EUROPEAN UNIVERSITY ASSOCIATION

Allocating core public funding to universities in Europe: state of play & principles

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1. Introduction

1.1. NARRATIVE

> ***When looking to the future, we envision universities without walls; these are universities that are open and engaged in society while retaining their core values. All of Europe's universities will be responsible, autonomous and free, with different institutional profiles, but united in their missions of learning and teaching, research, innovation and culture in service to society.*** [1]

To achieve its 2030 Vision, EUA sets out as one of three crucial success factors the need for adequate investment, including sufficient and sustainable core funding.[2] The association particularly highlights that core public funding must reflect the growing responsibilities of universities, and that a balance must be struck between core and competitive schemes.

These recommendations stem from work carried out by EUA in the early 2010s, which culminated in the release of the report "Designing strategies for efficient funding of universities in Europe" in 2015.[3] This work notably included a state-of-play analysis of funding models for universities across Europe, and the extent to which "performance-based funding" was considered as part of these models at the time.

Since then, EUA's monitoring has captured various developments in funding models for universities across Europe. These developments took place in a period characterised in a series of countries[4] by a certain degree of re-investment combined with intense reform activity, in the fields of regulation and funding frameworks. Between 2015 and 2020, various higher education systems also engaged in experimentation in that area, testing wider-scale changes to their models.

Although the changes applied in the last years do not all correspond to the same direction of travel, what has been striking is the ever-increasing interest in the notion of performance(-based) funding, in a context where efficiency and value for money have become critically important. EUA's exploratory work (2019) on the issue of efficiency in higher education has shown that post-2008 crisis, economic pressures have been a key driver pushing institutional efficiency to the front of the university agenda in many European systems. The crisis, which hit many countries over the long run, led to the growing expectation that like other public bodies, public universities should contribute to savings and demonstrate significant efficiency gains.[5]

The same study showed, however, that short-term savings may have serious negative consequences on the sector's financial sustainability. The analysis concluded that "*universities need sustainable, adequate public funding to be able to invest in the capacities and capabilities (for example, human resources and tools) required to achieve economy, efficiency, effectiveness, quality and value for money.*"[6]

The economic context has certainly been conducive of reforms seeking to enhance efficiency and steering of universities' use of the received funds. Such processes include the (partial) re-design of funding models as a whole, with a heavier focus on performance-related elements. They also include the provision of additional funding via separate, earmarked schemes, rather than injected in the existing core public funding mechanisms, ensuring visibility and alignment with the political priorities of the funder.

As a majority of higher education systems in Europe finally brought back levels of investment that exceed those of 2008, the pandemic hit world economies, with ripple effects still to be felt over the next years. The university sector in Europe, mainly publicly funded, has been partially sheltered over the short-term, but fiscal consolidation in the coming period will mean that universities have to fight tough battles and compete for resources with other sectors of the economy.

1 European University Association (2021) *Universities without walls – A vision for 2030*, p.5

2 European University Association (2021) *Pathways to the future – a follow-up to "Universities without walls – A vision for 2030"*, p.6

3 Bennetot Pruvot, E., Claeys-Kulik, A.-L. and Estermann, T. (2015) *Designing strategies for efficient funding of universities in Europe*, EUA, Brussels

4 Bennetot Pruvot, E., Estermann, T. and Stoyanova, H. (2021) *Public Funding Observatory report 2020/2021 Part 2*, EUA, Brussels

5 Estermann, T. and Kupriyanova, V. (2019) *Efficiency, Effectiveness and Value for Money at Universities – A USTREAM report*, EUA, Brussels, p.14

6 Ibid.

The pandemic has also had another type of effect on the university sector, leading governments to shelve reforms that were sometimes in advanced stages of preparation. This has resulted in growing uncertainty for universities, particularly when the modalities according to which funding is determined are left undecided or when their implementation is postponed.

For universities from EU member states, this picture gets more complex as governments engage in recovery and resilience plans that cover thematic reforms and investments and in many cases address higher education. More often than not, these plans incorporate the above-mentioned postponed reforms, almost always presented under the lens of enhanced sector performance.

It is in this context that EUA sought to revisit the question of public funding to universities, taking stock of the evolution since 2015 and addressing key messages on sound funding model design to policymakers. The present analysis focuses on the main mechanisms used to determine the block grants received by universities, including the types of indicators used by public authorities currently or in the upcoming planned reforms.

Throughout Europe, funding models for universities include a public and a private funding component. The latter represents less than 30% of the overall income structure of public universities in continental Europe.[7] The choices made with regard to student financial contributions, notably, have a strong impact both on the overall design of the funding model and the public funding mechanisms. This is also true of the importance of competitive funding in the funding landscape, which can make up a significant share of public funding to universities. Therefore, it is important to keep these aspects in mind, though they are not part of the focus of this study.

1.2. METHODOLOGY

Timeline and scope

The present study spans a relatively extended period of time, as it builds on several data sources gathered between 2019 and 2021 on the developments related to funding models around Europe. The core dataset on funding indicators was collected in the context of the preparation of the report "Exploring higher education indicators" (2020). The report dived into the education indicators used by external quality assurance agencies, funding mechanisms and international university rankings.

For the purposes of the 2020 study, EUA carried out an update of the survey conducted with its member national university associations in the framework of the previously mentioned DEFINE project. The data collected for the DEFINE project dated back from 2013, making it timely to update survey information in the winter of 2019-2020. Thus, national university associations were asked to provide information about their funding model in the same way (structure and questions) as they were before, to preserve comparability over time. Participating national university associations provided one consolidated response on behalf of their higher education system.

Survey on allocation mechanisms and indicators

National university associations were polled on the following topics:

Allocation mechanisms for block grants: respondents were asked to assess whether their system was placed in the adequate category of the matrix published in 2015, or to outline developments justifying any change. The matrix differentiated between funding formula, performance contract with funding impact and historical determination as possible mechanisms and considered possible combinations of primary/secondary mechanisms.

7 Bennetot Pruvot, E., Estermann, T. and Stoyanova, H. (2021) *Public Funding Observatory report 2020/2021 Part 2*, EUA, Brussels, pp. 34-35

The significant range of funding mechanism combinations for universities across Europe makes it challenging to propose a clear-cut analytical matrix. In 2015, EUA presented an overview of allocation mechanisms for block grants that differentiated between primary and secondary mechanisms. It proceeded to place systems according to their use of funding formulas, performance contracts or historical/negotiated allocation. This structure also sought to indicate where mechanisms differed for determining funding to teaching, versus funding to research activities.

Funding formula: respondents who confirmed a funding formula was used in their system were asked to rate the relative importance of various possible indicators in that formula, and to point to any change compared to the previous study.

It is important to note that there remains significant diversity in the understanding of terminology used for "indicators" listed by EUA, or their concrete scope might differ. For instance, the number of enrolled students, ECTS attained, or degrees obtained may or may not cover non-EU students, and may refer exclusively to students completing their degree in a standard study time. The indicator may also differentiate according to various cost groups which reflect the levels of investment needed across disciplines. "Number of staff" is another example where the calculation can reach a high level of sophistication, taking into account the positions/titles of staff as weightings. The present analysis necessarily simplifies complex configurations in each of the covered systems.

Public funding via contracts: respondents were asked whether public authorities made use of contracts/agreements with HEIs. They were also asked to outline the components of these contracts, and specify whether the completion of the objectives/targets/indicators had an impact on funding received by the universities.

