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Resourcing higher education in Ireland – Funding higher education institutions

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About this thematic policy brief

Ireland has a diversified and respected system of higher education that has allowed the country to achieve high levels of third-level attainment and develop its domestic research capacity in recent decades. In 2020, 58.4% of 25-34 year-olds in Ireland held a tertiary qualification, compared to a European Union average of 40.5% (Eurostat, 2022[1]). Between 2007 and 2017, total research income to the Irish higher education sector increased by over 20% in real terms, with a 40% real-terms increase in revenue from the private sector (HEA, 2019[2]).

The country's dynamic demographic profile means that undergraduate student numbers are projected to increase by almost 20% by 2030 (Parliamentary Budget Office, 2019[3]). However, wide-ranging cuts to state funding implemented in the wake of the 2008 financial crisis, combined with steadily rising enrolment, led to an estimated 20% real-terms fall in per-student funding in public higher education institutions (HEIs) between 2007 and 2017 (HEA, 2019[2]). A proportion of the reduction in state funding per student was offset by nationally mandated reductions in staff pay and an increase in the financial contribution paid by students. However, per-student revenue in Irish HEIs has not returned to pre-crisis levels. This situation has generated concerns in the higher education community about the ability of the higher education system to maintain quality standards, and sparked widespread calls for the adoption of a more sustainable funding model.

In its Strategic Plan for 2018-22, Ireland's Higher Education Authority (HEA) notes that implementation of a sustainable funding model is imperative and "all the more critical given demographic trends" (HEA, 2018[4]). Against this backdrop, and as input to an ongoing review of the higher education funding model in Ireland (HEA, 2017[5]), the HEA has asked the OECD to support the Authority by providing a concise analysis of how the higher education funding model compares with models used in comparable OECD jurisdictions. This work forms part of the OECD's ongoing Resourcing Higher Education Project.

In light of the detailed questions agreed with the HEA at the outset of the work (see annex A), following a brief overview of higher education resourcing in Ireland, the analysis in this thematic policy brief is structured into two substantive sections:

- A review of the main factors that affect the **cost of delivery in higher education** (cost drivers) and the extent to which OECD jurisdictions monitor costs and use cost information to inform the design and implementation of their funding systems.
- An analysis of the ways in which OECD jurisdictions design **models for allocating public funding** to higher education institutions to promote social inclusion objectives, reward institutional performance and provide targeted resourcing for national priorities (such as increasing production of high-demand skills or strengthening higher education campuses outside major urban centres).

The thematic policy brief draws on international literature, policy documents and the results of a Higher Education Policy Survey among 29 OECD jurisdictions (Golden, Troy and Weko, 2021[6]) to assess how Ireland's higher education resourcing model compares to those of its peers in these two areas. For each main topic, the brief draws conclusions and points to possible ways forward as Ireland seeks to refine its approach to higher education resourcing.

The brief was prepared in the OECD Secretariat by Simon Roy. Particular thanks go to Sheena Duffy and Ruaidhrí Neavyn (HEA) for their support in preparing the brief and to colleagues in the HEA for providing feedback on a draft version of the text.

Key findings

The thematic policy brief responds to five research questions agreed between the OECD and the Higher Education Authority (HEA). Key findings in relation to each question are summarised below.

1. Viewed in comparison to other higher education systems, does the higher education funding model in Ireland succeed in giving adequate recognition to the core costs drivers for higher education? To what extent and how do other OECD jurisdictions take into account institutional revenue from private sources in establishing the level of public funding institutions receive?

- Cost drivers are factors that cause a change in the cost of a particular activity. In higher education, student numbers or the volume of research projects are key driver of the *total* cost of operating higher education institutions. A growing body of research internationally has also examined the factors that influence *unit* costs in higher education. Student-to-staff ratios are consistently found to be the dominant driver of differences in the cost of instruction per student between fields of education. Salary differentials, variation in workload models and the degree of reliance on non-permanent staff also influence cost levels, although the extent of this influence depends on national policies governing employment in higher education. Smaller and regional higher education institutions may have higher costs, potentially related to their reduced ability to generate scale economies, but the extent of comparable evidence on the effect of institutional scale on costs is limited.
- A majority of OECD governments recognise volume of activity as a core driver of total costs in instruction by tying at least a proportion of public funding to student numbers and regulating fee levels. Governments in systems such as Denmark or Scotland (United Kingdom) provide fixed unit payments to institutions per credit passed or per student, but do not link the level of these payments directly to observed costs. Funding models in other systems, such as Finland, the Netherlands or the Flemish Community of Belgium use distributive formulas that allow the unit level of funding to fluctuate depending on enrolment and the available budget envelope. A majority of European OECD funding models also use subject-area weightings in allocation formulas to provide at least nominal recognition of cost differentials between fields of study that are driven by student-to-staff ratios and other factors, such as facilities and equipment costs.
- Through its system of differentiated payments in lieu of fees and subject-area weightings in the Recurrent Grant Allocation Model (RGAM) formula, the design of the Irish funding model for instruction in higher education provides a similar level of recognition of cost differentials between subject areas as models used in comparable OECD jurisdictions. However, Ireland's core funding model, with its relatively small research component, provides more limited recognition of the underlying costs of university research than models in comparable jurisdictions. As resources are required to develop institutional research capacity and third-party funding of research rarely covers the full economic costs of research projects, current levels of institutional funding for research are likely to lead to resources being diverted from learning and teaching to support costs associated primarily with research. This is already a concern in other OECD jurisdictions, such as the Netherlands and the Flemish Community of Belgium, which provide far higher institutional core-grant funding for research to their universities than Ireland.
- More fundamentally, the ability of the Irish funding model to take account of costs is constrained by the size of the available budget envelope. Between 2012 and 2017, inflation-adjusted spending per full-time-equivalent (FTE) student in Ireland decreased by 6%. Of nine selected comparator countries with similarities to the Irish system, inflation-adjusted per-student spending decreased by a greater proportion only in Finland, while it remained stable or increased in the eight other jurisdictions. Compared to Ireland, the level of total per-student expenditure on higher education

institutions, in purchasing parity terms, is 3% higher in Finland 11% higher in Belgium, 19% higher in the Netherlands 39% higher in Norway and 64% higher in the United Kingdom. Addressing Ireland's comparative spending deficit in comparison to key comparator systems will be crucial to creating a higher education funding model that provides adequate recognition of the costs associated with operating higher education institutions with the capacity to compete internationally and achieve Ireland's ambitious national objectives.

2. To what extent have higher education funding systems implemented methodologies that permit a shift towards full costing of activities in higher education institutions? To what extent have changes in costing been reflected in their allocation models?

- Granular cost data allow higher education staff and policy makers to understand the costs associated with different activities in higher education institutions. Although individual higher education institutions in many OECD countries use their own internal activity-based costing (ABC) methods, standardised, system-wide approaches have been implemented only in the United Kingdom, the Nordic countries, Ireland and, to some extent, Australia. In most cases, a primary goal of the systems has been to provide an accurate picture of the overhead costs associated with performing activities funded by third parties, such as research funding councils. Although information from the Transparent Approach to Costing (TRAC) in England has informed decisions about the level of tuition fees and legacy institutional teaching grants, there is no routine adjustment of funding levels to account for reported costs. ABC data in other systems is not used routinely to determine funding levels.
- The Full Economic Cost (FEC) model implemented in all Irish universities was pioneering at the time of its introduction and remains among the most advanced such systems in OECD jurisdictions, in terms both of its methodology and comprehensive coverage of institutions. Despite the limitations of the current model, activity-based costing appears to be more developed in Irish Institutes of Technology than in comparable University of Applied Science sectors in other OECD jurisdictions, although it is recognised that the transition of Institutes of Technology to Technological Universities is likely to require change.

3. Does the current higher education funding model, including the block grant, in Ireland (a) take sufficient account of cost differentials by study fields and (b) succeed in giving support to disadvantaged learners that is sufficient for HEIs to reduce gaps in study success? How does this compare with the situation in other OECD jurisdictions?

- The subject-area weightings used in Ireland within the RGAM formula are broadly in line with those used in other OECD jurisdictions. Lower-than-customary weightings for clinical medicine appear to be compensated by additional payments outside the model. Fee payments by the state (free fees) are also differentiated to take into account notional costs in different subject fields. A 2017 review of the Irish funding system (HEA, 2017[7]) found that real per-student costs in higher education institutions were 3-4% higher than the public funding and student contribution they received for non-laboratory subjects and around 16% higher than per-student funding in laboratory subjects. However, this situation results primarily from the falling share of subject-weighted formula-based funding in overall instructional funding per student. As the proportion of total funding allocated through the RGAM funding formula has declined, the formula has had less influence on per-student funding amounts and is less able to align payments with field-related cost drivers.
- Ireland succeeds comparatively well in promoting access to higher education and study success for students from disadvantaged backgrounds, and has an unusually comprehensive set of policy measures in place to support further widening of access. Two areas of concern nevertheless emerge from reviews of the system. The first is whether the current institutional funding model

provides sufficient resources to institutions for part-time students and allows sufficient flexibility to adapt to students joining programmes through non-standard access routes. The second issue is that as the level of funding allocated through the RGAM distributive formula has declined, so has the value of the access bonuses paid for each student. Recent increases in funding have been used primarily to meet core salary costs, meaning resources for targeted support for students remain limited. To be more effective, the model would need adequate funding for the distributive formula to generate a meaningful access bonus payments per student or to use fixed unit payments for each access student.

4. Viewed in comparison to other allocation models, is the performance-funding component of the Irish funding allocation model an effective steering tool, permitting the HEA to orient institutions towards agreed performance targets?

- The Higher Education Strategic Performance Framework system has strengthened dialogue and coordination between higher education institutions and national-level policy makers in Ireland. This is consistent with findings in other systems with institutional agreements, such as the Netherlands, Finland, Austria and some German federal states. Evidence from these jurisdictions also suggests that performance agreements can have a positive influence on strategic planning within institutions, but the effects on measurable indicators, such as study success, are mixed. A recent Irish study (O Shea and O Hara, 2020[8]) found little evidence of direct effects on institutional behaviour, with the authors attributing this to a lack of enabling funding to trigger change. Other challenges may include a focus on indicators rather than strategic issues and adapting profiles and activities with a largely fixed workforce.
- The Higher Education Strategic Performance Framework has been implemented for much of its existence in a context of contracting public funding for higher education. Under the initial system of performance compacts in Ireland, a proportion of core funding was "put at risk" if institutions failed to meet performance targets, but no additional funds were provided. Evidence from other jurisdictions, including the current system in the Netherlands suggest that additional funds – at around 3% of the teaching grant, for example – can create positive effects on institutional behaviour. In this respect, the recent annual allocation of EUR 5 million in additional resources for performance funding appears to be a step in the right direction, although the level of additional funding is modest. An assessment at the end of the current implementation cycle will be required to establish the scale and scope of the effects of this new incentive funding. A comparison with the experience of the most recent round of quality agreements in the Netherlands would also be instructive for future policy making in Ireland.

5. How have the funding models adopted in other higher education systems evolved to support new priorities and special requirements – e.g. future skills, re/up-skilling, regional engagement, valorisation, advanced research, development and innovation (RDI) activities or regional or multiple campuses – and what lessons does the experience of other systems provide for the Irish funding allocation model in general and for the current system of "top-slicing" in particular?

- Ireland's higher education funding model reserves part of the total budget envelope as "top-sliced" funds, which are allocated to institutions as earmarked grants for specific priority topics, aligned with government priorities. Top-sliced funds were originally intended to be additional to core funding. However, in the decade since the financial crisis, falling or stagnant higher education budgets have meant the funds for national programmes have absorbed resources that might otherwise have served to address falling core funding per student. As earmarked funds, the top-slice programmes are associated with specific sets of rules and reporting requirements or resource-

intensive competitive bidding procedures. If the overall pot of money available and award amounts is small, competitive funding calls can create a disproportionate level of administrative burden in relation to actual sums of money awarded, thus generating inefficiencies.

- Although many OECD jurisdictions provide funding to higher education institutions through temporary, targeted funding programmes, few systems have recurrent strategic investment funding embedded in the funding models. Austria and Finland explicitly allocate a share of core funding for strategy investment, while the Netherlands has a dedicated quality fund that is additional to core funding that provides resources for actions specified in institutional quality agreements. When additional funding becomes available in Ireland, an alternative approach to the current model of earmarked grants would be to mainstream at least some of the top-sliced funds into a strategic investment component of the core funding model, in a similar way to Austria, Finland or the Netherlands. Priorities for deployment of the funds and accountability procedures for their use could be established in institutional performance compacts. The Finnish example may be particularly helpful to Ireland as a reference point, as it splits its strategic funding into two parts, where part A – the majority – is allocated to institutions for priorities agreed in performance contracts and part B is retained at national level for targeted funding calls.

1. Resourcing higher education in Ireland

To provide context for the subsequent analysis, this section provides a brief overview of the scale and structure of the Irish higher education system, key aspects of system funding and the broad comparison of the levels and patterns of institutional funding in Ireland with those in other OECD jurisdictions.

1.1 The Irish higher education system

The Irish higher education system currently comprises 22 public higher education institutions, alongside a small number of private colleges. From the 1970s until recently, the public system was structured on a largely binary model, with seven universities and 14 professionally oriented Institutes of Technology (IoTs), complemented by three specialist colleges (two focused on teacher training and one on art and design). In 2019, this binary structure was altered with the formal establishment of the country's first Technological University, TU Dublin, created from three former Institutes of Technology in the greater Dublin region. In 2021, the Institutes of Technology in Cork and Tralee also merged to form the second such institution, Munster Technological University, and the IoTs in Carlow and Waterford are at an advanced stage of merging to create the Technological University of South-East Ireland. Also in 2019, the long-established Royal College of Surgeons in Ireland, the country's largest medical school, was granted permission to use the title "university" for the first time, making it the first non-public university in the state.

Table 1. Higher education institutions in Ireland in 2018-19

Universities	Enrolment 2018-19	Institutes of Technology	Enrolment 2018-19	Other institutions	Enrolment 2018-19
University College Dublin	26 734	Waterford IT	8 213	*TU Dublin*	
University College Cork	20 978	IT Carlow	8 136	City Campus	18 396
National University of Ireland Galway	18 670	Galway-Mayo IT	6 651	Tallaght Campus	5 445
Trinity College Dublin	17 139	Limerick IT	6 289	Blanchardstown Campus	2 757
Dublin City University	15 558	IT Sligo	5 256	*Munster Technological University (MTU)*	
University of Limerick	14 431	Dundalk IT	4 872	MTU Cork	11 054
Maynooth University	12 611	Athlone IT	4 833	MTU Kerry	2 805
		Dun Laoghaire Institute of Art, Design & Technology	2 335	*Colleges*	
				Mary Immaculate College	5 006
				St. Angela's College	1 441
				National College of Art & Design	1 198
				Private universities	
				Royal College of Surgeons	3 780

Note: Enrolment data count discrete enrolments.
Source: Higher Education Authority Statistics (HEA, 2020[9])

In the academic year, 2018-19, 228 503 students were enrolled in Ireland's universities and public Institutes of Technology and colleges, of which around 55% in the seven public universities and 30% in IoTs. Total enrolment in Irish higher education increased by over 16% between the academic years 2011-12 and 2018-19, reflecting Ireland's comparatively young and fast-growing population. As shown in Table 1, the size of higher education institutions varies considerably, from almost 27 000 students at University College Dublin (UCD) to under 1 200 students at the National College of Art and Design. Although Irish students most often attend an institution in their home region (HEA, 2017[5]), the greater Dublin region, home to around 28% of the Irish population, concentrates over 40% of higher education enrolment.

As well as attracting national students from other regions, Dublin's institutions concentrate over half of Ireland's international student population, which, in 2018-19, accounted for 12.4% of total higher education enrolment, or around 28 000 students. Over 70% of international students come from outside the European Union and the United Kingdom and around a third study at just two universities: Trinity College Dublin and University College Dublin. While enrolment from the United Kingdom has remained broadly stable over the last decade, enrolment by EU students has increased by 80% and by non-EU/UK students (primarily from the United States, China and India) by 150% since 2011-12 (HEA, 2020[9]).

The Higher Education Authority (HEA) is the government agency responsible for the strategic oversight and steering of the higher education sector in Ireland, as well as the design and implementation of the public funding model for the system. Based on analysis of existing strengths and weaknesses in the system, the HEA's Strategic Plan for 2018 to 2022 (HEA, 2018[4]) identifies a series of strategic priorities for the development of higher education in Ireland in the coming years, which public policy will aim to promote. Among the key priorities relating to the outputs and outcomes of the system are:

- Promoting equity of access to higher education for all population groups;
- Enhancing the student experience (including through exploiting the Irish Survey of Student Engagement) and promoting a well-balanced higher education research system;
- Enhancing the responsiveness of higher education to respond to strategic skills needs, including in Science, Technology, Engineering and Maths (STEM) fields and terms of up-skilling and re-skilling;
- Increasing engagement between HEIs and the business sector and civil society.

