]); this has been replaced by the number of students who complete within the expected graduation time.

The **Norwegian** system has not fundamentally changed since 2006. However, the use of line item budgeting was replaced by formula funding in the 2002 funding reforms aimed at increasing spending efficiency and autonomy in higher education institutions (Norwegian Ministry of Education and Research, 2006[58]). The funding formula changed in 2017 to include two new indicators, the number of graduates and public and private third party funding, along with the modification of some existing indicators.

3.7. Concluding remarks

This chapter reviewed the funding of higher education systems, a crucial input to their mission of providing education and research and engaging with the wider world. It discussed relevant higher education policies with a particular focus on four jurisdictions, and highlighted gaps in the existing information base. This concluding section reviews some key messages from the chapter, along with current information and data gaps. Key performance areas discussed in the chapter are summarised, including some indications of where an improvement of the information base would be particularly useful to assess performance.

- Higher education is a labour-intensive sector, with expenditure on staff accounting for two-thirds of current expenditure on average across OECD countries. The input of academic and non-academic staff is essential to the quality of output (see Chapter 4). International data on expenditure on staff only make a distinction between expenditure on teaching personnel and other staff. A further breakdown into expenditure for researchers and non-academic staff could provide useful insight for the benchmarking exercise.
- In many countries, expenditure on higher education institutions constitutes only a relatively small part of household expenditure in education, most of which occurs outside institutions (e.g. living costs of students, books, private tutoring). However, data on expenditure outside higher education institutions are either not collected internationally or scarcely comparable. This is a significant data gap, which makes cross-country comparisons of the total cost of higher education less transparent to the student. As a result, it is more difficult to assess higher education systems on the economic criteria.
- In many countries, public loans are a very important instrument to provide financial support to students. On average across OECD countries, each student

receives about USD 1 500 in loans, a similar amount as for grants and scholarships. Currently, international statistics measure the gross financial amount that the government transfers to students as loans. This could differ from the net present value of the cost to the government, for example before loan repayments from graduates are ignored.

- Other (non-household) private funding is an important source of funding from a strategic point of view, as it reduces the burden on the government and household sectors and incentivises engagement between higher education institutions and the wider world (see Chapter 7). This source of funding, which accounts for about 10% of higher education expenditure across OECD countries, could make funding more sustainable and ensure that the output of higher education is relevant to the wider world. To investigate non-household private funding more in depth, this chapter used data from the European Tertiary Education Register. However, an important limitation of this dataset is that it covers only European countries. Alternative data sources will need to be identified for other countries in future rounds of benchmarking.
- Donations from households, non-profit organisations and businesses constitute an important source of higher education financing in some OECD countries. They can contribute to a diversified and sustainable funding system. However, no internationally comparable data on this are available yet.
- The government can allocate public funding to higher education institutions through various mechanisms, differing in the incentives they provide to institutions and in how much autonomy they allow institutions in spending the funds received. The role of these mechanisms in steering the higher education system makes of them important tools to improve its effectiveness. The comparative analysis of funding systems would benefit from information on the financial amounts allocated through each of the main mechanisms (block grant, formula, targeted and competitive funding, performance agreements).
- This chapter discussed some of the differences between groups of institutions within the higher education system (public, government-dependent and independent private institutions; universities; and professional HEIs). Different types of institutions are one way of ensuring diversity in higher education. They can also offer some opportunities for cost saving; the per-student expenditure in professional HEIs is about half that of universities, even though the level of expenditure per student is similar across the two subsectors when R&D is excluded. However, the analysis was limited by the limited availability of internationally comparable data.

The benchmarking of higher education systems relies on the comparison across countries of quantitative indicators, as well as on qualitative information on national policies and on higher education practices. Some examples are given in Table 3.14. These initiatives represent the distinctive approaches by the participating jurisdictions to respond to some selected policy challenges.

The qualitative data on higher education policies have been collected from the four participating jurisdictions through an ad-hoc questionnaire, given the absence of a systematic data collection on higher education policies. The standardisation of qualitative policy and contextual information is increasingly recognised as beneficial to promote effective comparative analysis and achieve better value for analytical resources invested

by allowing for information to be easily reused and enhanced. For example, the development of a dynamic policy database for higher education could improve the comparability and utility of the qualitative evidence base.