Geographical scope

Changes in the scope of the study, as compared to the first data collection that was published in 2015, include:

- Systems added (not represented in the 2013 data collection round): Croatia, Luxembourg, Scotland, Serbia.
- Systems that did not participate in the 2019-2020 data collection round, and therefore excluded from the current report: Latvia, Portugal, Turkey.
- Germany: while the German national university association (HRK) previously presented the case studies of Brandenburg, Hessen and North-Rhine-Westphalia, this time it provided a generalised overview of the situation across German Länder.
- Spain: in a similar way, Spain was only accounted for via the case of Catalonia in the first data collection, and provided a generalised overview of the situation across Spanish Autonomous Communities in the second round. However, further attention has been given to the higher education systems of Madrid and of Catalonia in this report. It should be noted that several other Communities developed funding models. However, in 2021 there was no funding model actually in application in Spain, as since 2012 their implementation was interrupted following the budget adjustments derived from the country's economic stability policy.
- United Kingdom: only England was included in the first dataset, while the current report includes both England and Scotland, whose funding models differ significantly.

Thus, while the original study covered 28 systems (three of them from Germany), the present analysis covers 27, considering Germany from an aggregated perspective.

Surveys on funding reforms

As part of EUA's Public Funding Observatory, national university associations share regular information on the ongoing reform discussions in the field of governance and funding. In 2020, topics of importance included funding allocation for research and for teaching, as well as performance-based funding in general, in the midst of upcoming reviews. [8]

The Public Funding Observatory also polled sector representatives on their expectations regarding funding in the wake of the pandemic, which revealed a great degree of uncertainty.[9] Early observations (May 2020) suggested that private funding was likely to go down, and public funding would be associated more strongly with targeted mechanisms and possibly greater pressure for efficiency placed on universities.

In February 2022, EUA released the results of a follow-up survey (data collected in Autumn 2021),[10] which showed that national university associations expected even more change in the funding area for the three years. In several cases, this is because related reforms were put on hold in 2019-2020.[11] Most expected changes concerned mechanisms for core funding and in the use of targeted funding instruments.

The present study also incorporates the analysis of the national recovery and resilience plans[12] prepared and submitted by EU Member States to the European Union, insofar as several of these plans include a significant funding reform component relevant to higher education institutions (see Box 7).

8 Bennetot Pruvot, E., Estermann, T. and Stoyanova, H. (2021) *Public Funding Observatory report 2020/2021 Part 2*, EUA, Brussels, pp. 28-29

9 EUA, *Public Funding Observatory 2020/2021, Part 1*, pp. 22-24

10 Bunescu, L., Estermann, T. and Bennetot Pruvot, E. (2022) *Public Funding Observatory 2021/2022, Part 1*, EUA, Brussels

11 Bennetot Pruvot, E., Estermann, T. (2021), *NextGenerationEU: What do National Recovery and Resilience Plans hold for universities?*, EUA, Brussels, p. 17

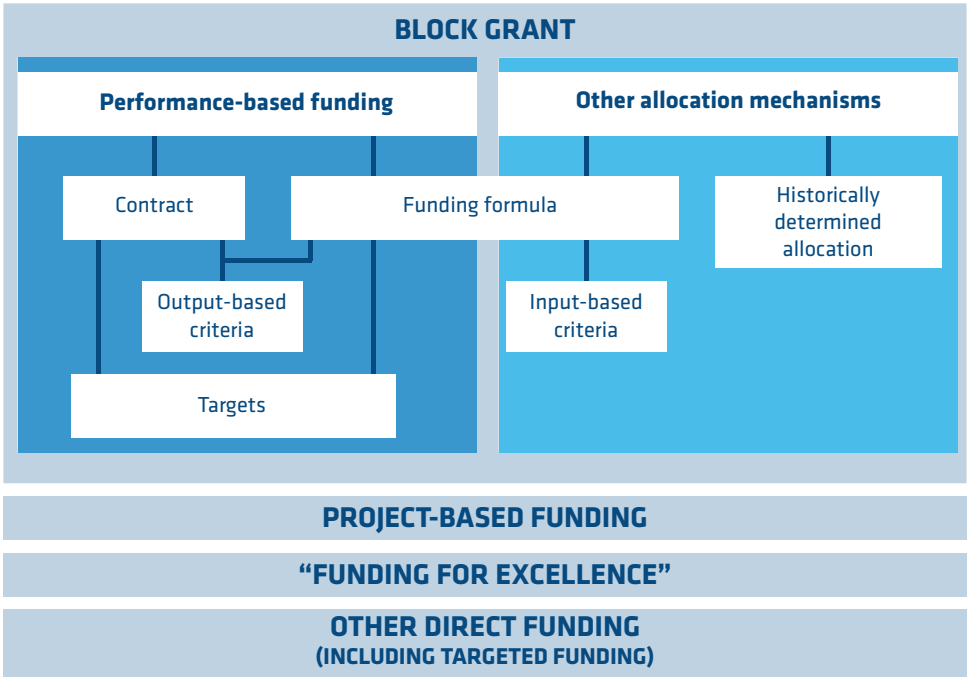
12 Ibid.

2. University funding models in Europe

2.1. COMPONENTS OF CORE PUBLIC FUNDING

University funding models in the analysed systems typically consist of several components. Core public funding is usually distributed to universities as a block grant, the value of which is determined through various allocation mechanisms. These include formulas built on specific indicators, which in turn can be input- or output-oriented; the definition of targets (with or without a funding impact); negotiation; or so-called historical allocation. In some cases, a contract may frame the terms of the overall allocation; in other cases, contracts that include a mix of instruments can accompany the distribution of the budget (see description below).

Figure 1 – Simplified overview of public funding allocation mechanisms[13]



13 Contracts may also include input-based criteria. Revised version of: Bennetot Pruvot, E., Claeys-Kulik, A.-L. and Estermann, T. (2015) *Designing strategies for efficient funding of universities in Europe*, EUA, Brussels, p.26

Core public funding is complemented by other mechanisms. Competitive allocation of funds is a tool used in all systems (a defined budget is allocated on the basis of success criteria and only a certain number of applicants receive a share of these funds). Competitive funding is frequently associated with research. However, other funds can also be awarded competitively, such as funds for upgrading campus infrastructure, funds for strategic reforms, etc. In addition, targeted funding may be made available to incentivise institutions to work towards a specific policy objective, either on a one-off basis or for a specific period of time (e.g. support for the development of university alliances). Targeted funding differs from competitive funding as it is not selective in nature and is normally made available to all institutions in the sector.

In addition to these tools, there are selective funding mechanisms that aim to provide a group of institutions with specific support. These mechanisms have a more general aim compared to regular competitive funding. The so-called Excellence Initiatives, for example, fall into this category.

The use and aims of these instruments within a funding model varies widely. While the primary function of the funding model is to cover the costs of the various activities carried out by universities in a system, other aims may include:

- ensuring the transparency of the resource allocation;
- steering effect towards the completion of defined policy objectives;
- incentivising certain behaviours deemed desirable by funders;
- engaging institutions and government in a dialogue;
- driving performance.

The "performance" dimension

The term "performance-based funding" itself is understood very differently across Europe. In may be used interchangeably with:

- "formula-based funding", without consideration for the nature of indicators included;
- "competitive funding", without distinction between core grant and competitive funding schemes;
- "contracts", usually labelled "performance contracts", even though they may include different components, not necessarily performance-based.