The HEA also identifies reform priorities to help achieve these broader objectives, including:

- A reformed funding system to support system sustainability and development;
- Implementing the existing system of institutional compacts and promoting further institutional mergers in support of regional development;
- Ensuring an effective digital transformation of the higher education sector;
- Strengthening institutional leadership and governance processes;
- Increasing the knowledge base on the impact of the higher education system, particularly in terms of graduate outcomes and research and innovation impact.

In many important respects, Ireland's higher education system already preforms well in international comparison. In addition to the high level of higher education participation, rates of progression and successful completion compare favourably to many similar OECD jurisdictions (Pigott and Frawley, 2019[10]) and recent employment rates among young graduates (88% among 25-34 year-olds in 2019) are on a par with the best-performing OECD economies (OECD, 2020[11]). Moreover, Ireland's fundamental policy objectives of equity of access, enhanced student experience and outcomes, responsiveness to emerging skills needs and requirements for lifelong learning, research excellence and support for regional innovation mirror those seen in highly developed higher education systems across the OECD. While funding higher education is also a challenge in most OECD jurisdictions, putting higher education on a sustainable and equitable financial footing emerges as a particularly pressing issue in Ireland, where reform is needed to allow the system to build on its successes and progress towards national goals.

1.2 Resourcing higher education in Ireland

The composition of institutional revenue and trends

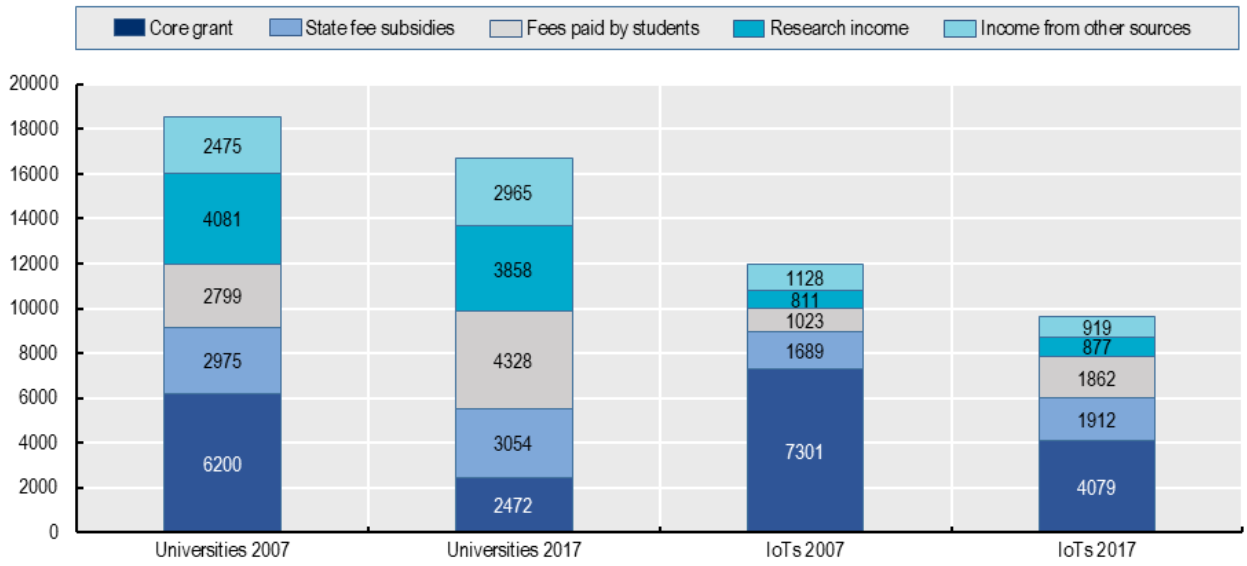
Public universities and Institutes of Technology (IoTs) in Ireland derive their income from a diversified set of public and private funding streams. The main categories of income are a core block grant from the Higher Education Authority (HEA); tuition fee subsidies for Irish and EU undergraduate students paid by

the HEA; academic fees and contributions paid by students; income from public and private external research funders and HEA capital grants. In addition, both universities IoTs obtain a growing share of their income from other sources such as philanthropic donations, consulting activities and revenue from commercial activities (hosting events, etc.) and provision of campus amenities.

The Irish Government agreed to pay tuition fees for eligible domestic undergraduate students from the academic year 1995/96 onwards, initially leaving eligible students to pay only a comparatively small registration fee. At the same time, the government assumed responsibility for compensating institutions for the income previously generated by student fees. The HEA still pays institutions fixed amounts (based on historic fee levels) in lieu of tuition fees for each eligible domestic or EU student they enrol. However, the initially small registration fee paid by students (which has evolved into a "student contribution") has been increased over time, with a major increase in 2011, and now stands at EUR 3 000 a year for undergraduate students in all public institutions. As discussed later in this brief, financial aid to cover a proportion of the student contribution is available for eligible students. Post-graduate and non-EU undergraduate students pay substantially higher fees, set freely by institutions.

Figure 1. Change in income per student in Irish universities and Institutes of Technology

Average income per full-time-equivalent student in universities and IoTs in 2007 and 2017 in euros (nominal value)



Note: Data exclude income for capital expenditure (inflows), which is treated separately in institutional accounts.
Source: Financial Trend Analysis – Universities and IoTs 2007-2017 (HEA, 2019[2])

In parallel to the increase in the student contribution, the level of the core HEA block grant paid to universities and Institutes of Technology fell steadily between 2008 and 2017, as a result of public spending constraints. This trend is illustrated in Figure 1, which shows average income per student in universities and Institutes of Technology in 2007 and 2017, broken down by source. Over the same decade, total income per full-time equivalent (FTE) student in nominal euros fell by 10% in universities (a 16.8% fall after accounting for inflation) and 19% in Institutes of Technology (25% after inflation) (HEA, 2019[2]). The value of the HEA formula-based core block grant received per student fell by 60% in universities and 44% in Institutes of Technology, although income per student from fee subsidies from the HEA (free fees) increased by, respectively, 3% and 13% (HEA, 2019[2]). Taking the core grant and state fee subsidies together, total core state funding for universities decreased by 40% in universities nad 33% in Institutes of Technology bewteen 2007 and 2017. Fee income paid by national and international students increased by

55% in universities and 82% in Institutes of Technology. Fees paid by students now account for around 26% of total income in universities (up from 15% a decade earlier) and 19% in Institutes of Technology (up from 9% in 2007) (HEA, 2020[12]).

The HEA core block grant is intended to provide a foundation level of investment for research in higher education, particularly in universities. In addition, as shown in Figure 1, receive research income from external public and private sources, including the Irish Research Council (funding for doctoral candidates, post-doctoral researchers and fundamental research), the Health Research Board and Science Foundation Ireland (mission-oriented research) and Enterprise Ireland (applied research and development). On average, in 2017, external research revenue accounted for about a quarter of total income in universities and just under 10% of income in IoTs (HEA, 2019[2]).

Ireland's current institutional funding model

The main steps in the allocation process

The HEA allocates the available budget envelope for core operating funding to public HEIs using a single allocation system, initially introduced in 2006 for universities and from 2009 onwards for IoTs (HEA, 2017[5]). The main steps in this allocation process are as follows:

1. The HEA receives notification of **overall budget envelope** available for the recurrent grant allocation to HEIs as part of national budgetary processes.
2. The Department of Further and Higher Education, Research, Innovation and Science – the line ministry for the HEA – directs portions of this overall envelope to be used for designated, **ring-fenced (earmarked) purposes** that correspond to strategic policy objectives. Strategic funding has been allocated for priorities such as system restructuring (such as the creation of Technological Universities), expansion of provision in areas of skills need, as well as shared services such as online tools (e.g. IRel for eJournals) or the Irish Survey of Student Engagement. Protected funding for costly fields such as dentistry or music is also ring-fenced at this point. Although strategic funding was historically intended to be additional funding, budgetary pressures in recent years mean that this process of initial "top-slicing" from the total budget envelope has put downward pressure on the amount remaining to distribute to cover institutional operating costs.
3. The remaining budget is split into **two "pots"**, with 60% for universities and specialist colleges and 40% for Institutes of Technology.
4. A number of further "**top slices**" for specific sector-wide purposes are deducted from the total within each "pot". This includes IT systems shared between IoTs (HEA, 2017, p. 27[5]).
5. An amount for each institution is deducted to cover the **cost of "free fees"** (see below), based on fixed unit costs for different fee groups multiplied by the number of eligible students in each fee group for the previous year.
6. The remaining budget is allocated to institutions using a primarily enrolment-driven **formula** called the Recurrent Grant Allocation Model (RGAM), which includes weightings by subject field, education level and student background, as well as a further top-slice for research in universities (explained below).

The steps outlined above result in a series of ring-fenced pots at system or sector level for shared projects and activities and an amount of core block grant for each university, college and IoT. Since 2013, there has been a provision for withholding up to 10% of the allocated institutional block grant for a particular year, on the basis of an institution's verified performance in the preceding year against agreed targets agreed in three-year mission-based compacts. In the latest cycle of implementation for the performance framework has provided a modest level of additional funding to allocate to high-performing institutions and reduced emphasis on potential financial penalties (HEA, 2019[13]). The system of performance compacts,

which a similar to performance agreements seen in other OECD systems are discussed further in Section 3 of this brief.

Key components in the allocation process

As highlighted in the steps described above, the amount of block grant that each public HEI receives each year in Ireland is determined by two enrolment-related mechanisms. The "free fees" allocation (step 5 above) uses historically determined **fixed unit prices** for different undergraduate subject fields, with different fee levels for universities and IoTs. The student contribution – currently set at a uniform rate of EUR 3000 – is subtracted from this unit price as part of the calculation of the institutional allocation for free fees, which uses student enrolment on 31 January each year as its reference point. After deduction of the student contribution, the amounts paid to institutions for each eligible full-time undergraduate student ranges from a per-student average of EUR 3 000 (for non-laboratory fields) to EUR 7 000 (for veterinary medicine) in universities and from around EUR 800 to EUR 1 500 for IoTs (HEA, 2017, p. 24[5]).

The remaining amount from the available budget envelope in each of the two "pots" in a given year, after the free fees has been subtracted, is allocated to institutions using the Recurrent Grant Allocation Model (RGAM) **distributive formula**. Each eligible full-time and part-time student at undergraduate and postgraduate levels is assigned a weight depending on a) the notional cost of their programme, b) their level of study and c) whether or not they belong to one of four nationally defined "access groups":

- There are five levels of weighting for undergraduate programmes ranging from "1" for non-laboratory subjects to "4" for veterinary medicine and dentistry, with the same weights applied for universities and IoTs.
- For eligible students enrolled in a taught Master's programme in universities, the relevant subject weighting is multiplied by "1.5" and for each research Master's and PhD student by "3". For IoTs, lower weightings are applied for eligible postgraduate students. This additional allocation is designed to contribute to foundational research funding in institutions.
- An additional weighting of "0.33" is added for each student from an access group, defined as those from under-represented socio-economic groups; first-time mature students; disabled students and those from a traveller background (see Section 3).

The total available amount of resources for universities and IoTs is divided by the number of weighted students in the sector and the resulting units distributed among institutions according to their share in the weighted enrolment patterns. For universities, 10% of the resulting allocation to each institution is deducted (top-sliced) and redistributed among the seven universities based on research degree completions in the previous three years (45%), competitively earned research income per academic staff member (40%) and knowledge transfer metrics (15%). From 2019, this allocation for research and innovation was extended to the newly created Technological Universities. To avoid significant year-on-year changes for any institution are limited to plus or minus 2% of the average sectoral change in a given year.

Possible reforms of the current system

Two independent in-depth reviews of the funding of higher education in Ireland in recent years have pinpointed challenges with the current institutional funding system. The 2016 Cassells Report (Cassells, 2016[14]) focused on the overall volume of resources required by the system and recommended an additional EUR 1 billion in annual funding by 2030, to be sourced through one of three proposed funding models (ranging from nearly full state funding, to a system with tuition fees, backed by income-contingent loans for students). Following on from a recommendation of the Cassells Report, an Independent Expert Panel convened by the HEA identified possible ways to improve the institutional allocation model described above. In its 2017 report, the Expert Panel recommended a gradual shift to a unified funding allocation model for universities and Institutes of Technology (IoTs), using a formula centred on student retention

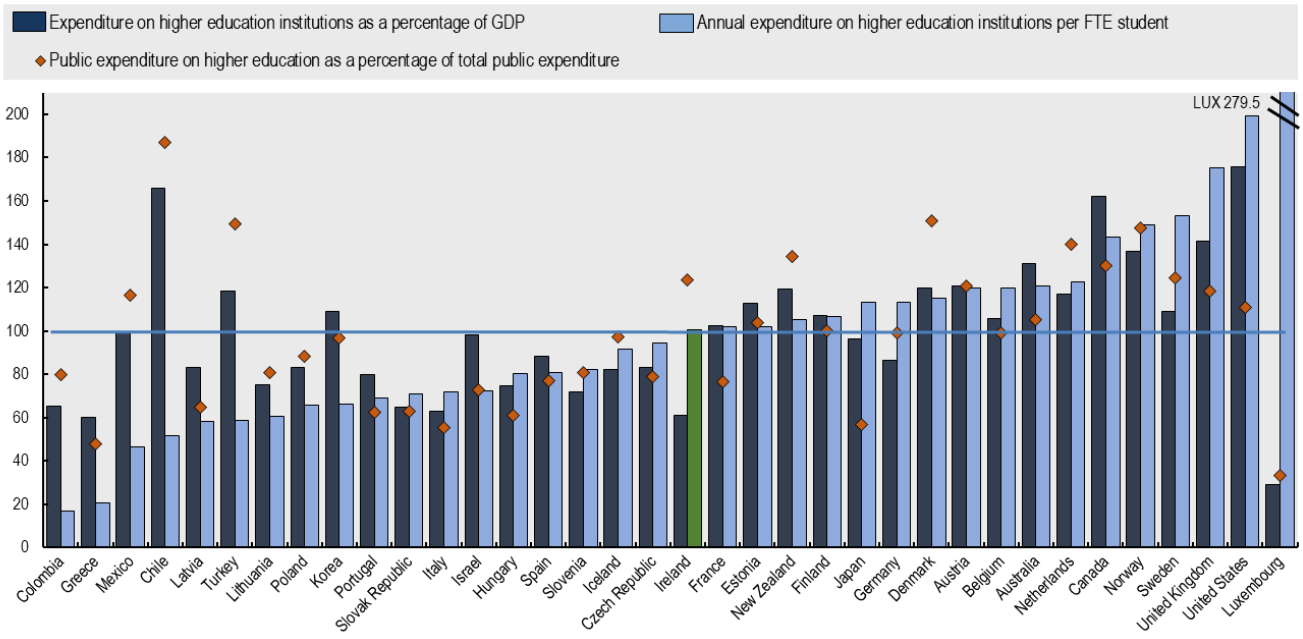
and which takes into account the costs of providing programmes in different fields of study (HEA, 2017[5]). The Expert Panel also recommended retention of an "access premium" in the core funding formula to reward institutional efforts to widen access, and a separate strand of targeted funding to institutions to support achievement of national priorities and respond to specific skills needs.

1.3 How resource levels in Irish higher education compare

Despite the challenging resourcing environment experienced by Irish higher education in recent years, the most recent comparable international data show that Ireland's total spending per full-time-equivalent (FTE) student on higher education institutions (all income streams) remains slightly above the OECD average when adjusted for purchasing power parity (PPP). As illustrated in Figure 2, Ireland's per-student spending on higher education institutions in 2018 was 0.5% higher than the OECD average, at around the same level as France, Estonia and New Zealand, although significantly lower than in Austria, Belgium, Australia and the Netherlands (all with per-student spending around 20% higher than in Ireland), Norway and Sweden (around 50% higher), the United Kingdom (74% higher) and the United States (on average, roughly double the level of per-student spending in Ireland).

Figure 2. Expenditure on higher education institutions (2018)

Selected measures of expenditure on higher education institutions (ISCED 5-8), OECD average = 100



Note: Expenditure on higher education includes spending from public and private sources on education, research and development, and ancillary services for students. The OECD average expenditure on HEIs as a percentage of Gross Domestic Product (GDP) in 2018 was 1.4%, average annual expenditure per student was USD 17 065, and average public expenditure on higher education as a percentage of total public expenditure was 2.9%.