Table 3.14. Selected policies from the participating jurisdictions (2017)

	Motivation	Policies
Estonia	Steering institutional behaviour through measurable indicators	▪ Formula funding accounts for 17% of the education component of block grant funding in Estonia, and it is directly related to the government's Estonian Lifelong Learning Strategy 2020. ▪ The formula is based on six indicators, all explicitly performance-oriented: the proportion of students graduating within the nominal time; the proportion of graduates employed or continuing to master's or doctorate; the proportion of students enrolled in fields of study identified as part of the university's mission or area of responsibility; the proportion of foreign students; revenue from the private sector for educational activities; and the share of outgoing mobile students. ▪ To ensure financial stability, 80% of the education component of block grant is based on its average amount over the past three years. ▪ Universities in Estonia also receive block grant funding related to their research activity, a large part of which is allocated through a formula based on research performance indicators.
The Flemish Community	Targeting financial support to low-income students	▪ All student financial support in the Flemish Community is provided through grants and scholarships. ▪ The main financial support mechanism is a means-tested grant for students with household income and assets below a certain threshold. ▪ Students who are eligible for a means-tested grant and other students from low-income households pay a lower fee. ▪ Beneficiaries of means-tested grants also benefit from other equity-related policies, for example, a reserved quota for international mobility grants (see Chapter 5).
The Netherlands	Directing funding towards institutional performance goals	▪ The funding generated through the replacement of most student grants with loans is re-directed towards higher education institutions through the "quality agreements". ▪ While performance agreements are contracts between the government and individual institutions, quality agreements are negotiated between the executive board of higher education institutions and their student and staff representatives. ▪ The progress of the institutions towards their goals is monitored by the accreditation agency (NVAO). ▪ If the progress is not sufficient, the funding tied to the quality agreement is converted into competitive funding for the improvement of teaching.
Norway	Helping students cover study and living costs	▪ All higher education students can receive the "basic support", a loan amounting to up to NOK 110 000 per year for a maximum of eight years. ▪ Up to 40% of the basic support can be converted into a grant for students who live away from their parents and complete their programmes within the expected time. ▪ The yearly interest rate paid by Norwegian graduates on their student loans was relatively low in 2016 (but increased in 2017). ▪ The debt can be repaid over a long period (20 years).

Source: Adapted from information provided by the participating jurisdictions. See the reader's guide for further information.

Notes

[1] For the conversion in USD, the OECD (2018[8]) purchasing power parity (PPP) conversion rate for the reference year of the respective charts has been used.

[2] An institution is considered private if its overall control is not retained by a public agency. A private institution is government-dependent if at least 50 percent of its core funding comes from government agencies or if its teaching personnel is paid by a government agency. Otherwise, it is considered an independent private institution. Due to their reliance on public funding, government-dependent private institutions are often subject to regulation very similar to that of public institutions.

[3] This rule is very similar to the Dutch "one bachelor, one master policy" described within this section. However, the Estonian rule differs because it does not apply to students who enrol in a programme after at least three times the nominal duration of the programme from matriculation at the same level of education. For example, students can study for free if they start a new bachelor's programme 9 (or more) years after their first matriculation to a bachelor's programme. A similar exception to the "one bachelor, one master policy" for students in areas related to health and welfare and teacher education exists in Estonia and the Netherlands (see Chapter 4).

[4] In contrast, the difference between public institutions and government-dependent private institutions in average annual tuition fees at the bachelor's or equivalent level is minimal for all countries with available data (OECD, 2016[9]). For example, in the Flemish Community, government-dependent private institutions are constrained by the same regulations on tuition fees as public institutions.

[5] Income-contingent loan schemes exist in Australia, Chile, the French Community of Belgium, Great Britain, Korea, the Netherlands, New Zealand, and the United States.

[6] As discussed in Lepori et al. (2017[47]), private third party funding and non-government core funding could, in some instances, include revenue from the household sector (e.g. a family living in a building owned by a university and paying rent). This kind of revenue would be classified among other (non-household) private expenditure in the UOE data presented in this chapter.

[7] Recurrent funding comprises all funding except that having an extraordinary and non-repeating character (Lepori et al., 2017[47]).

[8] In Estonia, the research component of block grant funding is awarded to all institutions that receive a positive evaluation of their research activities by the Estonian Research Council. This evaluation is carried out by a panel of experts and remains valid for seven years. In principle, UAS could also receive research funding through the same process, but no UAS have applied for the evaluation of research activities to date.

[9] In the Flemish Community, the funding formula is based on the number of credits awarded to students at the master's level. For bachelor's programmes, until a student has been awarded 60 credits within a bachelor's programme (the equivalent of a full-year, full-time workload), the formula rewards the number of credits in which a student enrols (independent of whether they successfully complete them). After the student completes 60 credits, the formula rewards the credits awarded to the student, meaning that the institution receives funding only for completed modules. This situation is different from what happens in Norway, where only the credits awarded are considered in the funding formula.

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Chapter 4. Human resources

Staff, particularly in their interactions with students, are essential to the functioning of higher education systems. This chapter describes the levels and characteristics of human resources in higher education in OECD countries. It looks at human resources in terms of staff profiles, student-to-staff ratios, types of contract, salaries and career trajectories. Further detail on human resources related specifically to research can be found in Chapter 6.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

4.1. Introduction

Higher education is a labour intensive sector, where a wide range of academic staff are involved in various institutional activities including education, research and engagement with the wider world. Higher education institutions also rely on the support of non-academic staff to ensure the strategic, technological, administrative, financial and operational aspects of their mission.