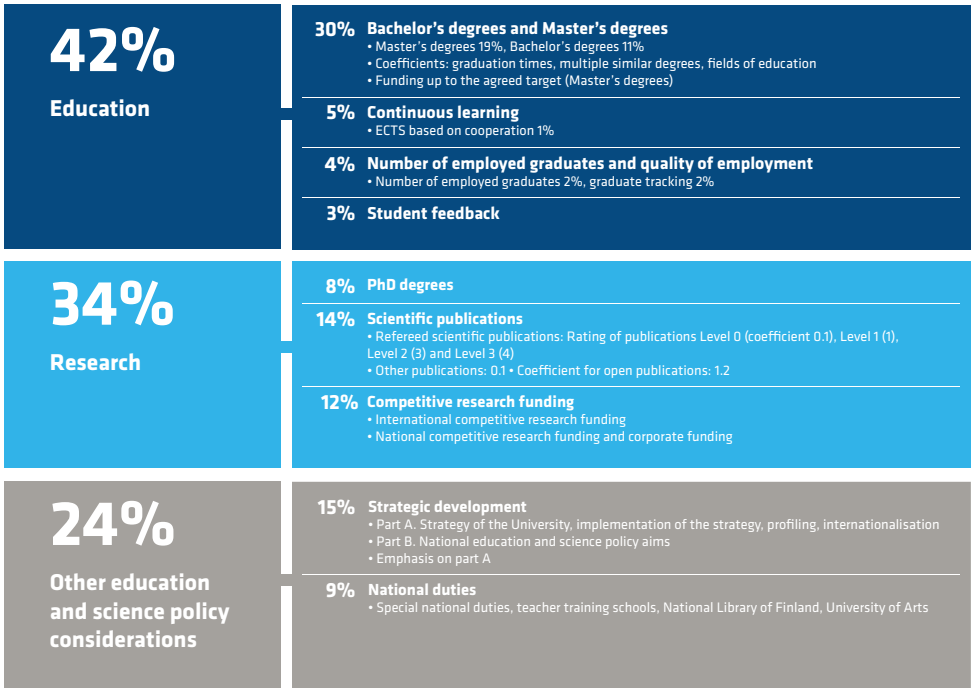
In this report, "performance-based funding" is used to cover mechanisms that distribute core public funding according to parameters that are related to performance, here understood as the output (at different stages) of a process of learning/teaching, research or interaction with external stakeholders (e.g. business, industry, society). This may be arranged via a funding formula or via contracts/agreements, whereby certain goals/targets are agreed on between the funder and universities, the (non-) completion of which may have an impact on the level of funding.

The analysis focuses on the allocation mechanisms for the block grant, shedding light on the use of funding formulas and contracts between public authorities and universities. In previous work, EUA has defined the term "funding formula" as follows:

A funding formula is "a mechanism to determine the amount of funding allocated to a higher education institution using a mathematical formula which includes variables based on indicators, such as student numbers, etc. This can be differentiated from other ways of determining the amount such as negotiation or historical allocation"[14]. While the variables in a funding formula usually refer to the past, they may also be expressed as targets referring to future achievement, for instance with regard to enrolment (e.g. Scotland).

Performance contracts, for their part, come by different names, such as "outcome agreements" or "performance compacts", and may have various shapes, insofar as they cover different instruments and scopes. They may be built around both activity-related indicators and the achievement of targets. Both indicators and targets may consider input and output criteria. Thus, in certain cases, the contract becomes the legal frame around what could be effectively considered a hybrid funding formula (i.e. a formula that includes both types of indicators in significant shares). Contracts are also a privileged format to incorporate objectives connected to more qualitative aspects like research integrity, contribution to Open Access policy, or institutional strategy/development plans. In some cases, the overall funding model is presented as a formula, with defined shares for each component. Among the components, parts may be likened to a contract, as is the case in Finland, for instance. Therefore, it may sometimes be difficult to distinguish between funding formulas and (performance) contracts.

Figure 2 – University core funding 2021 (Finland)[15]



14 Bennetot Pruvot, E., Claeys-Kulik, A.-L. and Estermann, T. (2015) *Designing Strategies for Efficient Funding of Universities in Europe*, EUA, Brussels, p.27

15 https://okm.fi/en/steering-financing-and-agreements

The present analysis does not seek to precisely assess the extent to which a funding model is based on "performance", even when retaining the definition used here, for several reasons. Firstly, depending on the context, some input indicators could be considered by public authorities and the sector as a proxy for performance (typically, the number of international students or staff, which offers a measure of the institution's international attractiveness). Secondly, output indicators connect differently to the cost structure of the institution. For instance, achieved degrees or ECTS, often weighted according to discipline, bear a direct relation to institutional costs; this is much less the case for bibliometrics or graduate employment. Finally, European countries may have joint or distinct allocation mechanisms for teaching and research activities; some might have little core funding for research and cater for it mostly via competitive funding. Thus, seeking to determine the "performance" value of a funding model would not bring significant comparative value to the analysis.

Box 1 Public funding to universities in Finland

In Finland, as described by the Ministry of Education and Culture, the model rests on a funding formula split mainly between education (42%) and research (34%). Both parts can be considered as performance-based, because they are composed nearly exclusively of output-related criteria. Master's degrees make up for 19% of the overall model, with funding capped to an agreed target; bachelor's degrees account for 11% of the funding. Various coefficients apply. Both indicators most closely relate to the cost structure of the institutions. Other indicators for education include graduate employment and tracking, student feedback and continuous learning.

The research component is made up of doctoral degrees (8% of the whole model), scientific publications (14%) and competitive research funding, distinguishing between international and national/corporate funding (12%).

The remaining part of the financing for universities (24%) is allocated on the basis of university strategies, which are formulated together between the ministry and each institution. Additionally, the national tasks and duties of the universities are taken into consideration in the central government funding for universities. The "strategic development" component of the funding (equals to 15% of the block grant) has two parts; the first one relates to institutional strategy implementation, while the second one is linked to "National education and science policy aims", giving the government additional steering power. In 2021-22, the government goals with this part of the funding were to subsidise the costs of an increasing number of students and strengthen international networks. The sector was concerned about the lack of specification of that part of the funding, giving the government increasing power to decide on the content.

The current model is valid since 2021. Compared to the previous model, used for the period 2017-2020, the education component has grown (from 39% to 42%), and the research component has remained almost identical (from 33% to 34%). The strategic part, which may be likened to a performance contract, has diminished (from 28% to 24%).

According to UNIFI, the Finnish university association, the narrative for the evolution in the model was to create stronger incentives for lifelong learning, employment and competitive funding for internationalisation as well as university publications.

Indicators related to internationalisation were transferred from the education component to the strategic, contract-like component. The importance of degree completion was strengthened, while previously 10% of the model rested on "near-completion" (students who gained at least 55 study credits).

A separate model exists for universities of applied sciences, where the bachelor's degrees indicator accounts for 56% of the core funding. It gives more limited importance to research indicators (19%). That model is revised together with the funding model for universities.

2.2. ALLOCATING CORE PUBLIC FUNDING

This chapter provides an **overview of the main mechanisms used to determine the block grant flowing to public universities**, whether for all main activities of universities, or for teaching (t) or research (r) only, when these are identifiable separate components using different instruments.

Table 1 shows that most systems use several instruments in allocating their block grant funding, combining the use of funding formulas with performance contracts/target-setting and maintaining a share of historical allocation. However, the individual share of the total budget allocated via the different instruments differs significantly, as shown by the simplified description in Table 2. One should note that, regardless of the mechanism used, some form of dialogue exists between public authorities and the sector or the individual institutions, which may at times be considered negotiation.