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 offshore oil and international shipping); United States: Data include some post-secondary, non-tertiary education that occurs within HEIs. Comparable data for Costa Rica and Switzerland are not available and thus not included.

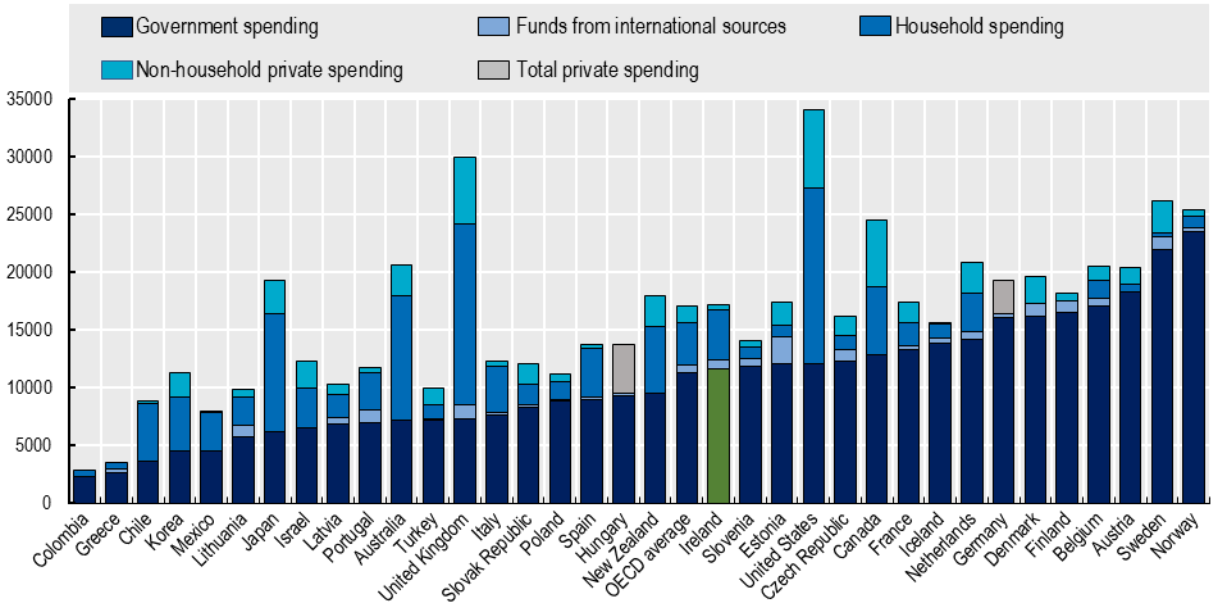
Source: OECD (2021[15]) *Education at a Glance 2021: OECD Indicators*, Tables C2.2, C4.1 and C1.2, https://doi.org/10.1787/b35a14e5-en.

In contrast, Ireland's high nominal Gross Domestic Product (GDP) per capita leads to a level of spending on higher education institutions as a proportion of GDP of only 0.9% of GDP. This is considerably lower than the OECD average of 1.4% of GDP and compares to 1.6% of GDP in Sweden, 1.7% in the Netherlands and just over 2% in the United Kingdom. At the same time, public spending on higher education consumes a comparatively high proportion of total public spending in Ireland, at 3.6%. This is a comparable level to that observed in Canada, Austria and Sweden, although in the case of the latter two countries, total public spending as a proportion of GDP is considerably higher than in Ireland.

As shown in Figure 3, expenditure from public sources account for around two-thirds of spending on higher education institutions in Ireland, roughly the same proportion as the average in OECD member countries, and significantly higher than in other predominantly English-speaking countries, such as the United Kingdom, the United States, Australia, Canada and New Zealand. The proportion of public spending per student reflects average values across all types of higher education institution. As noted earlier, the proportion of private income per student in the university sector is significantly higher than shown below. Data on public and private expenditure can be challenging to analyse in international statistics. For example, while a high proportion of spending on higher education institutions in the United Kingdom and Australia comes from nominally private sources (notably households), a significant proportion of this is spending is backed by public loan systems. High rates of non-repayment of loans, particularly in the United Kingdom, mean a proportion of spending recorded as private in the short term will become delayed public spending in the longer term (Bolton, 2020[16]).

Figure 3. Public and private expenditure on HEIs (2018)

Expenditure per FTE student on public and private institutions, in equivalent USD converted using PPPs



Notes: Countries are ranked in ascending order of the public expenditure on public and private tertiary institutions per full-time equivalent student. Data for Luxembourg are excluded to improve the readability of the figure. Luxembourg spent an average of over USD 47 694 per FTE student on higher education institutions in 2018.
Source: OECD (2021[15]) *Education at a Glance 2021: OECD Indicators*, https://doi.org/10.1787/b35a14e5-en.

2. Costs in higher education

In recent years, Ireland has placed significant emphasis on understanding the costs of providing higher education, as an input to policy. Standardised systems of cost accounting, derived from activity-based costing (ABC) methodologies, are in place for universities and Institutes of Technology and allow institutions to report the costs of educating students by subject field. However, the cost-accounting systems employed in the two sectors differ substantially and, in common with their peers in other advanced higher education systems, Irish policymakers and practitioners have concerns about the ability of existing systems to capture the complex set of factors – "cost drivers" – that affect the cost of activities in higher education. A further concern is that Ireland's current model for funding instruction in higher education (the student contribution, fixed unit fee subsidies and the RGAM distributive formula) are not determined or structurally aligned with estimated costs.

The 2017 HEA review of funding allocation to HEIs calls for "a new, consistent and comparable cost approach" that can "recognise the different and developing cost drivers in different institutions and respond accordingly" (HEA, 2017[5]). While suggesting that future state funding per student should be informed to a greater extent by costs, the review further questions whether a new funding model should take account of institutions' differing levels of dependency on state grants and capacity to generate revenue from private sources (HEA, 2017[7]). Underlying this question is a concern to avoid deadweight losses in public spending on higher education, whereby the state pays for services that could legitimately be part-funded from other sources.

Against this backdrop, this section of the brief addresses questions 1, 2 and 3a of the terms of reference by examining:

1. International evidence on the main factors that affect costs (cost drivers) in higher education, between fields of education, between institutions and over time.
2. How information on cost drivers can be taken into account in higher education funding models and the extent to which public authorities in OECD jurisdictions use information on observed costs in practice in their higher education funding models.
3. The extent to which the higher education funding model in Ireland, gives recognition to cost drivers, cost differentials between study fields, and how this compares to practices observed in other OECD jurisdictions.
4. The extent to which OECD jurisdictions have implemented systems to identify and report the cost of activities in higher education institutions as a basis for full-costing and how international practice compares to the activity-based costing approaches adopted in Ireland.

2.1 Cost drivers in higher education

What are the main cost drivers in higher education?

The term "cost driver" is used to describe a factor that causes change in the cost of an activity. In broad terms, as in many other labour and knowledge-intensive sectors, the *total costs* incurred by higher educations in their operations will always be driven by the volume of productive activity they undertake, in terms of the number of students educated and the scope of research and service activities delivered. Typically, as the number of students or research projects in a department, institution or higher education system increases, so does the overall cost of operating the department, institution and system. However, the *marginal cost* for each additional student or unit of research or service activity will depend on the influence of drivers of *unit costs* and, relatedly, the ability of institutions to achieve economies of scale.

Box 1. Total costs, unit costs and marginal costs in higher education – a short example

If total enrolment in a higher education programme increases by 50%, but class sizes are also allowed to increase by 50%, the unit cost per student will fall and the increase in the total cost of delivering the programme and the marginal cost of educating each additional student are likely to be comparatively modest. Some cost increases driven by increased student numbers – such as registration and IT costs – would be almost inevitable. Moreover, in the absence of changes to pedagogical techniques (the "production technologies" of the educational process), the impact of the increased class sizes on the student experience and quality of education will almost certainly be negative. Teaching staff will have less time to devote to each student and may have to reduce labour-intensive activities, such as supervision of practical exercises or marking assignments.

If, in contrast, the increase in student enrolment is accompanied by deployment of additional teaching staff and teaching space to maintain student-staff ratios and learning conditions, per-student unit costs are more likely to remain constant or increase, with the marginal cost of educating each additional student dependent on the efficiency with which additional staff and teaching space are deployed. In this second scenario, the total costs of delivering the programme will increase, but so will the likelihood that the student experience and educational quality can be maintained.

The drivers of unit costs in higher education institutions have been the subject of a limited, but growing, body of international research. Analyses conducted in different OECD jurisdictions typically take observed unit costs of provision in higher education (e.g. the cost by full-time-equivalent student per year, per credit or per module in a given field) and use statistical techniques to assess the significance and magnitude of the correlation between unit costs and possible unit cost drivers. International research has tended to focus on explaining cost differences in instruction between fields of study and between higher education institutions, and, particularly in the United States, on changes in unit costs over time. Research into cost drivers in higher education research has typically focused on understanding the full costs of research activity through the implementation of activity-based costing methods (see below). There has been limited research into unit costs in research, most probably due to the heterogeneity of research activities compared to instruction and the difficulty of defining comparable "units" of output.

Available international research consistently finds that the ratio of students to teaching staff is the primary driver of unit costs in instruction in higher education. In an analysis of differences in the costs of instruction between disciplines in US universities, Hemelt et al. (2018[17]) identify student-to-staff ratios as the largest determinant of unit cost. This is followed in importance by two further staff-related factors: faculty teaching load (the number of hours each staff member teaches) and the composition of department teaching faculty (tenured versus non-tenured (contingent) staff). They find that non-personnel expenses are also a significant driver of costs for sciences with laboratory components, albeit with less influence than staff-related factors, but in other fields explain relatively little of the cost differences observed. The study also identifies different trade-offs applied by institutions and departments in different fields. For example, in US universities, some fields, like economics, offset high faculty wages with large classes, resulting in unit costs that are comparable to English, despite higher faculty pay. Others, like physics, partially offset higher faculty salaries with heavier faculty workloads (more teaching hours per full-time faculty member).

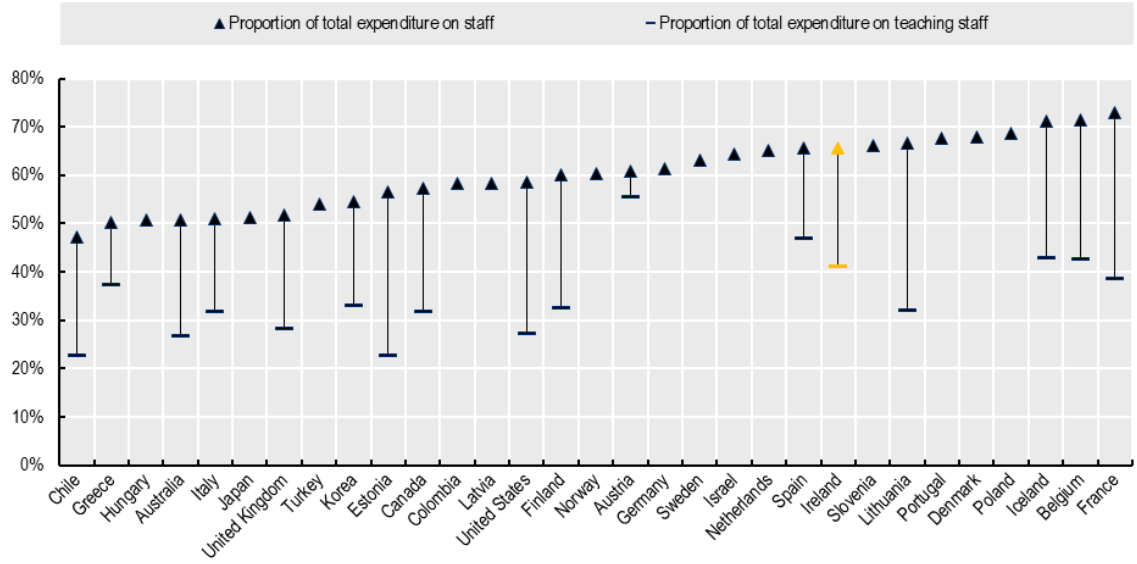
A 2016 study in Australia by Deloitte Access Economics (2016[18]) and 2019 study by KMPG LLP (2019[19]) in England also identified student-to-staff ratios and other staff-related factors as the main drivers of unit cost differences between fields of study and institutions in the Australian and English higher education sectors, respectively.

This strong correlation between staffing levels and costs in instruction is consistent with a general pattern of staff costs accounting on average for around 60% of total expenditure of higher education institutions

(67% of current expenditure) in OECD jurisdictions. As shown in Figure 4, the proportion of total expenditure on higher education institutions allocated to staff costs varies from under 50% in Chile to over 70% in Belgium and France, with Ireland in the top quartile of OECD jurisdictions with a proportion of 66%. A substantial, but varying, proportion of staff compensation costs in higher education institutions are incurred for staff with active teaching responsibilities in all higher education systems with available data, with other staff compensation costs incurred for dedicated research staff and staff in management, administrative and support roles. A proportion of the latter staff categories support the instruction functions of higher education institutions as thus form part of the indirect costs of instruction.

Figure 4. Proportion of institutional expenditure on staff compensation in OECD jurisdictions

Proportion of expenditure on higher education institutions allocated to expenditure for compensation of personnel and compensation of personnel with staff with active teaching responsibilities in 2017



Note: 2017 is most recent data for which comparable financial data are available at the time of writing. Not all countries report a breakdown of costs between teaching and non-teaching staff. Owing to missing data, the values for Ireland for 2017 are based on national data for the sector (HEA, 2019[2]), which are consistent with data reported to the OECD by Ireland in earlier years.
Source: OECD (n.d.[20]) Education Statistics (database), https://doi.org/10.1787/edu-data-en.

In addition to its findings in relation to staff factors, the Australian study by Deloitte Access Economics (2016[18]) also found the size of institutions to be weakly correlated to lower costs, suggesting some scale efficiencies in larger institutions. However, the authors note that smaller institutions also tend to have smaller class sizes (meaning class size and institutional scale overlap as unit cost drivers to some extent). The study also identified a weak positive correlation between universities located outside major urban centres and higher unit costs, which it attributes in part to higher proportions on non-traditional students in such institutions. In contrast, the Australian analysis does not find a correlation between the research intensity of universities and higher per-student instructional costs, despite assumptions that salaries in research universities are higher. It is conceivable this is related to class size and teaching load, as well as the way costs are attributed to instruction and research activities in the cost reporting method used.

Table 2 provides an overview of the main factors that influence unit costs in instruction in higher education that emerge from the international literature on costs. For each unit cost driver, the table provides a general indication of its influence on total costs and summarises the main mechanisms through which the driver is assumed to influence direct departmental costs and indirect costs (overhead) in the institution. In cost-

accounting systems, the term "cost driver" is frequently used to describe the factors used to allocate indirect costs to activities.

Table 2. Cost drivers in higher education and theoretical relationship to direct and indirect costs

Cost driver	Activity type	Measurable variables	Strength of influence	Key mechanisms of influence on *direct costs*	Key mechanisms of influence on *indirect costs*
Student-staff ratio / class size	Instruction	Student FTEs Teaching staff FTEs Support staff FTEs	***** Strong influence on costs	• Lower student-staff ratios and smaller class mean that the income generated for/by each student must pay for a higher level of staff salary costs • Larger student cohorts per staff member generally require fewer square metres of accommodation per student (fewer offices, more students per teaching space)	• Lower student-staff ratios mean income generated for/by each student must pay for more central services in support of staff (Human Resources, library and IT costs related to servicing staff) • The cost of central services in support of students is unlikely to be influenced significantly by this driver
Staff employment status	Instruction Research	% of casual vs permanent or tenured staff	***** Strong influence on costs	• Teaching and research staff with temporary or causal contracts command lower salaries than permanent staff • Temporary or casual staff can be recruited, dismissed and deployed more flexibly, reducing costs	• Employment or temporary staff in central services rather than permanent staff also reduces costs • Limited impact on other costs of providing central services: HRM and recruitment costs may increase with the proportion of casual staff, to process contracts
Teaching load	Instruction	Number of sections/modules taught by each FTE academic staff member	***** Strong influence on costs	• If salaried staff teach a higher number of teaching hours, this is likely to reduce the total number of teaching staff required and thus total salary costs	• A lower number of staff will reduce overhead costs for office accommodation, IT and calls on central services
Student origin	Instruction	% of students from "non-traditional" backgrounds	** Moderate to weak influence on costs	• Greater need for academic and non-academic support at departmental level, although institutions may not always provide this	• Greater need for academic and non-academic support at institutional level, although institutions may not always provide this
Institutional scale	Instruction Research	Number of FTE students per department Number of FTE students per institution	** Moderate to weak influence on costs	• Larger scale departments and institutions appear to be correlated with lower costs per student, although the correlation is weak and once student-staff ratios are controlled for	• As the scale of a department or institution increases, fixed indirect costs are spread over a larger volume of students There is some evidence of scale efficiencies
Regional location	Instruction Research	Number of FTE students Regional population density	** Moderate to weak influence on costs	• Lower target populations (smaller "markets"), meaning it is harder to achieve scale economies • Overlap with student origin, as regional campuses often cater to most disadvantaged students	• Link to indirect costs likely to be diffuse • Lower per-unit capital and labour costs possible

Source: Draws on analysis of cost drivers in Deloitte Access Economics (2016[18]), Cost of delivery of higher education and Hemelt, S. et al. (2018[17]), Why is Math Cheaper than English? Understanding Cost Differences in Higher Education.