Academic staff represent a core pillar of higher education, developing and imparting skills, knowledge and information through their interaction with students. The quality of academic staff, as producers and transmitters of knowledge, is directly related to the performance of higher education systems (OECD, 2012[1]). There is also a growing body of staff with responsibility for various outward-looking functions such as engagement with social partners and the community, technology transfer, entrepreneurship, continuing education and internationalisation.

Ensuring higher education institutions have highly-skilled, competent and motivated staff is a key performance issue for governments and institutions. Various factors can affect an institution's ability to recruit and retain high quality staff. These include financial incentives, such as salary and other income or benefits, and qualitative aspects of the job, including the work itself, as well as working conditions, job security, career paths and processes for progression and promotion, professional development and staff mobility (Metcalf et al., 2005[2]). Additional factors include policies and practices for recruitment, staff qualification requirements, and the prevalence of academic inbreeding, i.e. the appointment of faculty members who graduated from the institution employing them (Altbach, Yudkevich and Rumbley, 2015[3]).

Many governments and institutions are facing significant challenges relating to human resources in higher education, including attracting talented younger people to academia; gender imbalances, particularly at senior levels; and increasing salary and pension costs.

There is also a growing pressure to maintain and improve the quality of higher education, both on academic staff and on their employers (higher education institutions). As noted in Chapter 1, the number of students is increasing in many countries. The costs of higher education – for governments, students and their families – are also growing, increasing awareness of expected returns on public and private investments and value for money. In addition, nearly one-third of higher education graduates demonstrate low literacy and numeracy skills on average across OECD countries. These factors have driven a greater focus on the quality of learning and teaching in higher education, including the importance of teaching methods (OECD, 2012[1]). There is also an ongoing emphasis on research performance for higher education institutions and academics as well as increased expectations for higher education institutions and staff to engage with the broader community.

This chapter presents data and specific policy and practice information on key themes related to the staffing of higher education, including the profiling of staff by age and gender, working conditions, and career prospects. The information presented mostly relates to academic staff, although other staff categories are also discussed in Section 4.2.5. Chapter 5 presents complementary analysis on factors related to ensuring the quality of higher education personnel in terms of teaching excellence and appraisal. The quality of research and related factors is addressed in Chapter 6.

4.2. Profile of staff in higher education institutions

Higher education systems differ in the age and gender composition of their staff, as well as their precise duties, job titles and categories. This section discusses the profile of higher education staff, with particular emphasis on academic staff, as less data and information is available on other higher education staff. It explores the differences in staff categories and job titles among the four participating jurisdictions. It also provides an overview of staff age and gender composition across OECD countries, their implications and related policies, with a focus on the participating jurisdictions.

4.2.1. Academic staff

Academic staff primarily carry out teaching or research, often both. It includes people in very different staff categories (Box 4.1) within all types of higher education institutions (e.g. private, public, professional higher education institutions, universities, etc.). Academic staff also perform various engagement activities and service roles, which support the broader missions of their institutions and their own professional interests and development.

Cross-country comparisons of academic positions and human resource policies are difficult due to differences in titles, qualifications and tasks required for each position. Specific country traits also lead to differences between systems, including regulations of academic labour markets, types of institutions, and the role of teaching, research and non-academic positions (Arnhold et al., 2018[4]). Box 4.1 presents the variety of job titles that can be given to staff at different levels in the participating jurisdictions and associated regulations.

Doctoral candidates can also be categorised as academic staff in some countries. In Norway, for instance, doctoral candidates have employee status with a contract linked to the doctorate degree and compliant with labour legislation. In the Netherlands, around half the doctoral candidates are employees of the institution, around 45% work outside academia and are considered external candidates, and the remainder are enrolled as students (EC, EACEA, Eurydice, 2017[5]). Further description of the characteristics of doctoral education in the participating jurisdictions can be found in Chapter 6.

Box 4.1. Academic staff categories

There is not a standard categorisation of academic staff categories valid across all OECD countries, although some related classifications exist. For example, at the international level, a taxonomy for researchers can be found in the Frascati Manual (OECD, 2015[6]). In Europe, individual taxonomies for research careers have been developed by the European Science Foundation (ESF), the League of European Research Universities (LERU), and the European Commission (Scholz et al., 2009[7]; EC, 2011[8]; OECD, 2015[6]; Boulton, 2010[9]).

Job titles for academic staff in the participating jurisdictions can be grouped in three categories using the definitions developed by European Commission, Education, Audio-visual and Culture Executive Agency (EACEA) and Eurydice (2017[5]):

- Junior categories refer to academic staff in the early stage categories of academic employment, without substantial research or teaching experience. In the participating jurisdictions, job titles in this category include: instructor, teacher and lecturer, as well as early stage researcher, junior researcher, doctorate research fellow and senior research fellow.