Table 1 – Simplified overview of block grant funding mechanisms in Europe

	Funding formula	Including: Input-related indicators	Including: Output-related indicators	Performance contract	Historical/negotiated/ fixed allocation	Note
AT	X		X	X		
BE-fr	X	X			X	
BE-nl	X	X	X			
CH	X	X	X	X		Confederation funding only
CZ	X	X	X			
DE	X	X	X	X	X	Aggregated view
EE	X		X	X	X	
ES-ca	X	X	X	X	X	
ES-ma	X	X	X			
DK	X		X	X	X (r)	
FI	X		X	X		
FR				X	X	
HR	X	X	X	X		
HU	X	X				

	Funding formula	Including: Input-related indicators	Including: Output-related indicators	Performance contract	Historical/negotiated/ fixed allocation	Note
IE	X	X	X	X		
IS	X	X	X	(X)		Contract: no impact on funding
IT	X	X	X	X	X	
LT	X	X	X			
LU				X		
NL	X	X	X		X	
NO	X	(X)	X	(X)	X	Input: international students Performance agreement with no financial impact
PL	X	X	X		X	
RO (t)	X	X	X			Not considering the change in 2021 which introduced core funding for research
RS	X	X	(X)			
SE	X	X (t,r)	X	X	X (r)	
SK	X	X	X	X		
UK-en	X	X (t)	X (r)			
UK-sc	X	X (t)	X (r)	X (t)		Student numbers reflect targets

Funding formulas are the most common tool to allocate public funds, with very few countries not using them in a significant way. France makes only a marginal use of it (see Box 2), while Luxembourg defines funding for its only university via a performance contract including specific objectives to reach.

The analysis reveals that, although the use of funding formulas is frequent, there is a large degree of diversity in their composition. Models range from essentially input-based formulas, mostly accounting for student numbers (including Belgium-FWB, Croatia, Hungary, Iceland) to fully output-oriented formulas, based on ECTS and degrees earned, which may also include target values (e.g., Austria, Denmark, Finland). In both types of cases, weightings are applied to reflect the differences in costs connected to disciplines. There are different degrees of sophistication for these cost groups (three cost groups in Denmark, five in England, seven in Austria). The weightings may also be used not with a view to reflect the reality of costs, but as incentive mechanisms (for instance, differentiated weights according to gender, as can be the case in Germany). Many systems now feature hybrid formulas, including both types of indicators (input- and output-oriented), particularly when this is used as the main mechanism to fund both teaching and research activities (as in Italy, Netherlands, Poland).

Compared to the 2015 comparative analysis, the table also reveals the spread of contracts and the related used of targets as a funding steering mechanism, with a more frequent impact on funding (albeit often minor) than in the previous study.

Although the share of fixed/historical allocation in the model tends to decrease, it still represents a large part of the block grant in many systems, whether for teaching or for research (Estonia, France, Norway).

Box 2 Evolution of public funding allocation to French universities[16]

Main public funding accounts for 80% of the income structure of French universities. The core grant was for a long time determined on input-oriented indicators. In 2009, the "SYMPA" model introduced some performance-oriented indicators on top of the number of students, such as for instance the number of publishing academic staff. The initial ambition to determine the allocation of funds among universities was not fullfilled, and the mechanism was used to allocate additional funds towards the institutions most in need. A series of shortcomings to the model led to further work in 2013 with the view to establish a new system. This process did not come to fruition for universities because of disagreements with the sector on discipline weightings and the integration of staff salaries in the model. However, this mechanism (MODAL) is used for engineering schools since 2015. Today, the main grant to universities is thus allocated on a historical basis, complemented by project/competitive funding schemes and marginally via contracts.

Contracts exist in France since the 1980s but were included in the regulatory framework in 2007. Although the contract has only limited financial significance, universities enjoy relatively more autonomy in the allocation of these funds. The contracts have been used to support greater territorial coordination among institutions and were based on objectives and indicators, in part common to all universities, and in part individualised. Their main aim remains to support the development of institutional strategies.

16 Based on: Foret, Frédéric (ed.), *Les universités en France. Fonctionnement et enjeux. Nouvelle édition*, Presses universitaires de Rouen et du Havre, 2021

Table 2 – Simplified description of the core public funding models

System	Simplified description of the core public funding model to public universities
Austria	The teaching pillar is almost exclusively (96%) based on target values related to earned ECTS. 2% is calculated on output-based activity indicators. 91% of the research pillar is calculated on the basis of target values related to the number of academic staff. 8% is calculated through output-based activity indicators like external funding.
Belgium-Flanders	The funding component for education is based primarily on obtained credits as well as enrolment data for starting students. The funding component for research is primarily based on output criteria (degrees, publications) with some input-oriented indicators (mobility and diversity).
Belgium-FWB	Core public funding ("annual operating subsidies") covers teaching and research (partially) and is allocated via an enrolment-based funding formula for 70% and via historically fixed grants for 30%. In addition, other targeted/competitive funds are specifically dedicated for research.
Croatia	The funding formula for teaching is mostly based on the cost per student, with a performance-based component of up to 5% of the core basic funding for teaching activities. Core funding for research activities considers the number of academic staff as well as performance-based funding elements (publications). There is a specific funding stream of scientific activities based on results, which itself may amount to 20% of the basic funding for scientific activities.
Czechia	The bulk of the block grant is calculated on the basis of weighted student numbers. The performance-based component of the funding formula represents 20% of the main grant. It is mostly output-based but also includes indicators related to self-paying students and foreign academic staff.
Denmark	Funding for teaching is based on an output-oriented funding formula (¾ based on attained ECTS and other performance-related criteria, and ¼ a fixed grant). The performance-based funding elements in the core funding for research amount for 15% of the research block grant, with a fixed/historical element making up the largest part.
Estonia	80% of the funding formula for teaching is considered basic funding with historical allocation mechanisms. The performance-based component of the formula represents 20% of the main grant (including employability, mobility, completion within standard study time, income from educational activities, doctoral degrees awarded – 3% corresponds to completion of the previous contract, which includes specific targets for each institution). Core funding for research is allocated via an output-oriented formula, which includes indicators such as the number of high-level publications, scientific monographs as well as the number of patents and patent applications, also the amount of funding allocated for R&D (grants and contracts directly related to R&D activities; income from licensing and patents) as well as doctoral degrees awarded.
Finland	The model is based on a funding formula, where education-related indicators account for 42% (mostly BA and MA degrees, continuous learning, employability, student feedback), research accounts for 34% (doctoral degrees, publications, competitive research funding) and 24% reflect policy considerations (strategic development and national duties) – this last part can be considered as a contract as this is a negotiated and individualised process.
France	Different allocation models have been developed and tested, but currently the bulk of the public funding to French universities is allocated on a historical basis, next to smaller amounts via contracts and a greater use of earmarked/competitive funding.