The use of technology is also a potential driver of the unit costs of instruction in higher education, although evidence on the relationship between use of online and distance learning and unit costs is mixed (Xu and Xu, 2019[21]). Hemelt et al. (2018[17]) find online and blended programmes are associated with a modest reduction in unit cost, while Chirikov et al. (2020[22]) use a randomised experiment to show how blended undergraduate science programmes can be designed to achieve acceptable student learning outcomes at

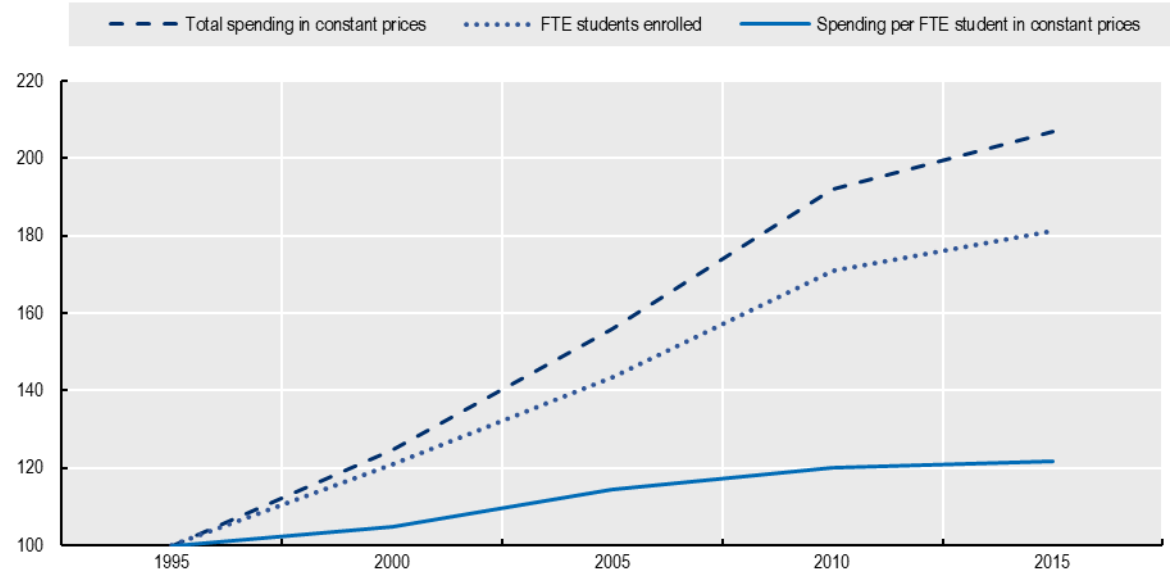
substantially lower costs than in-person instruction. However, in the absence of commonly defined indicators of technology deployment, it is difficult to apply deployment of technology as a criterion more widely in cost analyses and cost systems.

How have costs in higher education evolved over time?

As higher education has expanded, the total amount of money spent on higher education has increased in OECD countries over recent decades. As illustrated in Figure 5, in the twenty years between 1995 and 2015, total spending on higher education institutions more than doubled on average (an increase of 107%), after adjusting for inflation, in the 13 countries for which reliable time series date from the OECD/UIS/Eurostat data collection exist for this period. However, in the same period, total enrolment in full-time equivalent (FTE) students increased by only 81% and spending per FTE student increased by 22% on average, after adjusting for inflation. Unfortunately, a lack of historical, internationally comparable data, including for Ireland, limits the country coverage of such long-term analysis of expenditure, although the 13 countries included do represent a range of profiles among OECD members.

Figure 5. Changes in enrolment and expenditure on higher education institutions, 1995-2015

Average changes in enrolment of full-time equivalent students, total spending and spending per FTE student on higher education institutions (in constant prices (2015) and constant PPP) in 13 OECD member countries (Index: 1995 = 100)



Note: Average value across 13 OECD countries with available data for all years (Chile, the Czech Republic, Finland, Israel, Italy, Mexico, the Netherlands, Norway, Portugal, the Slovak Republic, Spain, Sweden and the United States). The value for 2005 for Norway has been interpolated as the average between 2000 and 2010. Spending data for the Slovak Republic are for 2016 rather than 2015. Data are not available for Ireland for this time period.
Source: Adapted from OECD (n.d.[20]), OECD Education Statistics (database), https://doi.org/10.1787/edu-data-en.

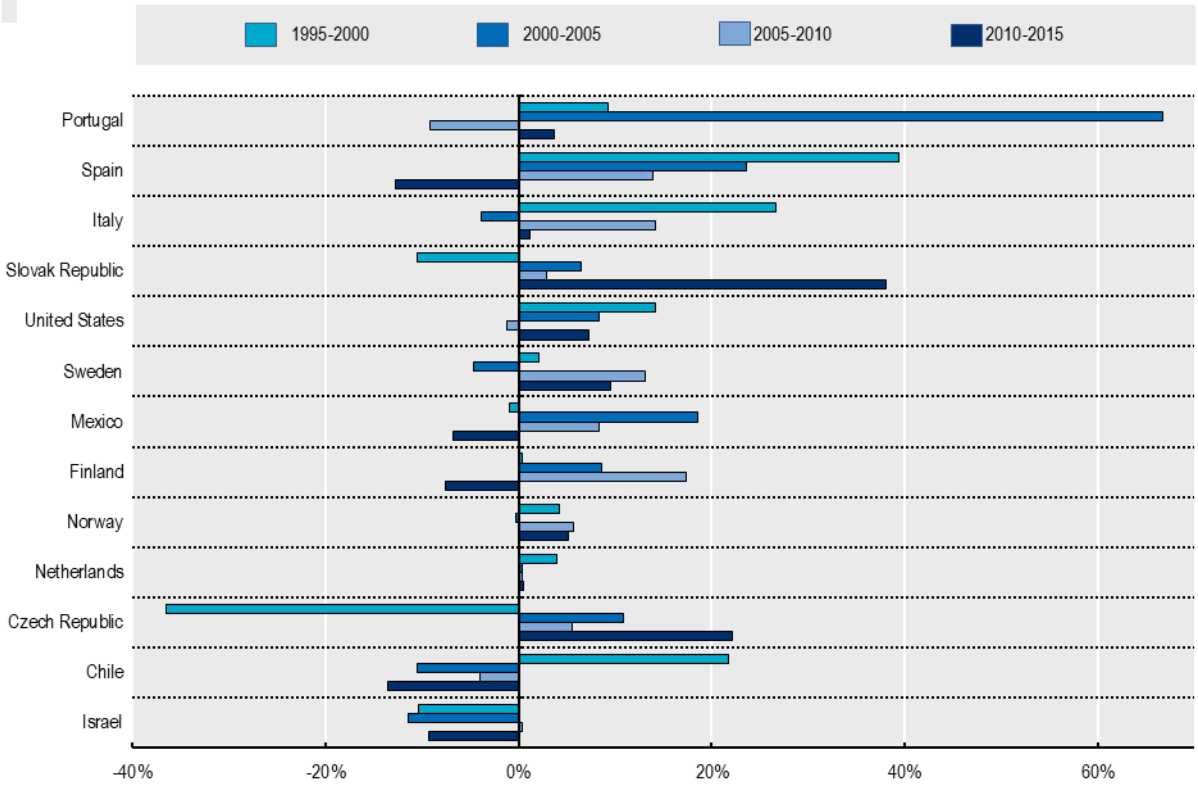
On average, in the 13 countries for which long time series data are available, real-terms expenditure on higher education institutions grew consistently faster than student enrolment between 1995 and 2010, leading to rising per-student spending. In the wake of the 2008 financial crisis, student enrolment increased sharply, most probably as a proportion of the population opted to enter – or remain in – higher education to avoid poor labour market conditions, while growth in total spending slowed, as governments introduced budgetary restraint measures. While total spending growth picked up in the years following the crisis and

enrolment growth slowed across the OECD member countries covered by the data, the rate of growth in spending per student decreased in the period from 2010 to 2015, as illustrated in Figure 5.

The average rate of change in expenditure per FTE student shown in Figure 5 masks divergent patterns in the OECD member countries with data included in the underlying calculation. Figure 6 shows the rates of change in per-student spending for each of the 13 countries, for each five-year period between 1995 and 2015, ordered by the overall rate of change observed between 1995 and 2015.

Figure 6. Percentage change in spending per FTE student 1995 to 2015

Percentage change in spending per FTE student on higher education institutions (in constant prices (2015) and constant PPP) per time period for the countries included in the calculation underlying Figure 5



Note: Organised in descending order of the rate of growth in spending per FTE student between 1995 and 2015. The value for 2005 for Norway has been interpolated as the average between 2000 and 2010. Spending data for the Slovak Republic are for 2016, rather than 2015. Data are not available for Ireland for this time period.
Source: OECD (n.d.[20]) Education Statistics (database), https://doi.org/10.1787/edu-data-en.

A number of patterns can be observed from Figure 6. Firstly, real-terms growth in per-student expenditure in two sets of European countries in the period 1995-2015 was driven by a relative convergence of spending levels in these countries towards OECD norms, from a low base. Portugal, Spain and Italy, all experienced strong real-terms growth in per-student spending in the period 1995-2005, with particularly rapid increases (over 25%) in Spain and Italy between 1995 and 2000 and in Portugal between 2000 and 2005, primarily as a result of increased public investment. In all cases, initial levels of spending were well below the OECD average. All three countries were strongly affected by the 2008 financial crisis, with Portugal already seeing real-terms spending per student falling by almost 10% in the period 2005-2010 and Spain seeing a decrease of 13% between 2010 and 2015. In the Czech and Slovak Republics, a period of decline in per-student expenditure in the late 1990s was followed by a period of growth, with real-

terms increases of over 20% in spending per student between 2010 and 2015. In Spain, Portugal and the Czech and Slovak Republics in particular, the periods of rapid growth in per-student spending coincide with periods of strong growth in the economy more generally.

A second pattern was seen in the high-spending jurisdictions of the United States, Sweden and Norway, which experienced sustained increases in real-terms per-student spending between 1995 and 2015, with the exception of a modest decline in the United States between 2005 and 2010 as a result of the financial crisis. The increases in in per-student spending in Norway and Sweden appear to have been driven by increases in investment in research in higher education, which increased faster between 1995 and 2015 than expenditure on institutions not directly related to research.

In the United States, a body of research evidence suggests that the observed cost increases result primarily from a combination of higher staff costs, stable productivity (common in high-skill economic sectors with limited scope for automation – a phenomenon known as Baumol's cost disease), and increases in spending on student services (Archibald and Feldman, 2018[23]; Hemelt et al., 2018[17]). In contrast to Norway and Sweden, where higher education institutions depend almost exclusively on public resources to fund instruction, institutions in the United States, particularly more prestigious public and private four-year institutions, have considerably flexibility to increase student fees to raise additional revenue. This contextual and regulatory factor (rather than a cost driver as such) also helps to explain the particular trends in per-student funding observed in the United States.

Finally, in both Mexico and Finland, despite the countries' radically different profiles, expenditure per student increased in real terms between 2000 and 2010, and declined in real terms after 2010, as the effects of budget cuts were felt. In contrast to the case of the United States, Norway and Sweden, in the Netherlands – another relatively high-spending country - per-student spending remained remarkably stable in real terms over the 20-year period. Following fast growth in the late 1990s, per-student spending in Chile has fallen in real terms since 2000, while the level in Israel has consistently fallen in real-terms since 1995, moving from a level in purchasing power parity equivalent to that of Finland to one similar to that in Italy.

2.2 The use of cost information in higher education funding policies

Why understanding the costs of higher education is important, but challenging

Governments have an interest in ensuring there is broad alignment between the relative costs of delivering higher education in different fields of study and the relative levels of revenue higher education institutions are able to obtain from public and private sources to fund instruction in these fields. If revenue is too low to pay for well-qualified and able teaching staff, appropriate facilities and equipment, and adequate guidance and support to students, there are serious risks to learning quality and student outcomes. When per-student revenue for particular studies is excessive in relation to real costs, inefficiencies are created and public funders and fee-paying students risk paying too much. Mismatches in funding between fields of study can lead to undersupply in educational fields that are underfunded, but important for national priorities, and, conversely, oversupply in well-funded, but potentially less relevant fields (Connew, Dickson and Smart, 2015[24]).

For institutional leaders and department heads within higher education institutions, information on the cost of the different activities undertaken in their organisations is useful for effective planning and resource management (Anguiano et al., 2017[25]). For example, activity-based costing (ABC) makes it possible to identify the cost implications of increasing or decreasing enrolment in a particular programme or module, of creating a new programme or of engaging in an externally funded research project or cooperation partnership. By identifying and attributing the indirect costs of specific activities, activity-based costing systems make is possible to gain an accurate picture of overhead costs – a particularly important consideration in the context of competitive research funding.

Efforts to ensure alignment between revenue and costs, in government or institutions, should ideally be informed by accurate information on what it actually costs to undertake a particular activity in higher education in a particular field in a particular institutional context. Unfortunately, five main factors complicate the task of obtaining and interpreting cost information in higher education:

1. Higher education institutions are generally **complex, multiple-output organisations**, which complicates the task of attributing costs accurately to activities. In institutions where academic staff conduct research and engage in service activities, as well as teach, it can be difficult to identify the staff time and physical resources used for each activity and thus the associated costs. Complex governance structures and multiple central services with different user communities make it more challenging to assign indirect (overhead) costs to activities at the level of departments and individual staff members.
2. Higher education institutions – and particularly universities – are **heterogeneous organisations** in comparison to many other public institutions, even within sub-sectors of the same higher education system. Disciplinary mixes, levels of research intensity, the scale and age of estates all vary. These inter-institutional differences are also arguably greater than in other potentially comparable sectors of activity, such as school education and healthcare. This can make it more challenging to interpret and compare cost information in two or more institutions on a like for like basis.
3. Information on the **quality of outputs** produced by higher education is, at best, imperfect and, at worst, entirely absent. This makes it harder to make judgements about efficiency and value for money. Objective and comparable measures of student learning outcomes are rarely available (and generally incomplete) and even established research metrics are open to challenge. More diffuse or long-term outcomes from activities, such as social engagement projects or fundamental research cannot be captured by established quantitative measures. This is not to say that it is impossible to make judgements about the quality of higher education – by combining a range of indicators, for example - merely that it is harder than in many other sectors.
4. As higher education institutions are primarily non-profit organisations operating **outside a market system**, the cost of specific activities tends to be a reflection of the level of resources available, rather than price levels established through market forces. Universities generally spend the income they receive and there is circularity between observed costs and income (and funding) levels, which is stronger than in market-based sectors (Deloitte Access Economics, 2016[18]).
5. The combination these factors makes it challenging to establish objective threshold measures of **what constitutes the "reasonable cost"** of producing a given higher education output in a given institution. If cost measurement challenges can be overcome, it is inherently difficult to determine if observed costs are too high or too low compared to the level need to produce a given unit of higher education output with few objective measures of quality and imperfect comparability between heterogeneous providers.

Higher education systems in several OECD jurisdictions, including Ireland, have made considerable progress in improving basic understanding of costs across different institutional types (the first and second of the five factors above) through the introduction of activity-based costing systems. Such systems make it possible to observe actual costs in a granular and accurate manner and to identify the main components that drive cost (see discussion in Section 2).

As noted, however, accurate cost data alone do not allow users to make judgements about whether the observed costs are appropriate to achieve a societally desirable level and quality of outputs. Debates are ongoing in the United States about the causes and justification for the increases in per-student costs highlighted in Figure 6. A consensus is emerging that a large proportion of the average cost increases observed in US universities can plausibly be attributed to legitimate attempts to maintain quality – by

offering competitive salaries to talented academics, for example – rather than profligacy and inefficiency (Archibald and Feldman, 2018[23]; Hemelt et al., 2018[17]).

Conversely, observers in other higher education systems may argue that institutional revenue is insufficient to guarantee adequate levels of quality in instruction and research. This is an argument heard in many OECD systems with comparatively low levels of per-student funding (see Figure 2). It is also an argument advanced in Ireland, where major system-wide reviews have called for increased funding to maintain and increase quality standards (Cassells, 2016[14]).

Box 2. Estimating "reasonable costs" in Australian higher education

In its 2016 study of costs in higher education institutions in Australia, Deloitte Access Economics (2016[18]) collected and compared cost information for 19 disciplinary areas from 17 Australian universities that voluntarily provided data. Based on regression analyses, the study concluded that most variation in cost across universities and fields of education can be explained by observable, universal, contextual characteristics (such as scale), and discipline-specific fixed effects. The study uses the results of this analysis to inform a definition of the "reasonable cost" of providing each field of education. This is fixed at the 25th percentile of observed costs (i.e. 75% of values are higher) after controlling for university characteristics. The authors argue this is a "lower bound of cost that may represent a reasonable cost frontier", although acknowledge it is a somewhat arbitrary threshold.

The "reasonable cost" of one year of full-time, bachelor's-level education was identified as roughly AUD 35 000 for veterinary and dental studies and around AUD 12 000 in education, management and commerce. The median costs in the same fields were around AUD 42 000 and AUD 13 000. The Australian study was conducted in a well-funded system with per-student spending that is above the OECD average (see Figure 2). It is questionable whether establishing a "reasonable cost" threshold at the 25th percentile would be appropriate in systems with below-average levels of per-student spending.

The authors also attempt to account for possible variation in educational quality in their analysis using self-reported student satisfaction measures, but acknowledge the limitations of such indicators. In the absence of common learning assessments that permit the standardised measurement of learning gains, there are no easy ways to incorporate robust measures of quality into such quantitative assessments of cost and to provide more nuanced measures of efficiency.

Source: Deloitte Access Economics (2016[18]), Cost of delivery of higher education https://docs.education.gov.au/system/files/doc/other/deloitte_access_economics_-_cost_of_delivery_of_higher_education_-_final_report.pdf (accessed on 14 August 2020).

One approach to determining whether the observed costs of providing higher education in a particular HEI or higher education system are reasonable (or unreasonably high or low) is to compare these costs with those observed in comparable institutions and systems. This was the approach adopted on a national scale in the study of costs in Australian higher education highlighted in Box 2. In broad terms, such benchmarking exercises are effective at uncovering cost differences and in identifying certain key drivers of these cost differences. Further analysis and contextual information are required, however, to determine whether observed costs and cost differences reflect genuine inefficiencies or simply unobserved, and entirely legitimate, differences in production conditions.

How governments (could) use cost information in funding policies

Governments can use information about the cost of higher education to inform the design of funding policies for the sector. They might do so for three main purposes:

1. To understand cost of providing higher education in different **fields of study** and the **differential costs** between fields to ensure subject-area weightings used in funding allocation mechanisms adequately reflect differences in real costs, in particular for expensive, and often high-priority, subject fields such as medicine or STEM subjects.
2. To permit judgements to be made about **total revenue needs** in higher education institutions, as an input to annual budgeting processes or as an input to reforms of public funding allocation mechanisms or student fee policies.
3. To make public how HEIs spend their income as part of broader efforts to ensure **transparency and accountability** in the sector.

The following sections review evidence collected for the OECD Resourcing Higher Education Project on the use of cost information in higher education funding models in OECD jurisdictions.

Linking funding to the cost of provision in different fields of study

Most OECD jurisdictions use formulas to allocate public resources to higher education institutions (rather than purely historical allocations) and most of these formulas use subject-area weightings in an attempt to align payments to institutions to the notional cost of provision in different fields. The effect of these weightings is to allocate more money to institutions for each student they enrol or graduate in expensive fields such as some natural sciences or medicine and less money for students in less costly areas of provision, such as humanities and social sciences. As subject areas weightings used by public authorities are often also used in internal allocation models within higher education institutions (meaning amounts per student received by institutions are passed on in the same proportion to departments), these weightings influence the resources available to – and thus the cost of – different fields of study on the ground.

Table 3 provides an overview of the subject-area weightings based on the notional cost of provision used in allocation formulas for undergraduate teaching subsidies in selected OECD jurisdictions comparable to Ireland. In nearly all cases, the subject-area weightings appear to have their origins in historical assumptions about – or assessments of – cost differences between fields of study, which may – or may not – have been cross-checked with observed costs.

Table 3. Subject-area weightings in selected OECD jurisdictions

Weighting factors for *undergraduate* students used in funding allocation formula in selected OECD jurisdictions

	Flemish Community		The Netherlands[2]		Scotland	Ireland (universities)	Denmark (universities)	Finland[3]
	Univ.	UC	Univ.	UAS				
Non-laboratory subjects (e.g. humanities and social sciences)	1	1	1	1	1	1	1	1
Subjects with fieldwork (e.g. computer science, education)	2	1.1 to 1.6	1.5	1.28	1.2 / 1.4	1.3	1.4	1
Laboratory subjects (e.g. engineering, physical sciences)	2	1.6	1.5	1.5	1.6 / 1.8	1.7	2.1	1.75
Clinical medicine	3.9	-	3	-	3.2	2.3	2.1	3
Veterinary studies / dentistry	3.9[1]	-	3	-	3.2	4	2.1	3

Note: Univ. = universities; UC = university colleges; UAS = universities of applied sciences; 1. Veterinary studies = 3; 2. The Dutch funding formula applies this weightings to enrolments and degrees awarded for the instruction component of funding and to degrees awarded to allocate 15% of basic funding to universities for research; 3: Finland introduced multipliers from 2021.
Source: de Boer, H. and B. Jongbloed (2018[26]), *Evaluatie interne allocatiemodellen Vlaamse universiteiten (Evaluation of the internal allocation models of Flemish Universities)*; Flemish Government (2013[27]) *Higher Education Code*, Article III.19 Scottish Funding Council (2019[28]) Outcome agreement funding for universities – final allocations for 2019-20.

The extent to which subject-area weightings based on notional costs influence the actual level of available funding for different fields of study in academic departments depends not only on how institutions distribute resources internally, but also on the relative weight of formula-based public funding in total institutional revenue. In publicly funded systems with modest levels of international fee-paying students, like Denmark, Finland or the Flemish Community of Belgium, core-grant income accounts for a majority of revenue available for instruction, and subject-area weightings will have a strong influence on the amount of money departments receive. In mixed systems with higher fee income, such as Scotland and Ireland, where formula-allocated funding accounts for a smaller proportion of institutional and departmental revenue, the influence of subject weightings on available funds is lower.

Assessing the extent to which subject-area weightings achieve their objective of aligning subsidies to programme costs requires data on actual subsidy levels and real costs for each subject area. There are no internationally comparable measures of per-student spending or costs in higher education by subject area. Generating such information would require detailed data on public subsidy rates (which could theoretically be obtained, but is not collected in existing international data systems) and cost data for standardised fields of study. As discussed below, a majority of OECD jurisdictions lack the institutional cost-accounting systems needed to generate the latter type of data and systems that do exist use different methods and subject-area groupings.

Table 4 nevertheless reports the average unit cost in purchasing power parity by subject group for a full-time equivalent undergraduate student in Ireland alongside costs observed in related fields in the United Kingdom and Australia. The data are not fully comparable as the subject-area groupings and underlying accounting systems used in the three countries differ. The objective of including these data is simply to provide a broad idea of the variation across and within countries. The data in Table 4 are reported average costs for instruction in the fields concerned and exclude spending formally attributed to research activities. This is the major factor explaining the differences in magnitude between the cost values shown here and the per-student spending data presented in Section 1.

Table 4. Observed costs per student by subject area in three OECD jurisdictions

Unit costs per full-time equivalent undergraduate student in 2016 USD adjusted for purchasing power parity (PPP)

Field	Ireland 2016/17 (Universities)	United Kingdom 2016/17	Australia 2016/17
History	8 515	12 858	8 949
Modern languages	11 930	12 780	15 149
Biological sciences	10 735	14 811	13 043
Engineering	11 796	16 545	15 528
Clinical medicine	20 354	26 124	20 149
Dental studies	49 730	26 124	29 520
Veterinary science	25 811	26 124	35 386

Note: Cost indicated are averages for the subject groupings to which the indicated field was assigned in each costing study. These subject groupings are not consistent across the three studies, meaning these average figures should be interpreted with caution.
Source: For Ireland: FEC data for 2016/17 supplied by HEA; for the UK KPMG LLP (2019[19]), *Understanding costs of undergraduate provision in higher education provision*; for Australia: Deloitte Access Economics (2016[18]), *Cost of delivery of higher education*.

Table 4 illustrates that the broad distribution of costs between fields is similar in all three countries and the adjusted per-unit costs are similar in many cases. Per-student costs in less expensive subjects, such as history, are, on average, lower in Ireland than in the United Kingdom, but around the same level as in Australia. Average costs in engineering in Ireland also appear to be below the average levels observed in these two comparable jurisdictions, while costs in dental studies are higher. A more accurate comparison of costs between countries would require a more fine-grained analysis and more rigorous harmonisation of data from the different countries, although even this would not be able to compensate totally for differences in cost measurement and subject groupings.

Setting budget envelopes and accounting for non-state income

The results of the OECD Higher Education Policy Survey and policy and literature reviews undertaken to prepare this brief show little evidence of governments systematically using cost information to set the level of public budget envelopes for higher education or to adjust cost weighting in their systems. Both Australia and New Zealand have undertaken recent reviews of costs to inform policy (Deloitte Access Economics, 2019[29]; Connew, Dickson and Smart, 2015[24]). However, both these countries lack universal activity-based costing systems and, in both cases, the reviews (which are ongoing in Australia) served to inform broad policy formulation rather than the establishment of specific budget thresholds.

The level of public funding for higher education institutions (the total budget envelope) is established in OECD jurisdictions through political processes, which take account of available public resources and budget proposals developed by ministries or agencies responsible for higher education. The method for developing such budget proposals (which, subsequently, may or may not be approved by government and parliament) differs slightly depending whether the funding model sets up-front unit costs per funded student or simply distributes the available budget envelope. Broadly, there are three main models of formula systems to allocate funds to institutions, each with slightly different implications for budget programming:

1. Systems can theoretically fix **guaranteed per-student unit costs** in advance *and* allow **open student recruitment** by institutions. The only notable recent example of such a system in an OECD jurisdiction was Australia's demand-driven system for undergraduate enrolment, used from 2012 to 2018. The comparatively high student fees in Australia meant the per-student subsidies under the Commonwealth Grant Scheme (CGS) were lower than in a fully public system. Nevertheless, such a system requires careful projections of student enrolment and latitude in the total budget envelope to cope with calls for funding generated by student enrolment. This budgetary

uncertainty and increasing enrolment lead to the introduction of institutional maximum grant levels in 2018.

2. Some systems fix **guaranteed per-student unit costs** (with weightings for different fields of study) in advance, but place **limits on recruitment** for funded students. This is the case for Scottish and Irish-domiciled undergraduate students in Scotland, for example, where the funding agency calculates the number of funded places they can provide in light of available funds and allocate these to institutions. In such cases, it is possible to work with closed budget envelopes and adjust student recruitment caps by institution depending on the level of resource available. This is now the system in place in Australia and Denmark and Finland operate broadly similar systems, although per-student funding has declined in Finland in recent years (so unit costs have not been guaranteed over time).
3. Other systems combine **open or near-open recruitment** of students with a closed or nearly **closed budget envelope**. Such systems seek to achieve broad stability in per-student funding, often by using historical enrolment and credit acquisition data (e.g. for T-2 years), but do not construct their budgets using guaranteed unit costs per-student. This is the system used in several OECD countries, including the Flemish Community of Belgium, as well as many US states. In such systems, if the available budget envelope does not increase in line with enrolment or graduation, the level of funding per student falls. In the US states, which are unable to borrow to compensate for lower tax revenue in economic downturns, such reductions are almost inevitable when economic conditions deteriorate.

Although jurisdictions such as Australia and Scotland take account of the level of domestic tuition fees in establishing levels of institutional subsidy, the research undertaken for this brief has not identified higher education systems where public subsidies are modulated in function of the level of institutional revenue for other sources. Table 5 summarises the main funding allocation and budget-setting configurations in place in selected OECD jurisdictions.

Table 5. Features of funding models that influence calculation of the budget envelope

	Type of budget envelope	Open or capped recruitment of students	Formula allocation method		
			Fixed unit cost per student	Mixed (unit costs + distributive)	Purely distributive
Ireland	Closed	Open (1)		X	
Denmark	Closed	Capped in certain fields	X		
Flemish Community	Semi-open	Capped in certain fields			X
Finland	Closed	Effectively capped			X
Australia	Closed	Effectively capped	X		
Scotland	Closed	Capped	X		
The Netherlands	Closed	Capped in certain fields			X

Note: (1) Institutions in Ireland have autonomy to limit the number of students they admit, but there are no system-level caps.

2.3 Does Ireland's funding model give adequate recognition to cost drivers?

The design of the Irish funding model recognises some key cost drivers, but not all

The 2017 Irish funding review (HEA, 2017[5]) notes none of the three main components of the current core funding system in Ireland (the student contribution, the grant in lieu of tuition fees and the RGAM block grant) are determined by, or structurally aligned to, the actual costs of providing higher education (HEA, 2017, p. 8[7]).

The evidence collected for this brief suggests that:

1. The current public funding model for higher education in Ireland, with its combination of differentiated fee payments by the state and subject-area weightings within the distributive RGAM formula creates a relatively **transparent link** between student numbers (a key driver of total costs) and the public subsidy institutions receive. Systems with unit payments per student that are established in advance, such as the system of "free fees" in Ireland, are more transparent than purely distributive formulas, which, if the total budget envelope fails to increase in line with enrolment, do not guarantee institutions funding levels that are proportional to changes in activities or outputs achieved. This latter pattern is also clearly visible in Ireland, where the value of the per-student funding allocated through the distributive element of the RGAM funding formula declined substantially in the period following the financial crisis (see Figure 1), as the level of total funding available did not keep pace with increasing enrolment. Ireland is the only OECD jurisdiction analysed for this brief to combine fixed unit payments (free fees) with a distributive formula.
2. The **subject-area weightings** used in Ireland within the RGAM formula are broadly in line with those used in other OECD jurisdictions, albeit with a lower-than-customary weighting for clinical medicine and a comparatively high weighting for veterinary students and dentistry. In the case of these latter fields, additional funding is provided to institutions as a targeted grant outside the model. Fee payments by the state (free fees) are also differentiated to take some account of differences in the notional cost of delivery in different subject fields. International evidence supports the differentiation of funding by subject field to allow higher education funding systems to give appropriate recognition to inter-field differences in student-to-staff ratios and other major cost drivers.
3. A rudimentary comparison of the costs of instruction in different subject fields in Ireland, the United Kingdom and Australia suggests **observed per-student costs are lower in Ireland** than in the two comparator countries, including in fields such as engineering and clinical medicine. Given the circular nature of costs and expenditure on higher education, this is consistent with the substantially lower levels of per-student spending on higher education institutions in Ireland, compared to the United Kingdom and Australia (see Figure 2).
4. The 2017 Irish funding review found that real costs in higher education were 3-4% higher than the combined funding that institutions receive from state fee subsidies, the RGAM formula and student contribution for non-laboratory subjects in both universities and Institutes of Technology, and around 16% higher than combined per-student funding in laboratory subjects in both sectors (HEA, 2017[7]). This situation is not the result of inaccurate cost weightings (the per-student cost difference between laboratory and non-laboratory costs is actually smaller than the difference in the respective weightings), but rather of the **falling share of the subject-weighted formula-based funding in overall instructional funding** per student. As the proportion of total funding for instruction allocated through the distributive element of the RGAM has declined, the formula has had **less influence** on per-student funding amounts and is **less able to align payments** in line with key subject-field-related cost drivers.
5. The Irish funding model does not include weightings to provide additional funding to small or regional institutions that have comparatively high overhead costs and are less capable of achieving **economies of scale**. International research suggests institutional and departmental scale are important secondary drivers of costs (after staff-related factors linked to subject mix). Some other OECD jurisdictions, such as the Flemish Community of Belgium and Denmark use fixed allocations in their funding formulas, which account for a proportionally larger share to instructional funding in smaller institutions.
6. Although not primary focus of this brief, the Irish funding model provides **very limited structural funding to higher education institutions for research**. Research activity has a cost and project-based funding rarely covers the full economic costs of research in OECD jurisdictions. The limited

core funding for research in Irish institutions means research activity and the increasing levels of externally funded research – promoted by Irish governments – creates downward pressure on core funding for instruction. Any reform of the funding model will need to pay adequate attention to the cost of research and the mechanisms in place to ensure adequate funding of research activity.