System	Simplified description of the core public funding model to public universities
Germany	Funding models vary across the country, with different mixes including funding formulas, contracts and historical allocation. Formula-based funding is quite common, with input and output indicators. Teaching indicators may relate to weighted student numbers, in-time study completion or graduates, while research indicators may refer to doctoral candidates and external funding. Multiannual target agreements in most German *Länder* are linked to extra funding which level remains small in relation to the whole university budget.
Hungary[17]	The input variables of the funding formula are the number of students on state scholarships and the level of the tuition fee charged by the institution for the relevant programmes. The extent to which graduates have found employment in their field of study is used as a correction mechanism (for large deviations).
Iceland	Public funding is mainly allocated based on weighted student numbers, complemented by individual performance contracts focused on research activities.
Ireland	The core recurrent grant is allocated through a funding formula based on weighted student numbers. The major portion of core grant support for research is provided through the research student numbers that are included in each institution's overall student numbers and in the allocation formula. Part of the funding is based on research metrics (research income, knowledge transfer, output of research degrees). The funding model also uses "top-slicing", i.e. ring-fenced allocations for strategic priorities. Since 2013, a performance funding component has been established, which allows for the withholding of up to 10% of the allocated block grant based on verified performance against agreed targets for the preceding year. Targets include elements that may be considered as input (diversity and social inclusion; governance, leadership and operational excellence) and output (university engagement with stakeholders, meeting skills needs to knowledge economy).
Italy	In 2020, the overall basic funding ("FFO") received by Italian universities was based on a historical share for 33% of the total amount. A performance-based formula made for 25%, complemented by an input-based funding formula (standard cost per student) for 21%. Other interventions accounted for 19%, and a re-balance share made up for 2%.
Lithuania	The funding formula is largely based on student numbers and other input indicators. The "standard tuition fee", which constitutes the core unit in the formula, is set in function of requirements for qualifications of the teaching staff, student–teacher ratio and studies-related expenses for acquisition of goods and services. In complement, public authorities also use targeted funding schemes.
Luxembourg	The university elaborates a four-year contract including key performance indicators, the completion of which conditions the release of the annual funding tranche. The contract includes qualitative objectives like research integrity, gender balance, contribution to open access policy, as well as output-oriented indicators (publications, competitive funding, ECTS validated by students in mobility, etc). Underperformance in a particular indicator does not lead to reduced funding.
Netherlands	Direct government funding is allocated via a funding formula (48%) which is based almost on equal terms on student numbers and degrees. 43% is a fixed block grant, and the rest (9%) is made of temporary grants based on specific policy objectives.
Norway	Public funding to Norwegian universities is mostly based on historical allocation, although the block grant is also affected by performance-based funding changes (output-oriented indicators for teaching include earned ECTS and graduates and for research: publications, external funding). Public universities also have performance contracts since 2019 but without impact on funding so far.

17 Reflecting the situation for 2020/2021. Changes to be implemented as of the academic year 2021/2022 (including greater consideration for scientific activities in the funding model).

System	Simplified description of the core public funding model to public universities
Poland	The funding formula is set to account for 75% of the total grant amount by 2024, while the rest remains based on historical determination, with correction and indexation mechanisms. The formula considers input indicators (students, staff) as well as output-oriented indicators (research activity metrics). There has been greater impact of research evaluation and internationalisation over the years. Since 2019, a new funding model has been applied to ten selected universities as part of a special "excellence initiative".
Romania	The contract signed between the higher education institution and the Ministry of Education comprises basic funding, supplementary funding, an institutional development fund, funding for special situations and social subventions for students. As of 2021, core funding for research is also included. Basic funding for public higher education institutions is allocated through study grants calculated per student equivalent, and depends on the field of study, study programme and language of instruction. Supplementary funding amounts to at least 30% of the amount allocated at national level to public universities as basic funding. It is calculated via a mixed funding formula (including input and output indicators) and composed of four indicator categories: Learning and Teaching (22%), scientific research/artistic creation/sports performance (46%), international outlook (12%), regional orientation focus & social equity (20%). The institutional development fund is allocated according to the results of an annual competition.
Serbia	The state funding of public higher education institutions in Serbia is input-based. The number of enrolled students, as well as that of lecturers (professors) and of the administrative staff represent the main criteria for the allocation of funding.
Slovakia	The block grant is allocated via a mixed funding formula accounting for the costs of accredited study programmes, numbers of students and of graduates, employment rate, student/staff ratio, as well as other output-oriented indicators. Recently, universities were assigned targets as part of an effort to decrease the number of BA students applying to MA programmes. Failure to reach the fixed objectives could have a financial impact for universities.
Spain-Catalonia	Public funding is mostly formula-based (input and output), but a minor share of the grant is fixed and identical to all Catalan universities. An extra source of funding is linked to the completion of targets that can be considered both input and output oriented. The implementation of the model has however been suspended.
Spain-Madrid	The basic funding stream for teaching is mostly input-based, while the basic funding stream for research is mixed (input and output). Next to these streams, an "objective-based" funding stream representing 10% of the direct public funds includes both input and output-based indicators. The implementation of the model has however been suspended.
Sweden	Funding for teaching is based on registered full time-equivalent students and credits obtained by the students. Swedish universities are assigned a target value, or financial cap. Over-production is not funded. Research funding in Sweden is based on historical levels of funding, an increasing share of funds based on the number of students, and an additional grant determined per university type/group.
Switzerland	Confederation funding accounts for 20% of the reference costs of cantonal universities. The teaching component of the funding formula is based on both input and output indicators including enrolment, successful study completion and quality of education. The research component is output-based (research performance, third-party funding).

System	Simplified description of the core public funding model to public universities
UK-England	The teaching grant formula is primarily intended to cover high-cost subjects and support equity. High-cost subject funding is based on a formula considering student numbers, with price groups and an overall scaling factor. Recurrent funding is targeted where research quality is highest through the 'quality-related research (QR) funding' method. This distributes grant money based on: the quality of research; the volume of research (based on numbers of research-active staff); the relative costs of different types of research (reflecting, for example, the fact that laboratory-based research is more expensive than library-based research). [18]
UK-Scotland	Funding for teaching is allocated via a funding formula based on weighted student numbers (targets), while main funding for research is allocated in the same way as England, via the UK's research excellence framework, which assesses research outputs. Scottish universities have "outcome agreements" since 2012/13. The Scottish Funding Council recovers funding from universities if they under- or over-recruit against the target number of places it sets for the year.

2.3. DRIVERS OF FUNDING ALLOCATION

The following tables seek to provide a more precise comparative picture for the systems included in the study. The first one concerns those systems that allocate a block grant covering both teaching and research activities (Table 3), while the following two group those systems where there are identifiable different block grants for teaching (Table 4) and for research (Table 5). Only the main mechanisms are included in these tables (as accounted for in the summary description of funding models). Country codes in bold reflect the biggest component of the model, insofar as it could be identified. The tables distinguish between mechanisms that are primarily driven by input or output indicators, and those that may include both input and output in a single, hybrid mechanism. The categorisation also seeks to differentiate between mechanisms based on past activity indicators (typically, funding formulas) and mechanisms connected to targets/objectives. The latter tend to be taken up in contract-style funding instruments. The third category groups systems that rely to a significant extent on historical allocation, with a possible element of negotiation, but which cannot be likened to proper funding contracts.

The picture reveals an increasingly complex funding landscape, and a mainstreaming of various funding instruments including contracts. The distinction between the use of indicators, measuring past activity/performance, and targets, by nature future-oriented, is becoming a relevant feature in the funding model discussion, more so perhaps than the contrast between quantitative and qualitative aspects.

Targets and objectives may be nested in performance contracts (as in Ireland) or be considered as part of correction/mitigation mechanisms, notably with regard to total student enrolment. Swedish universities, for instance, have an individual "financial cap" set by the government. While the funding allocation depends on registered students and ECTS attained, under- or over-production, so to say, is penalised in the sense that underproduction negatively impacts funding, while overproduction is not fundable. A similar system applies to Scottish universities, where each institution has a target number of enrolments and will be penalised for recruitment outside a tolerance band around that target. Austria is another example (see Box 6), with both teaching and research pillars based on target values (in examination activity and in the number of academic staff).

Targets lend themselves to multi-annual funding models, as in Luxembourg, where the funding allocation is decided for four years, and the payment of the annual grant "tranche" is linked to the achievement of key performance indicators. Nevertheless, in the case of this mono-institution country, underperformance on a given KPI does not have an impact on the overall funding received, as it is the overall performance that is considered.

18 https://eacea.ec.europa.eu/national-policies/eurydice/content/higher-education-funding-93_en

Countries that allocate a single block grant covering the universities' main activities (Table 3) often combine mechanisms. At least ten systems use two different funding tools. Primarily output-orientation is rare (Finland), considering that the grant must account for largely rigid cost structures. Historical allocation often complements the use of formulas. Mixed formulas are becoming relatively common.

Table 3 – Funding allocation mechanisms for learning & teaching and research activities

Main allocation mechanism to determine the block grant covering both learning & teaching and research activities	Allocation driven by past activity indicators	Allocation connected to future-oriented targets	Historical/ incremental allocation, with a possible element of negotiation
Primarily input-oriented	**BE-fr**, **CZ**, HU, **IE**, IS		BE-fr, **EE**, FI, **FR**, IT, NL, **NO**, PL, ES-ca
Primarily output-oriented	CZ, EE, **FI**, NO		
Mix (including both types of criteria as of highest importance)	DE, **IT**, **NL**, **PL**, RO, SK, **ES-ca**, ES-ma	FR, IE, IT, ES-ca	

Where specific mechanisms exist to allocate core public funding to teaching activities (Table 4), the picture is quite diverse. Universities may have targets in terms of enrolment, with over or under-enrolment leading to negative financial impact. Austria has a rather unique profile with its funding mechanism being almost exclusively based on target values, and a minor part linked to output-oriented indicators.

Table 4 – Funding allocation mechanisms for learning & teaching activities

Main allocation mechanism to determine the block grant covering learning & teaching activities	Allocation driven by past activity indicators	Allocation connected to future-oriented targets	Historical/ incremental allocation, with a possible element of negotiation
Primarily input-oriented	HR, RO, RS, UK-en	UK-sc, SE	
Primarily output-oriented	AT, DK, NO	**AT**	
Mix (including both types of criteria as of highest importance)	BE-nl, CH, LT, PL, **SE**	LU	

Specific grant allocation for research (Table 5) is more often done via output-based (and rarely mixed) formulas, although Denmark and Sweden distinguish themselves with an essentially historical allocation system. The Swedish national university association (SUHF) reported on a complex and variating funding model for research, largely based on historical levels of funding, to which various instruments have been applied, resulting in winners and losers among the different types of universities without a clear narrative or methodology.

Table 5 – Funding allocation mechanisms for research activities

Main allocation mechanism to determine the block grant covering research activities	Allocation driven by past activity indicators	Allocation connected to future-oriented targets	Historical/ incremental allocation, with a possible element of negotiation
Primarily input-oriented	SE	**AT**	**DK**, **SE**
Primarily output-oriented	AT, BE-nl, CH, UK-en, UK-sc		
Mix (including both types of criteria as of highest importance)	DK, HR		

Funding formula indicators

The study polled national university associations on the relative importance of various indicators in the funding formula used in their system (regardless of the importance of the formula itself in the funding model), as described in Figure 3. Predictably, student numbers come out as the most important indicators, consistent with the classification outlined above as well as with the 2015 report. Student numbers are indeed often regarded as the closest proxy to costs at universities. However, the importance of the number of doctoral candidates, in particular, has significantly jumped upwards. The output-oriented version of student numbers, i.e. the number of degrees obtained/ECTS attained, continues to be highly relevant as well, although research evaluation mechanisms (which are a broad category encompassing various indicators) now rank higher in relevance. While there is overall stability in the ranking of the indicators over the past years, one can notice that greater relevance is given to a wider range of indicators. Some noteworthy changes include for instance the growing importance of the graduate employment rate (jumping from 19th to 14th place out of 24 ranks[19]), or conversely, the lower relevance of completed doctoral theses (from 16th to 22nd).

Assessing the indicators for systems that described the funding formula as a mechanism covering teaching only[20] reveals a steeper gap between the number of bachelor's and master's students and ECTS attained, on the one hand, and the rest of the possible indicators on the other. The number of international students is also considered more important as a component of the formula in this configuration than for the general assessment shown in Figure 3.

19 Excluding the category "other indicators", not included in the 2015 study.

20 The collected data did not make it possible to run the analysis for research-only funding formulas. Seven systems are considered for the teaching-only funding formula, including systems where the formula might not be the main allocation mechanism.

Importantly, EUA's previous work on higher education indicators showed that while the amount of data on educational performance had increased, similar types of indicators continued to be used across different tools, and for different purposes (funding, quality assurance, rankings, etc.). This generates important questions regarding the fitness for purpose of these indicators, their contextualisation and excessive "recycling". EUA advised that "it should not be taken for granted that indicators are transferable, even though data collection and processing, especially if repeated on a periodic basis, entail a considerable workload".[21]

Figure 3 – Estimated importance of indicators in funding formulas

Note: Respondents were asked to assess the relative importance of a series of possible indicators in the formula used in their system. Responses were given weights to rank these indicators, following the same methodology as in the previous study. The graph includes all systems making use of a funding formula, regardless of whether it is a major or minor funding mechanism, and whether it is geared towards funding all activities, teaching or research only.

21 Loukkola T., Peterbauer H. and Gover A. (2020) *Exploring higher education indicators*, EUA, Brussels

3. Evolution and challenges

Over the last decade, there has been a continued discussion on funding models for universities, which materialised in different changes across Europe. EUA's Public Funding Observatory revealed that funding allocation for teaching and research, as well as performance-based funding, were recurrent "topics for discussion and reform" in 2019. Debates, expected reform processes or significant changes were signalled in various countries at the time, including Austria, Denmark, Estonia, France, Ireland, the Netherlands, Norway, Poland, among others. Less than a year later, asked about their expectations on core funding changes, Finland mentioned the development of a new funding model, while Czechia and Spain referred to upcoming adaptations to funding indicators. By the end of 2020, 12 higher education systems recognized a debate or change around the funding allocation model for research in their country (compared to nine in 2019), 11 referred to "performance-based funding" (nine previously), and nine to the funding allocation model for teaching (eight previously). Discussions about changing funding models then included Romania and Slovenia. Subsequently, further attention was given to funding reforms in 2021 in the context of the national recovery and resilience plans as part of the NextGeneration EU package.

Approaches to funding model reform vary tremendously throughout Europe, from a complete overhaul of the system to recurrent adaptations in a given, stable frame.

3.1. LARGE-SCALE REFORM PROCESSES

Croatia is an example of a long-run reform process, gradually transforming higher education funding. Changes in the financing model of higher education and science were motivated by the need to increase the responsibility of public universities in managing financial assets and to communicate clearly the state requirements towards the public universities, formulated in goals and measurable performance indicators. In the period 2015-2018, contracts were signed between universities and the Ministry of Science and Education, funding costs of full-time students and other expenditure (materials), depending on the field of study. Scientific activities were financed in the same way, with a higher base cost. In 2018, there was an attempt to make structural change in the financing with the aim to set up overall financing of higher education and science based on results achieved and strategic goals, using the principles of transparency, efficiency, quality assurance and social dimension in higher education. For the period 2018-2022, a new model was designed, including teaching and scientific activities as well as institution-specific funding, although it excluded staff salaries. The model is further described in Box 3.

In Hungary, significant change took place as the formal "normative funding" model gave way to a cost-based funding model in 2016. The formula is now essentially based on the number of students on state scholarship and the tuition charged by the institution for the relevant programmes. The tuition fees are calculated on the basis of the estimated cost of the educational activity. Lower and upper limits of the costs, by study fields and levels, are defined in a Government Decree, and institutions may determine their tuition fees within these limits.

The amount distributed to Hungarian institutions may differ by ± 10%, if an extremely high or low proportion (± 25%) of the former graduates of the institution (compared to the national average) have found employment in their respective field of study. [22] At the time of writing, the government was rolling out a new funding model as of academic year 2021/2022 for those institutions becoming foundations, articulated around multi-annual financing agreements, and integrating support for scientific activities and operating costs of the institution.