7. The Irish system does **not impose or provide for negotiation of student enrolment caps** for funded places on higher education institutions, as is the case in Scotland, Finland or Australia, for example. Recruitment limits may have allowed Irish institutions to maintain per-student spending at more constant levels in recent years, but the result would almost certainly have been reduced access to higher education for the country's growing population. It is questionable whether this would have been politically or socially acceptable, in particular in light of Ireland's strongly knowledge-based economy.

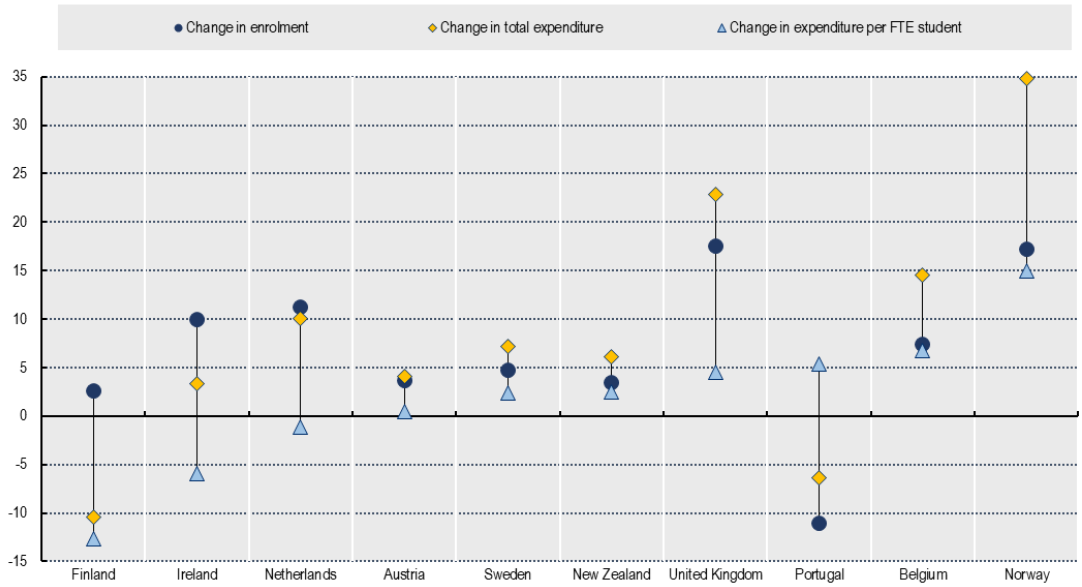
In summary, the design of the Irish higher education funding model for instruction gives a similar or greater level of recognition to cost differentials between subject areas to models used in comparable OECD jurisdictions. It thus recognises keys cost drivers that explain differences in cost between subject areas. However, the model does not recognise the potential effects of institutional and departmental scale on costs, nor provide adequate recognition of the costs of research activity. This situation is compounded by the fact that the budget envelope for higher education institutions has not kept pace with increased enrolment leading to falling per-student funding in recent years.

Total funding for higher education in Ireland has not kept pace with enrolment and costs

Available international data confirm the trend illustrated in Figure 1, showing that total spending per-student on higher education institutions in Ireland decreased in real terms between 2012 and 2017.

Figure 7. How per-student spending on higher education has evolved in OECD jurisdictions

Percentage change in enrolment in FTE students, and total expenditure and per-FTE-student expenditure on higher education institutions in USD adjusted for constant (2015) prices and constant PPP between 2012 and 2017



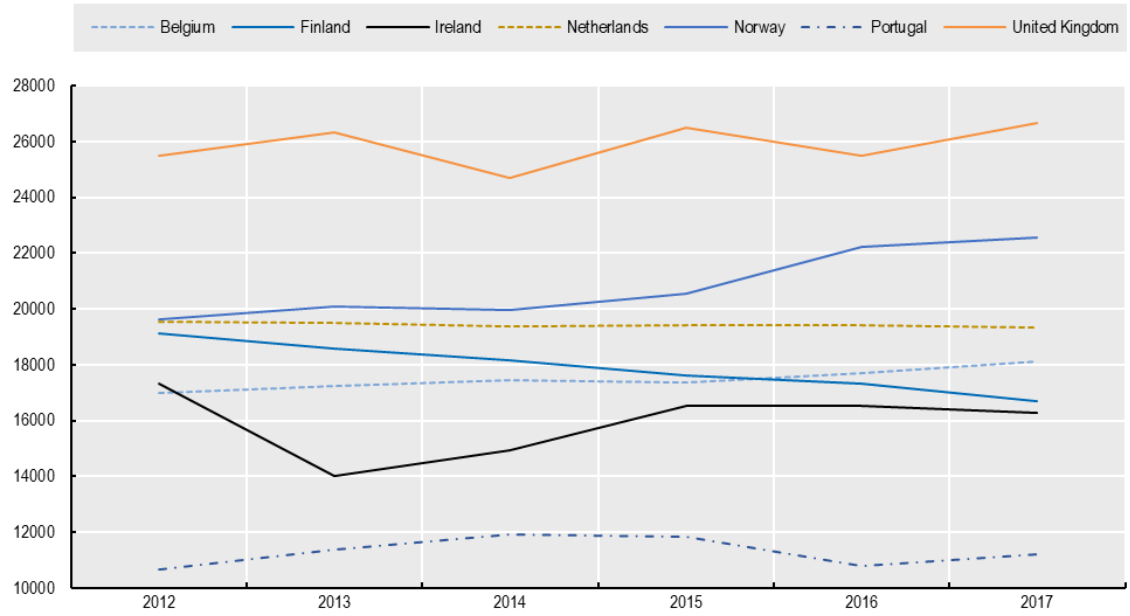
Note: Selected comparator countries with available data, ordered by percentage change in per-FTE-student expenditure in constant prices (2015) and constant PPP
Source: OECD (n.d.[20]) Education Statistics (database), https://doi.org/10.1787/edu-data-en

Figure 7 shows that, while total spending on higher education institutions in Ireland increased by around 3%, after adjusting for inflation, between 2012 and 2017, real-terms spending per FTE student decreased by 6%. Of the nine selected comparator countries, per-student spending only decreased by a greater proportion in Finland (-13%), while it remained stable or increased in the eight other jurisdictions. Portugal, another country hit hard by the 2008 financial crisis, was only able to achieve real-terms growth in per-student spending because of a sharp (-11%) fall in enrolment. In Norway, Belgium (both language communities) and the UK, per-student spending increased by over 4% after adjusting for inflation, despite dynamic enrolment growth.

Furthermore, while, as shown in Figure 2 above, per-student spending on higher education institutions in Ireland remains marginally above the average of the OECD as a whole, its level is significantly below that in comparator jurisdictions against which Ireland might legitimately be benchmarked. As shown in Figure 8, having reached a low point in 2013, real-terms per-student spending in Ireland increased, but remains below the level of funding seen in Finland (3% higher), Belgium (11% higher), the Netherlands (19% higher), Norway (39% higher) and, by the greatest margin, the United Kingdom, a country that spent 64% more per student than Ireland in 2017. In the absence of robust, comparable measures of quality in instruction, it is not possible to establish a correlation between the comparatively low level of funding in Ireland and the quality of education provided in the Irish system. Nevertheless, the fact that Ireland's relative position to the comparator systems (with the exception of Finland) declined in recent years raises legitimate questions about the adequacy of funding in the Irish higher education.

Figure 8. How the level of per-student spending on higher education in Ireland compares

Per-FTE-student expenditure on higher education institutions in USD adjusted for constant (2015) prices and constant PPP between 2012 and 2017 – selected OECD jurisdictions



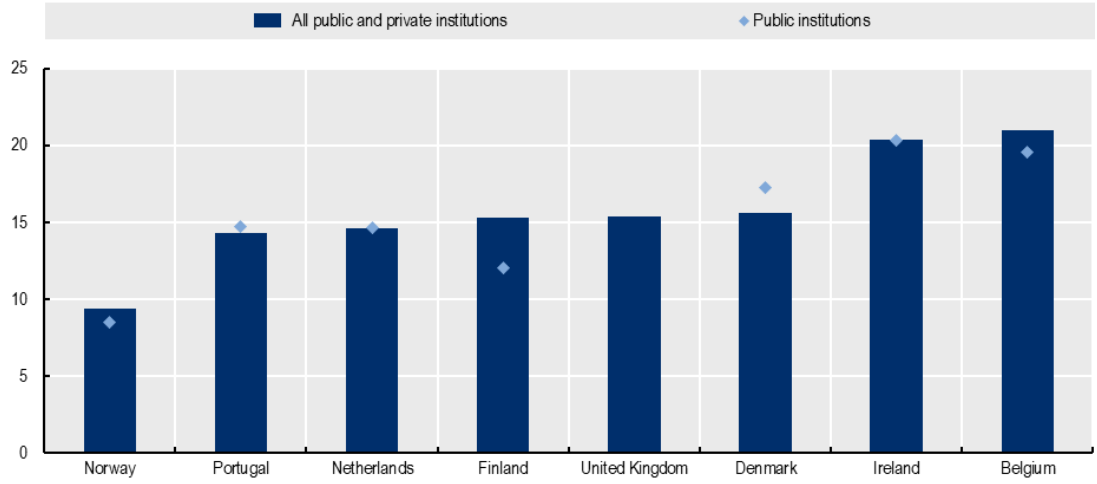
Note: Selected comparator countries with available data
Source: OECD (n.d.[20]) Education Statistics (database), https://doi.org/10.1787/edu-data-en

Figure 9 shows the average ratio of FTE students to FTE academic staff member in Ireland and selected OECD comparator jurisdictions. The ratio of students to academic staff in Ireland is over 20:1 on average, compared to around 15:1 in Denmark, the United Kingdom, Finland and the Netherlands. Notwithstanding the fact that international data on academic staff are imperfect, as they do not allow hours spent teaching

to be distinguished from hours spent doing research, the available data suggest larger class sizes are a key mechanism used in Irish higher education to maintain costs (and expenditure) at lower rates than seen in comparable OECD jurisdictions. Although the relationship between class size and teaching quality is hard to prove, it is reasonable to assume, in the absence of compelling evidence of more efficient and equally effective instructional practice, that higher student-to-staff ratios have a negative influence on student learning environments.

Figure 9. Ratio of students to staff in higher education in Ireland and comparator countries

Average number of FTE students per FTE academic staff member in higher education institutions.



Note: Selected comparator countries with available data
Source: OECD (n.d.[20]) Education Statistics (database), https://doi.org/10.1787/edu-data-en.

The decline in real-terms per-student funding observed in Ireland between 2012 and 2017, the country's low level of total per-student spending in comparison to key comparator systems and the relatively high student-to-staff ratio all suggest that Irish higher education is not funded at level that will allow it to operate on a par with other high-performing OECD systems. This will make it harder for the system to achieve the government's ambitious national objectives for higher education (Irish Government, 2018[30]). This conclusion is consistent with findings for the 2016 Cassells Report (Cassells, 2016[14]), which also called for a structural increase in funding for higher education in Ireland.

Increasing available resources to allow the system to meet existing and additional costs – for expanded provision, smaller class sizes or research activity, for example – will almost certainly require additional public funding for higher education. Although there may be scope to increase revenue from international students, which can be reallocated internally, the attractiveness of the system as a study destination is dependent on its underlying strengths, not all institutions can benefit equally from such revenue and the COVID-19 pandemic has illustrated the risks of a strong reliance on tuition fees from international students. Equally, the scope to raise domestic fees above the level of the current EUR 3 000 annual "student contribution" is likely to be limited in a context where the government seeks to widen access and many parts of the Irish population will be facing economic difficulties in the wake of the pandemic.

2.4 Activity-based costing in Ireland and other OECD jurisdictions

System-wide activity-based costing approaches are not widespread in the OECD

Over the last decade, an increasing number of OECD higher education systems have adopted system-wide protocols for activity-based costing (ABC). Such protocols make it possible to identify the direct costs of different types of activity in operational units – such as departments, faculties or research centres – and to attribute indirect (overhead) costs to these activities. In European OECD jurisdictions, the adoption and development of ABC accounting systems has been driven largely by the financial reporting requirements of competitive research funding programmes, in particular, the European Union's research and development framework programmes (known as Horizon Europe in its current incarnation). Such funding programmes require beneficiaries to maintain detailed records of direct project costs (such as the salaries of staff engaged in funded projects) and be able to demonstrate and justify eligible overhead costs (related to premises and central services).

The United Kingdom was the first European country to introduce a system-wide cost-accounting model for universities in 1999. This initiative resulted in part from pressure from within the university sector itself to demonstrate the costs of delivering project-based funding and to make the case for higher funding rates from the national research councils. Costs and their measurement remain a central issue in public research policy. In particular, debates continue in many OECD jurisdictions, not just in Europe, over the level of indirect costs (overhead) that external research funders should contribute. There is widespread evidence from the United States, European countries and Australia that external research funding tends to cover only a fraction of the full costs associated with research projects, leading to research being cross-subsidised by revenue from teaching activities (Olive, 2017[31]; Norton, 2015[32]). This has led universities to demand a move towards greater "full-costing" within research funding programmes (EUA, 2018[33]). Table 6 provides an overview of the main examples of system-wide activity-based costing systems in the OECD. Institutions in other jurisdictions also use such systems, but system-wide standards tend to be less developed or absent.

Table 6. System-wide activity-based costing approaches in OECD jurisdictions

Jurisdiction	Approach (sector of application)	Universal in publicly funded institutions?	Year introduced	Key mechanisms to assign indirect costs to activities	Output variables for institutional or policy use
Australia	Transparency in Higher Education Expenditure exercise	No	2018 (2011/2016)[1]	Overhead costs are allocated based on FTE staff numbers	Cost per FTE student per Field of Education (FOE)
Finland	Full cost model developed by Academy of Finland (universities)	Yes (universities)	2009 [National regulation 2016]	Use of research infrastructure charged as direct cost to projects. Multiplier for indirect costs is applied to units of working time (time sheets) and direct operating costs	[to verify: system primarily used for internal costing of research activity]
Ireland	Full Economic Costing – FEC (Universities)	Yes	2006 (revised 2017)	Direct staff costs allocated across 9 academic activity profiles (AAP). Overhead allocated mainly using staff and FTE students as drivers	Cost per FTE student per Subject Price Group (SPG)
	Unit Cost Approach (IoTs)	Yes	2006	Overhead costs apportioned to departments using usage mechanisms and FTE students. Approach excludes non-recurrent projects and investments	Unit cost per FTE student per programme

Jurisdiction	Approach (sector of application)	Universal in publicly funded institutions?	Year introduced	Key mechanisms to assign indirect costs to activities	Output variables for institutional or policy use
Norway	TDI cost-accounting model	Yes (universities)	2015	Treats research infrastructure resources (RIR) as direct costs. Indirect costs attributed to activities using staff FTE	Primarily used for research
Sweden	SUHF (*Sveriges universitets- och högskoleförbund*) model (universities + university colleges)	Yes	2009	An overhead surcharge (covering indirect costs) is charged to "cost carriers" for each unit (SEK) of direct salary and direct operating costs	Costs per study field and research project
United Kingdom	Transparent Approach to Costing (TRAC)	Yes	1999	Overhead allocated based on staff time to public and non-public teaching, research and other	Unit cost per FTE student per subject

Note: 1. Australia conducted pilot exercises with fewer institutions in 2011 and 2016.
Source: EUA (2018[33]) Accepting University Accounting Practices under Horizon Europe A compendium of national and institutional cases; Deloitte Access Economics (2019[29]), Transparency in Higher Expenditure.

Ireland's system of activity-based costing is comparatively advanced

As shown in Table 6, Ireland was one of the pioneers in the OECD of using activity-based costing on a system-wide scale, initially in the university sector. Box 3 provides an overview of the methodology applied in the cost systems used in the two sectors of higher education in Ireland.

Box 3. Activity-based costing in higher education in Ireland

Drawing inspiration from the Transparent Approach to Costing (TRAC) used in British universities, Ireland's universities launched a joint project in 2007 to develop and implement their own system of **Full Economic Costing (FEC)**. As a core part of the system, academic staff in universities report annually on their time use using a set of nine commonly defined types of activity referred to as Academic Activity Profiles or APPs[a]. Following "reasonableness" checks by management, this allows direct staff costs (salaries etc.) to be assigned to each of the nine activity categories in each academic unit. The main steps in the cost allocation process for **universities** are then:

- Overhead (indirect) costs, such as central IT services, premises costs and central administration costs, identified in accounting systems and subject to some initial adjustments, are allocated to each academic unit using common cost drivers (allocation factors). These cost drivers include the surface area of different categories of space (laboratory vs classroom or office, etc.) and numbers of FTE staff and students for shared IT costs.
- Within each academic unit, these overhead costs are then apportioned to cost pools for each of the nine activity types, using different cost drivers to differentiate appropriately between overhead used for teaching, research or other activities (or two or more of these).
- The direct and indirect costs for administration and management (AAP 9) are then redistributed among the other eight activity types, based on staff costs in each activity type.
- The direct and indirect costs of internally funded research and clinical services (AAP 5, 6 & 8) are allocated to the three levels of teaching (AAP 1, 2 & 3), based on FTE students.
- Full economic costs are calculated for a) student FTE by subject category and level of instruction; b) the overhead for externally funded research; c) overhead for other income-generating activity.

Institutes of Technology use a simpler **unit cost (UC) system** that calculates an expenditure per FTE student for each academic programme. This system identifies direct costs associated to each programme (notably pay costs) and then apportions overhead costs (library, central services, etc.) to each programme based on the number of FTE students. Non-recurrent costs, including major capital works and externally funded projects, are removed from the calculations, as is depreciation of institutes' assets.

Note: a. These are: 1. Teaching (Under Graduate); 2. Teaching (Post Graduate); 3. Teaching (Post Graduate Research); 4. Research with External Sponsor; 5. Research No External Sponsor but with an output; 6. Other Research & Scholarly Activity; 7. Other Income-generating Activities; 8. Clinical Services; 9. Administration and Management.
Source: EUA (2018) Accepting University Accounting Practices under Horizon Europe A compendium of national and institutional cases (EUA, 2018[33]); HEA (2017) Working Paper 6: Cost Drivers and the Costing System Underpinning Higher Education Contents (HEA, 2017[7]); NUI Galway (2020) Full Economic Costing (NUI Galway, 2020[34]); Deloitte (2019) Higher Education Authority (HEA) Cost Study (Deloitte, 2019[35]).

Evidence on the impact of new activity-based costing models on internal resource allocation and accounting practices within HEIs and on public policy is patchy. In some cases, it is clear that introduction of new ABC models has had a profound impact on the way higher education institutions operate. In Sweden for example, the introduction of the SUHF model led to the majority of institutional income being transferred to departments, which then pay a transparent unit overhead surcharge for each unit of their direct salary and operating costs. In Finland, the use of the ABC model – which is designed primarily as a tool to support research funding – is reported to have increased cost awareness among staff and made the cost implications of engaging in externally funded projects more transparent (EUA, 2018[33]).

In Ireland, the Full Economic Cost system, which originally emerged from a partnership between the Irish University Association (IUA) and the HEA, is reported to have increased planning and management of capacity and also to have led to greater cost awareness among staff (Estermann, Kupriyanova and Casey, 2018[36]). As in the United Kingdom, but to a far greater extent than in many OECD systems, the existing cost models in Ireland have also been used to place information on the costs at the centre of debates and policymaking concerning the future of higher education financing.

3. Allocating funding to higher education institutions

The previous section focused systems for measuring costs and elements taken into account in establishing global budget envelopes for higher education. This section takes a closer look at the design of allocation mechanisms for public funding and the extent to which these can be used to influence institutional behaviour and support public policy goals. The analysis addresses questions 3b, 4 and 5 of the terms of reference agreed with the HEA and is structured into three blocks:

1. The first block examines whether and how institutional funding allocation mechanisms can be designed to support disadvantaged learners and how the Irish funding models compares in this respect.
2. The second block examines efforts in OECD jurisdictions to influence institutional behaviour and performance through public funding allocation models, and whether experiences elsewhere hold lessons for Ireland.
3. The final block examines how OECD governments direct funding to higher education institutions to support specific policy priorities, including in new and emerging areas such as digitalisation or up and re-skilling.

3.1 Supporting disadvantaged learners through institutional funding

Different funding instruments are used to support widened access to higher education

Ensuring equitable access to higher education and promoting participation and completion of higher education by individuals from disadvantaged groups are explicit policy objectives in most OECD member countries. Governments use different combinations of tools to support achievement of their goals for widened access and completion in higher education, including specific measures in quality assurance and accountability systems for higher education providers, information campaigns and financial support to students and higher education institutions (Kottmann et al., 2019[37]).

Student aid, in the form of grants or loans, is the most frequently used financial mechanism to promote social equity goals across OECD jurisdictions. While comparable data on financial aid provided to students is scarce, it is clear that levels and coverage of grant and loan systems vary considerably between systems (OECD, 2020[11]). While Nordic states provide public grants and, in some cases, publicly subsidised loans to all domestic students, systems elsewhere in western and southern Europe, including Ireland, as well as other parts of the OECD, target student aid systems – with radically varying levels of coverage - on students from designated groups with particular financial needs.

Governments may also provide regular or periodic targeted funding to higher education institutions to support institution-level activities to promote social inclusion and widened access, include widening access objectives in performance agreements negotiated with institutions (see Section 3) or, less frequently, incorporate “access-related” criteria in the formulas used to allocate resources to institutions.

The results of the OECD Higher Education Policy Survey indicate that the Flemish Community of Belgium, Italy, New Zealand and the Slovak Republic, as well as Ireland (see below), use additional weightings in their funding allocation formulas to provide additional resources for students from designated

disadvantaged groups. In New Zealand, for example, equity funding is provided to institutions specifically to support student success among Māori and Pasifika learners, as well as to promote the participation and achievement of students with disabilities. The equity funding is a "top-up" to the main Student Achievement Component (SAC) funding and is designed to help cover the costs of providing extra support for these students (Tertiary Education Commission, 2021[38]). Additional funding resulting from the access-related weightings is not generally earmarked in the systems examined, including Ireland, meaning that institutions are free to allocate the resources as they see fit.

Ireland has a comprehensive policy framework to support disadvantaged learners

Successive Irish governments and the Irish higher education sector have placed great emphasis on widening access to higher education for all Irish residents. Ireland's current National Plan for Equity of Access to Higher Education aims "*to ensure that the student body entering, participating in and completing higher education at all levels reflects the diversity and social mix of Ireland's population"* (HEA, 2015[39]). The Plan establishes targets for participation in higher education for six specific population groups (socio-economic groups that have low participation in higher education; first time, mature student entrants; students with disabilities; part-time/flexible learners; further education award holders and Irish Travellers) and outlines complementary actions to promote achievement of these targets and monitor progress.

Similarly, the System Performance Framework for 2018-2020, which sets out the goals the Irish Government wishes higher education institutions to respond to in their institutional strategies and performance compacts (see Section 3), includes "equity" as one of its six objectives (Irish Government, 2018[30]). The System Performance Framework requires higher education institutions to establish a "Student Success Strategy" by 2020, which should set out institution-wide approaches to promoting access and success among disadvantaged and target student populations. The HEA monitors progress in relation to access and study success as part of the strategic dialogue it holds with institutions in relation to their performance compacts.

The Irish Government provides financial resources to support the access strategies at national and institutional level through four main channels:

- *Student Universal Support Ireland (SUSI)* provides mean-tested grants to students from low-income backgrounds. This is primary source of student financial aid in Ireland. Eligibility for SUSI financial support has recently been extended to postgraduate students.
- The formula for the distributive element of the *RGAM block grant* to institutions incorporates an additional weighting (of 0.33) for each student institutions enrol from one of four nationally determined "access groups" (those from low-income backgrounds; first time, mature student entrants; students with disabilities and Irish Travellers). Approximately EUR 43 million of HEA core funding was allocated to HEIs in 2020 on the basis of access metrics. These resources are designed to finance HEIs to have an access infrastructure in place that supports students from target groups access and successfully complete higher education.
- The HEA provides *earmarked funding for institutions* to support students in financial need and cover costs for equipment and services to enable access for students with disabilities. The *Student Assistance Fund* directs funds to institutions, which institutional student services departments can use to provide additional financial support to students experiencing financial difficulties while studying. The *Fund for Students with Disabilities* (FSD) is specifically to help institutions to ensure students with disabilities have the necessary assistance and equipment to enable them "access, fully participate in and successfully complete their chosen course of study".
- Additional targeted funding has been provided in recent years through the three-year Programme for *Access to Higher Education Fund (PATH)*. A total of EUR 16 million was allocated to provide extra funding to support individuals from under-represented groups in initial teacher education programmes (Strand 1); provide additional bursaries to students from low-income groups (Strand

2); and for the Higher Education Access Fund to finance partnerships between higher education institutions and schools to promote widened access (Strand 3) (Irish Government, 2018[40]).

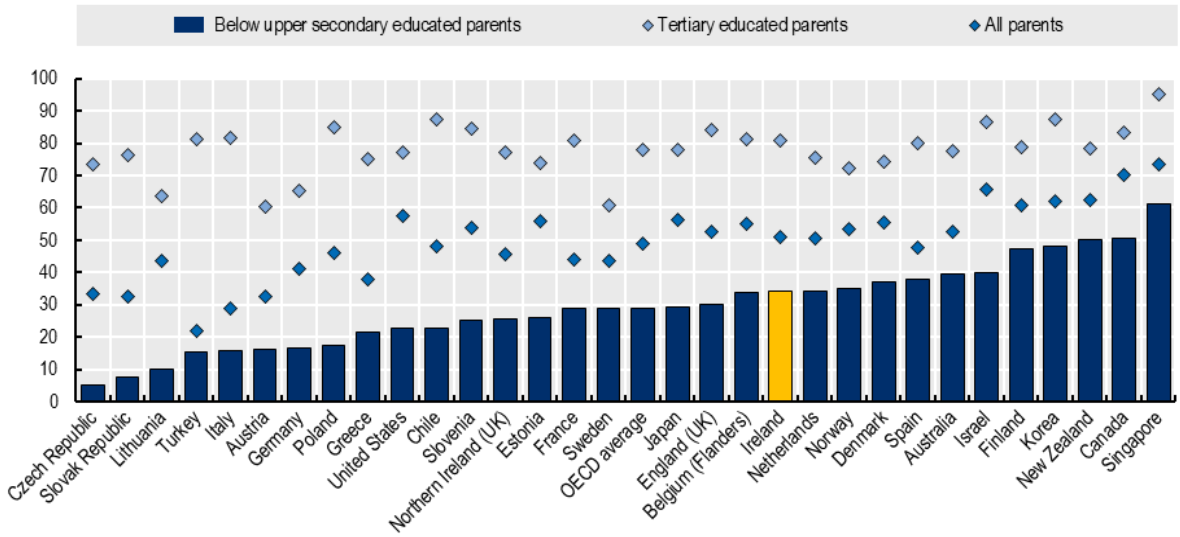
In addition to the financial instruments above, Ireland has established specific higher education access policies for specific target groups. The Higher Education Access Route (HEAR) is a programme through which institutions offer places with reduced Leaving Certificate points and additional institution-level support services, such as orientation activities and guidance, to school leavers (under the age of 23) from socio-economically disadvantaged backgrounds. The Disability Access Route to Education (DARE) offers a similar access protocol for school leavers who with a disability and who have experienced challenges in secondary education. At the time of writing a new National Access Plan is under development for 2022 to 2026.

The Irish model to widening access compares favourably in international comparison

Progress towards the goals of the National Access Plan has been generally positive. An initial review of the targets established in 2015 found that participation in higher education as a percentage of the 18-20 age cohort of individuals from households with parents in the group "semi/unskilled manual worker" increased from 26% in the academic year 2012-13 to 36% in the year 2016-17 (Irish Government, 2018[40]). In the same period, the proportion of new entrants to higher education with disabilities increased from 6% to 10%. More generally, older data on rates of access to higher education among individuals with parent with different levels of education found relatively high rates of intergenerational mobility in Ireland, compared with other OECD jurisdictions.

Figure 10. Intergenerational educational mobility (2012 and 2015)

Proportion of 25-44 year-olds who have entered higher education at least once in their life (independent of completion) by parental education attainment



Source: OECD Survey of Adult Skills (PIAAC) (2012, 2015); Reproduced from Borgonovi & Marconi (2020[41]) "Inequality in Higher Education: Why Did Expanding Access Not Reduce Skill Inequality?", *Open Education Studies*, https://doi.org/10.1515/edu-2020-0110.

As illustrated in Figure 10, the OECD Survey of Adult Skills found that a third adults aged 25-44 in Ireland with parents who had not obtained a Leaving Certificate or equivalent had entered higher education at least once in their life, compared to an OECD average of 29%. As in other OECD countries, having parents who have obtained a tertiary education qualification greatly increases the likelihood of individuals entering

higher education – over 80% of young adults in Ireland with tertiary-educated parents participating in the Survey of Adults skills had entered higher education at least once in their lives. Those entering higher education in Ireland have an above-average chance of successfully obtaining a qualification. Data on completion rates in higher education from 2017 show that Ireland has one of the highest rates of completion within the theoretical duration of bachelor's programmes (63%) in the OECD, with only the United Kingdom having a higher completion rate (OECD, 2019[42]).

Despite the generally positive progress in widening access to higher education in Ireland, the 2018 review of progress found that the share of mature students among full and part-time students had fallen from 13% to 9% between 2012 and 2017 (Irish Government, 2018[40]). The review attributed this decline to a period of economic recovery and labour market reactivation that created fewer incentives for adults to enter higher education. The review also noted persistent difficulties in reaching targets set for participation from the Irish Traveller community.

In the scope of a policy brief such as this, it is impossible to provide a comprehensive assessment of the adequacy and effectiveness of the financial support provided to disadvantaged learners in higher education in Ireland. On the basis of available evidence, however, it is clear that Ireland both succeeds comparatively well in promoting access to higher education and study success for students form disadvantaged backgrounds and has an unusually comprehensive set of policy measures in place to support further widening of access. The National Plan for Equity of Access to Higher Education establishes very precise targets and the System Performance Framework, discussed below, provides a mechanism to articulate national and institutional strategies in terms of widening access. Both strategic tools recognise the complex factors that affect students' decisions on whether and what to study and the need for holistic approaches to widening participation that link to earlier stages of education and go beyond simple provision of information.

The institutional funding model – which is the focus of this brief – provides direct recognition of the additional costs associated with supporting study success among students from disadvantaged groups in the form of the access bonus. As noted above, among OECD jurisdictions, only a few other OECD jurisdictions use this method of support. Although the additional funding provided as a result of weighting for access students is not earmarked for support to these student groups, it is positive that the funding model explicitly recognises resourcing needs associated with educating non-traditional student groups. The fact that the additional weighting is provided for first-time adult learners, as well as the other access groups, also sends a positive signal and has the potential to support the Irish Government's broader lifelong learning agenda.

Two areas of concern nevertheless emerge from the evidence considered for this brief. The first, raised in the 2018 review, is whether the current institutional funding model provides adequate support to institutions to cater to the needs of part-time students from non-traditional student groups and allows sufficient flexibility in funding students entering higher education through non-standard pathways. A recent shift to using comprehensive data on the socio-economic status of students (the Deprivation Index Score – DIS (HEA, 2021[43])), rather than data from the previous, voluntary Equal Access Survey, means that funding calculations now take into account the characteristics of the entire student population. Data for 2018/19 on the number of full-time and part-time disadvantaged students in each institution were used to calculate the access bonus paid to institutions for the first time in 2021. However, a second area of concern – directly related to the discussion in the previous chapter – is that as the level of funding allocated through the RGAM distributive formula has declined, so has the value of the access bonuses paid for each student. To maintain the value of the access bonus for institutions – and thus direct additional resources where they are needed to support disadvantaged student – a reformed funding model will need to provide adequate funding for the distributive formula to generate a meaningful access bonus payment per student or provide fixed unit payments for each access student.

3.2 Rewarding performance in Irish higher education funding

OECD higher education systems use different forms of performance-linked funding

In recent decades, an increasing number of OECD jurisdictions have introduced higher education funding models that link the level of public funding allocated to institutions to outputs and outcomes, such as study credits obtained, degree awarded or research publications, rather than inputs (such as enrolled students) or purely historical allocations. Four main methods are used to incorporating incentives for performance into institutional funding models:

1. Output criteria (such as graduate numbers) or outcome criteria (such as student satisfaction or employment rates) are *incorporated in institutional funding formulas*. As illustrated in Table 7 below, output and outcome criteria are used in funding formulas in several of European systems comparable to Ireland. Credits obtained and degrees awarded are common output indicators.
2. The system allocates a *separate budget envelope*, based on institutions' performance against system-wide indicators outside the main institutional allocation formula. This is the case in Denmark, which allocates 7.5% of total public funding for instruction based on institutions' performance against national targets on study duration and graduate employment rates.
3. Institutional *performance agreements* where an explicit proportion of block funding or additional *funding is made conditional* on attainment of objectives. As discussed below, this is the case in Ireland, but also in current and previous versions of the Dutch performance agreement system.
4. Institutional *performance agreements* which are a condition for funding (i.e. mandatory), but without an explicit budget linked to attainment of objectives. In such cases, performance in relation to agreements can be taken into account in future negotiations, including on budgets, but there is no direct or "mathematical" link between poor performance and financial penalties for institutions. This is the case in Denmark, Finland and Scotland.