22 Eurydice, "Hungary – Higher education funding", dated 07/12/2021, available at https://eacea.ec.europa.eu/national-policies/eurydice/content/higher-education-funding-35_en

Box 3 Public funding of Croatian universities (2018-2022)

Basic prerequisites of performance financing in Croatia (2018-2022)

1. Basic financing of educational, scientific and artistic activities

1.1. Education: based on the amount of full subsidy for the participation in the study costs for each student, depending on the type of study programme and scientific or artistic field it belongs to, and based on the number of students who meet the requirements to be freed from participation in their study costs. (Range: from HRK 4,300 to HRK 7,500).

1.2. Research/art:
STEM areas: [(number of papers published in WoS / total number of full time employed researchers in STEM areas) * HRK 13,500 * number of full time employed researchers in STEM areas charged to the state budget].
DH areas: [(number of papers published in WoS or SCOPUS) / total number of full time employed researchers in DH areas) * HRK 7.500 * number of full time employed researchers in DH areas charged to the state budget].

2. Financing based on results

2.1. Teaching: up to 5% of the basic funding of the material costs of the teaching activity, and the amount is proportional to the number of graduates in the academic year and inversely proportional to the number of students enrolled in the first year of the academic year.

2.2. Research: up to 20% of the basic funding of scientific activity costs, based on: the value of contracted national and international competitive scientific projects, i.e. their share in total revenue; the proportion of graduates who are not employed in the system of science and higher education compared to the total number of graduates in one academic year and on the number of published papers in the first quartile in journals introduced to the Web of Science database by FTE.

2.3. Art: proportional to the number of full-time employees appointed to artistic-teaching grades and the number of students, and inversely proportional to the number of external associates. The total amount for all higher education institutions for additional funding of material costs of artistic activity based on the results cannot be higher than HRK 10 million per year.

3. Institution-specific funding

Up to 3% of the total amount allocated to each higher education institution for basic funding based on the results of teaching, scientific and artistic activities. Indicators include:

- compliance of study programmes with the qualification standards from the Register of the Croatian Qualifications Framework
- employment - based on the results of employment monitoring
- the proportion of students who completed the study in n + 1 of the nominal duration of the study
- the proportion of incoming foreign professors / scientists
- the proportion of incoming international students
- increasing the number of scholarly books with an international review
- increasing the number of patents accepted
- increase the share of graduate students who are the first generation in the family in higher education in the total number of graduates.

Large-scale processes may also apply to a part of the sector, as has been implemented in Poland since 2019. In the same line as pre-existing "excellence initiatives" from other countries, the Polish Ministry introduced a specific funding line ("IDUB" programme), for which 20 higher education institutions were eligible to apply. Ten universities were selected in a competitive process to receive extra funding representing 10% of their core public funding over the period 2020-2026, to fund activities and development plans described in their proposals. According to the authorities, "The aim of the IDUB programme is to encourage the best Polish universities to be on a par with the leading European universities in the field of research, thereby increasing the international importance of their work."[23] Non-selected universities were promised an additional 2% public funding. An interim assessment of the actions taken by selected universities will take place in 2023, with the final evaluation scheduled for 2026. A second round is planned, with the possibility of funding extension for well-performing institutions, and the possibility for previously non-selected institutions to join.

3.2. ADAPTING EXISTING MODELS

In several other systems, changes were operated within relatively stable frames. They were often considered as part of the regular "fine-tuning", or "tweak and twist" of the model – and concerned the value, or weight, of various indicators of the funding formula, rather than its scope. This is for instance the case of Finland, which regularly reviews its funding model but maintains its structure and components (see Box 1). This type of modifications may reflect evolving priorities or may seek to correct the results of the formula itself. When this is a systematic feature of the model, this practice suggests that a more holistic evaluation and revision might be necessary, as the formula may not meet its objectives.

Changes in the value of the indicators may nevertheless be of noticeable scale; for instance, in the Netherlands, the fluctuations in the allocation of public funding among universities was reduced in 2020 by lowering the weight of students and degrees in the funding to education, from 70% (in 2019) towards 59% (in 2020).

Such changes may also be implemented progressively, shifting the focus of the formula in a way that reflects better the public authorities' priorities for the university sector. In Poland, research evaluation mechanisms as well as indicators related to international activity (funding, students, staff) have gained more importance over the years, while the formula itself has grown as a part of the overall funding model (from 50% in 2019 to 75% as a target value 2024), at the expense of the share that is determined historically. Estonia has undergone a progressive reform process between 2013 and 2017, according to which 20% of the grant is now based on indicators (17%) and on the evaluation of compliance with the previous contract (3%). The largest indicator informing this part of the funding is the share of students graduating within normal duration, followed by the share of students/graduates in employment or further studies.

Other changes internal to the formulas since the last study include for instance Czechia, Romania (see Box 4), Slovakia and Sweden. The number of senior academic staff is no longer an indicator used in Czechia, while Sweden has "paused" the use of indicators connected to external funding (previously used between 2009 and 2016) or citations in scientific journals for allocating research funding.

23 https://www.gov.pl/web/science/the-excellence-initiative---research-university-programme

Box 4 Public funding of Romanian universities

In Romania, funding for public higher education institutions is mainly provided by the Ministry of Education, based on an institutional contract concluded between the ministry and the higher education institution. The contract includes institutional funding (basic funding, supplementary funding, an institutional development fund since 2016, funding for special situations, as well as since 2021, formula-based research funding). The contract also includes social support for students.

Basic funding (core funding) for public higher education institutions is allocated through study grants calculated per student equivalent, which depend on the field of study, study programme and language of instruction.

Supplementary funding has been one of the main novelties brought by Law no.1/2011 in terms of higher education funding. Supplementary funding is allocated to stimulate excellence of both higher education institutions and study programmes, in public universities, based on the criteria and quality standards set by the National Council for the Financing of Higher Education (CNFIS). It amounts to at least 30% of the amount allocated at national level to public universities as basic funding.

The quality indicators for awarding the supplementary funding were introduced in 2016 and are divided into four classes, namely Learning and Teaching, scientific research/artistic creation/sports performance, international outlook, regional orientation focus & social equity. The indicators and their weights are prone to change from year to year. The table below refers to the 2020 indicators, as approved by the Ministry of Education. While supplementary funding takes into account research-related indicators, it supports teaching activities and does not offer direct funding to research activities taking place at public universities.

The institutional development fund is particularly intended for the best performing public higher education institutions and is awarded based on competition (annual calls for participation). Public universities may submit projects in one or several of the following topics: promoting new study programmes; enhancing institutional capacity; improving learning and teaching processes; enhancing research capacity; nurturing connections with the local community; social inclusion; internationalisation.

Higher education institutions may also conclude an additional (complementary) contract with the Ministry for funding of capital expenditure and repairs, investment in infrastructure and subsidies for student housing and catering.