Table 7. Mechanisms used to allocate performance-based funding in selected OECD jurisdictions

	Output and outcome indicators in core funding formula		Separate budget envelope allocated based on output or outcome indicators		Institutional performance agreements with proportion of public funding conditional on observed performance		Institutional performance agreements as condition of funding, without financial penalties linked to observed performance
	Output	Outcome	Output	Outcome		%	
Denmark	✓	✓	✓	✓	✓	1.25%*	
Ireland					✓	10%	
Finland	✓	✓					✓
Flemish Community	✓						
Scotland							✓
The Netherlands	✓				✓	3%**	

Notes: Examples of output indicators: credits obtained, degrees awarded; Examples of outcome indicators: graduate employment rates or student feedback. *DNK: 5% of the fixed base funding (*grundtilskud*). **In The Netherlands, additional payments possible based on real performance in last year of operation of the quality agreements programme in 2024, amounting to around 3% of the value of total quality funds allocated over the six-year period 2019-2024.

Ireland has used performance compacts as a steering tool with some success

Since 2014, the Irish funding model for higher education institutions has included an explicitly performance-based component. Each institution is required to agree a three-year, mission-based compact with the HEA, setting out proposed targets related to system-wide objectives established by the Minister. Each year, an

external expert panel reviews the performance of each institution against the targets established in the compacts, based on annual progress reports. The first round of compacts covered the years 2014 to 2017. During this implementation period, there was a provision for withholding up to 10% of the annual allocation for the institutional block grant if performance targets were not met. This financial penalty was never applied in practice. In 2016, 2% of funding was withheld from three institutions pending delivery of a programme of remedial actions, but was subsequently released following satisfactory responses (HEA, 2017, p. 26[5]).

The 2017 review of the allocation model for higher education institutions recommended a shift to using positive financial incentives to support the national performance framework (HEA, 2017[5]) and this recommendation has been adopted in the new System Performance Framework for 2018-2020. In the new implementation period, the government has allocated an additional EUR 5 million per year in performance funding.

In common with other performance agreement systems in Europe and North America, the Irish System Performance Framework seeks to create articulation and coherence between strategic objectives established by government at system level and institutional strategies. Targets and Key Performance Indicators (KPIs) are negotiated between each institution and the HEA based on a long list of indicators and objectives established at system level and grouped under the six "Key System Objectives" listed in Box 4.

In 2018, institutions developed performance compacts, with reference to the national framework, and which, based on each institution's own strategic plan, set out a series of objectives that are outcome oriented, mission-based and subject to annual review by the HEA. As part of the Strategy and Performance Dialogue review process in 2019 and 2020, institutions were required to submit a self-evaluation report on progress against the targets established in their compacts and an "Impact Assessment Case Study" setting out exemplars of their progress. The case studies are assessed and ranked by an independent panel of six experts as a basis for allocating the EUR 5 million in annual performance funding. In 2019, for example, 39 case study examples were received and performance-funding awards of either EUR 350 000 or EUR 200 000 made to 16 institutions (HEA, 2019[13]).

Box 4. Ireland's Key System Objectives for the Higher Education System 2018–2020

The six Key System Objectives (KSO) for the Higher Education System, established by the Irish Government in its System Performance Framework for the period 2018 to 2020 are:

1. Providing a strong talent pipeline combining knowledge, skills & employability which responds effectively to the needs of our enterprise, public service and community sectors, both nationally and regionally, and maintains Irish leadership in Europe for skill availability;
2. Creating rich opportunities for national and international engagement which enhances the learning environment and delivers a strong bridge to enterprise and the wider community;
3. Excellent research, development and innovation that has relevance, growing engagement with external partners and impact for the economy and society and strengthens our standing to become an Innovation Leader in Europe;
4. Significantly improves the equality of opportunity through Education and Training and recruits a student body that reflects the diversity and social mix of Ireland's population;
5. Demonstrates consistent improvement in the quality of the learning environment with a close eye to international best practice through a strong focus on quality & academic excellence;
6. Demonstrates consistent improvement in governance, leadership and operational excellence.

Source: Irish Government (2018[30]) Higher Education System Performance Framework 2018-2020, https://hea.ie/assets/uploads/2018/01/higher-education-system-performance-framework-2018-2020.pdf (accessed on 17 May 2021).

There is evidence that the Higher Education Strategic Performance Framework system has been successful in strengthening dialogue and coordination between higher education institutions and national-level policy makers in Ireland. An analysis of the effects of the first three-year period of implementation (2014-2017) by O Shea and O Hara (2020[8]) found that the objectives of the Performance Framework are broadly supported in higher education institutions. The system is reported to have contributed to the creation of a constructive relationship building between the Higher Education Authority (HEA) and institutions and had positive impacts on self-reflective institutional learning and strengthening of strategic capacity building, self-reflection and institutional learning.

However, the same study found little evidence on any direct effects on institutional behaviour, with the authors attributing this to a lack of enabling or incentive funding to trigger change and the fact that the potential funding penalty is insufficient to affect behaviour. Other challenges identified by O Shea and O Hara are an excess of Key Performance Indicators within institutional agreements, a tendency of focus on detailed indicators rather than strategic issues and an inherent challenge for institutions to achieve significant shifts in their profile with a largely fixed workforce and a funding system that rewards student numbers. Employment conditions in Irish higher education are such that it is very difficult to re-allocate staff to other roles is departments are closed or merged, while the funding system creates an incentive to maximise enrolment in established (or related) study fields, rather than innovate.

The findings in relation to the Irish system are broadly consistent with those in other OECD systems that have used performance agreements. International literature suggests that performance agreements can strengthen the relationship between the higher education sector and public authorities, provided the negotiation is based on a real dialogue between institutions and their funding authority undertaken in a spirit of mutual respect (Claeys-Kulik and Estermann, 2015[44]). Equally, performance agreements can increase focus on strategic objectives at institutional level. After the introduction of performance agreements in Finland, observers reported an increased attention to cost and performance among universities and in North-Rhine Westphalia (Germany), performance agreements were said to have

improved internal university decision-making (de Boer et al., 2015[45]). However, causal effects of performance agreements are hard to establish, in particular as many systems introduced performance agreements alongside other policy changes, making the effects of different initiatives even more difficult to isolate (Higher Education and Research Review Committee, 2017[46])

International evidence also broadly supports the Irish approach of establishing broad objectives at system level and allowing institutions flexibility in fixing their own KPIs and targets. The Netherlands, for example, reformed their institutional agreements in 2017 to give institutions greater choice in the selection of indicators after an evaluation pointed to the risk of homogenisation arising from the exclusive reliance on generic indicators (Leest et al., 2017[47]). Another approach to balancing standardisation and individualisation was chosen in Ontario (Canada), where performance indicators are centrally defined, but HEIs negotiate the weight to assign to them and which targets they will be measured against. In line with the findings in Ireland, several authors highlight the costs and administrative burden of (overly) detailed monitoring and reporting requirements (Jongbloed and Vossensteyn, 2016[48]).

Additional funding may increase the effects of Ireland's institutional compacts

In terms of the funding attached to performance agreements, a general consensus exists in available research that performance agreements – and performance funding in general – have a greater chance of being when they are linked to new, additional funding, rather than a proportion of existing core funding (Higher Education and Research Review Committee, 2017[46]). When new money is involved, an incentive is created for institutions to work towards agreed goals, while they also have additional resources to invest in changes that are needed to achieve these goals. In the Netherlands, for example, the current generation of agreements (the results of which have not yet been evaluated) are linked to additional resources freed up by the Dutch Government's decision to replace student grants with a student loan system. Institutions are guaranteed payments over the six years from 2019 to 2024 to deliver their strategies, but can also receive a share of an additional "bonus" payment in 2024, which is dependent on positive performance against their goals (Dutch Government, n.d.[49]).

Ireland's institutional Higher Education Strategic Performance Framework was initially implemented with a system of potential financial penalties, which could nominally rise to 10% of total core state funding. Although financial penalties were never applied, the system in place from 2014-2017 carried the theoretical risk that the budgets of poorly performing institutions would be reduced. Especially in a constrained funding environment, such a measure could easily prove counter-productive, by further reducing the resources available to the institutions concerned to address the performance challenges they faced. As in the Netherlands, it is hoped that the new system of performance-linked financial bonuses, although relatively modest in size, will create more positive incentives and potentially have a greater impact on institutional behaviour. Once the current cycle of the Strategic Performance Framework has been completed in Ireland, it would be appropriate to take stock and assess the effects of the new approach, including in comparison to the previous system focused on financial penalties.

3.3 Providing funding for strategic development and new priorities

Governments fund strategic development with different approaches

Higher education institutions require financial resources to pay operating costs (staff costs, materials utility bills, etc.) incurred directly or indirectly from instruction, research and service activities. They also need to pay for routine maintenance and periodic refurbishment or replacement of their buildings and major pieces of equipment. In addition, they need to invest in planning, strategic development and adapting their activities to the changing environment in which they operate. These latter, strategic tasks will be funded in part from the general institutional overhead, as managers engage in strategic planning, as well as operational management, for example. However, major new projects, institutional restructuring or

innovations, such the adoption of new digital technologies require investment capital. Governments explicitly or implicitly provide such resources for investment in three main ways:

1. In many systems, there is a general expectation that institutions will *fund strategic development from their own funds*, a large proportion of which may come from public core funding that is nominally intended for day-to-day instruction or research activities. As core funding is typically provided to higher education institutions in OECD jurisdictions as a block grant, institutions are able to re-allocate funds internally and to create internal funds for strategic development at institutional or departmental level. This is the broad expectation in systems such as Denmark, the Flemish Community of Belgium and, historically, the Netherlands.
2. A second, frequently used, approach is for governments to provide *targeted funding* to institutions for strategic development or innovations in specific areas linked to government priorities as earmarked grants or through competitive calls for proposal. The vast majority of OECD jurisdictions responding to the Higher Education Policy Survey on resourcing indicated that they used targeted funding for strategic priorities. This is the approach used in Ireland, where, as discussed below, a proportion of the total budget envelope for higher education institutions is reserved ("top-sliced") for national targeted funding programmes.
3. A final approach is for governments to *explicitly allocate a proportion of core funding to institutions for strategic development*. In practice, in the primary examples of this approach identified for this policy brief, the funds for strategic development are added to the block grant to institutions use as they see fit, but the strategic component of the funding is explicit, rather than implicit as in the first approach. Finland and Austria both use institutional funding models with three pillars for a) education; b) research and c) strategic development. A majority of funds for strategic development in Finland and all such funds in Austria are allocated to institutions as part of the block grant, but institutions have to account for their use of the funds through performance agreements. The Netherlands uses a similar approach, although the strategic funds take the form of a dedicated quality fund (*kwaliteitsbekostiging*) that is earmarked for a broad set of quality-related investments (Dutch Government, n.d.[49]). Here again, the funds are intended to support activities and objectives agreed in performance agreements between the government and each beneficiary institution.

Targeted funding for strategic investments, allocated directly as earmarked grants or through competitive calls for proposals, is the most common form of strategic funding in OECD jurisdictions. As shown in Table 8, in recent years, targeted funding has often used to promote digitalisation and up and re-skilling in the jurisdictions that reporting regular use of such funding mechanisms in the Higher Education Policy Survey. It is notable that Austria and Finland are among the jurisdictions reporting recent targeted funding programmes in several priority areas, although they are also countries that provide dedicated strategic funding to institutions. While in both systems, institutional strategic funding is accompanied by a process of negotiating performance agreements, it is clear that targeted programmatic funding allows public authorities to retain greater control over how funds are spent.

Table 8. Targeted funding for higher education in selected OECD jurisdictions

	Austria	Finland	Ireland	New Zealand	Portugal	United Kingdom
Digital tools for institutional management (e.g. management information systems)	X		X		X	X
Digital tools for course development and design, teaching and learning	X	X	X		X	X
Student advising and/or learning analytics	X	X		X		
Staff training and development	X	X	X			
Equity initiatives			X	X	X	
New educational offerings for up-skilling or re-skilling of adult learners	X	X	X	X	X	
Regional or business engagement		X		X	X	

Source: Golden, Troy and Weko (2021[6]) "How are higher education systems in OECD countries resourced?:Evidence from an OECD Policy Survey", https://dx.doi.org/10.1787/0ac1fbad-en.

The Irish funding model use earmarked funds "top-sliced" from core funding

As highlighted in earlier in this brief, the Irish funding model incorporates a system of "top slices". These are earmarked funds that are deducted from the global budget envelope for higher education institutions before the remainder is allocated for fee subsidies and, ultimately, distributed through the RGAM formula. Top-sliced funding is allocated to institutions through direct grants by the HEA or through competitive calls for proposals in areas identified by government as being of strategic importance. At present, top-sliced funding is provided to support institutional restructuring arising from the national strategy (the creation of Technological Universities through the merger of Institutes of Technology), to support activities to develop ICT skills, to create third-level apprenticeships and to expand provision in medical fields. Other top-slices are not used to fund new priority areas, but rather shared service initiatives, such as an e-Journal platform and the Irish Survey of Student Engagement.

Two main criticisms can be levelled at the current system of top-slicing. The first is that system has reduced the amount of resources available for core funding to institutions at a time of budgetary constraint. Top-sliced funds were originally intended to be additional funds, but in the decade since the financial crisis, falling or stagnant higher education budgets (see Section 2) have meant the funds for national programmes have absorbed resources that might otherwise have served to address falling core funding per student. A second criticism is that, as earmarked funds, the different top-slice programmes come with additional administrative burden either in the form of specific rules and reporting requirements or a resource-intensive competitive bidding procedure. Particularly if the overall pot of money available and award amounts are small, competitive funding calls can create an excessive amount of administrative burden in relation to actual sums of money awarded, lead to inefficiency.

An alternative approach, when additional funding becomes available in Ireland, would be to mainstream at least some of the top-sliced funds into a strategic investment component of the core funding model, in a similar way to Finland and Austria. Priorities for use of the funds and accountability for their use could be established through the system of institutional performance compacts. The Finnish example may be particular helpful to Ireland as a reference point, as it splits its strategic funding into two parts, where part A – the majority – is allocated to institutions for priorities agreed in institutional performance contracts and part B is retained at national level for targeted funding calls.

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Annex A: Research questions

The terms of reference for this thematic policy brief established the following five questions:

1. Viewed in comparison to other higher education systems, does the higher education funding model in Ireland[1] succeed in giving **adequate recognition to the core costs drivers** for higher education? To what extent and how do other OECD jurisdictions take into account institutional revenue from private sources in establishing the level of public funding institutions receive?
2. To what extent have higher education funding systems implemented methodologies that permit a shift towards **full costing of activities** in higher education institutions? To what extent have changes in costing been reflected in their allocation models?
3. Does the current higher education funding model, including the block grant, in Ireland (a) take sufficient account of cost differentials by study fields and (b) succeed in giving **support to disadvantaged learners** that is sufficient for HEIs to reduce gaps in study success? How does this compare with the situation in other OECD jurisdictions?
4. Viewed in comparison to other allocation models, is the **performance-funding component** of the Irish funding allocation model an effective steering tool, permitting the HEA to orient institutions towards agreed performance targets?
5. How have the funding models adopted in other higher education systems evolved to **support new priorities and special requirements** – e.g. future skills, re/up-skilling, regional engagement, valorisation, advanced RDI activities or regional or multiple campuses – and what lessons does the experience of other systems provide for the Irish funding allocation model in general and for the current system of "top-slicing"[2], in particular?

[1] The concept of "funding model" encompasses both the mix of public and private funding sources in the resource envelope for higher education institutions and the mechanisms used to allocate public funding to higher education institutions.

[2] In the context of public funding of higher education institutions in Ireland, the term "top-slicing" is used to refer to amounts within the overall public funding allocation for each institution that are reserved or earmarked for specific objectives related to national or sector priorities.

Resourcing Higher Education Project

This thematic policy brief has been prepared as part of the OECD Resourcing Higher Education Project (RHEP). Co-funded by the European Union, the RHEP aims to develop the shared knowledge base available to OECD member and partner countries on effective policies for higher education resourcing. It does so by exploring how OECD jurisdictions organise the funding of higher education institutions, provide financial support to students and regulate the employment of academic staff, taking into account evidence on the effects of different policy approaches. The findings of the project are shared in publications, including thematic policy briefs and country review reports, and through peer learning events organised to share practice and experiences.

For more information

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