Class of indicators	Indicator	Weight
Learning and Teaching (22%)	Ratio students/teaching staff	8%
	Ratio MA students/BA students	6%
	Ratio teaching staff up to 40-year-old/total number of teaching staff	4%
	Ratio teaching staff entitled to coordinate PhD theses/total number of teaching staff	4%
Scientific research/ artistic creation/sports performance (46%)	Quality of human resource	14%
	Impact of scientific research/artistic creation/sports performance	12%
	Excellence in scientific research/artistic creation/sports performance	14%
	Funds for scientific research/artistic creation/sports performance	6%
International outlook (12%)	Student mobility	6%
	Number of foreign students enrolled in study programmes	6%
Regional orientation & social equity (20%)	Number of students from socio-economic disadvantaged backgrounds enrolled in study programmes	5%
	University's own contribution to the scholarships' fund	4%
	Internship activity for BA students	4%
	Number of places in student dorms	5%
	Non-reimbursable funds attracted by the university	2%
Total weight		100%

Source: CNFIS

3.3. THE CHALLENGE OF EVALUATION

In some cases, countries that had developed complex formulas have since back-pedalled, working towards simpler, more understandable systems, based on reliable indicators that connect, to some extent, to the actual cost structure of the institutions. As academic career assessment evolves,[24] with more institutions seeking to implement holistic approaches and moving away from quantitative publication metrics, changes in funding models can have a significant positive effect on this process (see Box 5).[25]

The transformation of funding models may also be triggered by the results of comprehensive evaluation processes. This is the case of Austria. Until 2012, next to a negotiated budget, 20 % of the direct core funding was calculated through a formula composed of 11 indicators. An evaluation in 2011 revealed that this was too complex for a rather limited steering effect (the overall amount was allocated via a contract). This 20% formula was thus replaced in 2013 by so-called structural funds, representing 5% of the total funds allocated via four indicators. This was assessed as simpler and more effective in terms of steering and redistribution effect. In 2015, the weighting of indicators was slightly adapted and one indicator was replaced by another. The overall amount increased to represent 7,7% of the total budget.

Despite these changes, there was a long discussion about the need to more closely link the funding model to costs, especially to student numbers, notably because of concerns about a high dropout rate. The reform in 2018 addressed these issues (see Box 6).

Recommendations may take years to shape actual reforms. This is the case in Ireland, where the current funding model has been in place since 2013. Following concerns with regard to the long-term sustainability of this model, a review of the future funding of higher education in Ireland was published in 2016, which has yet to be acted upon by government. A related review[26] of the funding allocation model in 2017 led to 33 recommendations being formulated, but full implementation was still pending in 2022. A government response to the long-term funding model for higher education is however expected this year.

Box 5 Academic career assessment and the funding model: Finland

Changes [regarding academic career assessment, hiring and promotion models] at Tampere [University] were externally motivated in part by the commitment of the Academy of Finland, a large governmental funding body in Finland, to responsible academic assessment. The funding model under the Ministry of Education and Culture has shifted away from quantitative proxy-based indicators toward a model that also includes more qualitative criteria. University leaders at Tampere used this funding shift, as well as the Academy of Finland's signing of DORA in 2019, as leverage to stimulate local change.

24 *Reimagining Academic Career Assessment: Stories of innovation and change*, EUA-DORA-SPARC Europe, January 2021

25 Ibid, p. 34

26 Higher Education Authority, *Review of the Allocation Model for Funding Higher Education Institutions*, December 2017, available at https://hea.ie/assets/uploads/2018/01/HEA-RFAM-Final-Report-for-Publication.pdf

Box 6 Public funding of universities in Austria since 2018

Since 2018, funding of Austrian universities is organised around three important pillars. There is one pillar funding teaching, one for research and the development and of the arts, and a third providing a budget for infrastructure and strategic development, which covers special expenses for universities (such as rent contributions). Only the first two pillars are calculated by using indicators.

The most important component of the teaching budget is the examination activity, which is given if at least 16 ECTS credits are earned per academic year. There are seven subject groups with different funding rates (humanities, social sciences and law with €9,900 on the one end and art and music with €49,500 on the other end of the spectrum). 96% of the teaching pillar is provided through this indicator in the funding period 2022-2024.

The most important indicator for research (and development of the arts) is the number of academic (or artistic) staff. The amount is calculated through the value of the subject group. 91% of the research pillar is provided through this indicator.

A specific feature of the first two pillars is that the funding allocation works with target values (for example a target for academic staff).

In addition, in each pillar a certain amount is allocated through further output indicators. In teaching, 2% is awarded via the number of degrees and 2% via students who are particularly active (40 ECTS credits/year). In research, 8% is awarded through an indicator taking into account external funding and 1% through doctoral studies.

In addition to that, the performance agreements contain projects and measures derived from the Austrian University Development Plan and the specific University Development Plans. An under-performance of more than 2% deviation from the agreed target values leads to a budget reduction. But it cannot be inferior to the current budget.

A small amount of the budget is retained and provided upon proof of measures to support disadvantaged and vulnerable groups.

The entire budget is distributed by concluding a performance contract. However, this performance contract can only be formally assessed as such. The amount to be distributed is largely allocated by means of indicators as described above.

3.4. EVOLVING PERFORMANCE CONTRACTS AND THEIR IMPACT ON UNIVERSITY AUTONOMY

Apart from setting out the resource allocation principles and mechanisms, funding models also constitute a steering instrument for public authorities to foster the achievement of certain policy goals. In this regard, the funding model may have a direct impact on institutional autonomy.

The choice of specific indicators in formula funding often reflects the current government's political priorities. Higher values result in higher budget, thus generating a financial incentive. The objectives can be as diverse as the indicators, ranging from income diversification (incentive to attract competitive funding), internationalisation (number of international students or staff) to graduate employment.

In that context, performance agreements/contracts are an instrument of choice, which can be used to set specific goals in a more flexible way than via funding formulas. Practices vary widely and range from very focused agreements including a small set of indicators, to far-reaching agreements listing a large number of goals. As shown in Table 2, most of European higher education systems make use of them in one way or another. In Luxembourg, the four-year performance contract is the main funding frame for the university, as explained above.

These agreements also differ depending on whether they are connected to (additional) financial resources and whether the achievement of different objectives has financial consequences or not.

In Italy, for example, these "target agreements" include three areas (research quality, teaching quality, and internationalisation). Universities can autonomously choose two indicators out of two of these areas (for instance, "share of graduated students with at least 12 ECTS acquired abroad" under the "internationalisation" area, and "share of enrolled students on doctoral level courses graduated in a different university" as part of the "research quality" area). Universities are evaluated according to the improvements of these indicators. The impact on funding is considered to be limited.

Another case is the introduction of the Irish "performance compacts". Since 2014, this instrument constitutes a form of contract between universities and public authorities to deliver on agreed performance criteria based largely on agreed national priority areas and institutional strategic priorities. Each institution is required to describe its approach to deliver on the six key system objectives. For the period 2018-2020, these were:

- Meeting skills needs of the knowledge economy
- National and international engagement including with enterprise and wider community
- Excellent research, development and innovation
- equality of opportunity through Education and Training
- quality of the learning environment and academic excellence
- governance, leadership and operational excellence

The link to institutional funding, as well as the detail and scope of the agreements, are important factors to assess the extent to which such agreements have an impact on the autonomy of the universities.

Data collected by EUA on institutional autonomy in 2021-2022 also revealed that governments are increasingly using these tools for micro-steering, where extensive targets and detailed processes are set in some systems.

In Austria, in addition to the targets described above, the agreements contain various obligations of the universities to achieve certain objectives, measures and projects. These include strategic goals, profile building, university and staff development; research, teaching and other goals such as institutional cooperation. The agreement is concluded for a period of three years. The number of targets varies between universities but can reach up to 100.

In Scotland, agreements were established in 2013 and cover a period of three years. The main focus is on learning and teaching, research and knowledge exchange, as well as widening access outcomes. The "outcome agreements" were originally thought as an instrument that would help align university strategies with national priorities, but over time they have become excessively detailed, incorporating an ever more diverse array of government priorities with sometimes loose connection to university missions.

Some countries, on the other hand, have found that a high number of targets is not necessarily efficient and have therefore adapted this instrument.

In Denmark, the contracts do not have a financial impact. Before 2018, the contracts included three to five goals for all universities, set by the Ministry of Higher Education and Science, and three to five goals for each university individually. In 2018, a new model was introduced, focusing only on the strategic goals agreed upon between each university and the ministry. Equally, in Norway, performance agreements are in use at all public institutions since 2019. These are concluded for three years and are not tied to financial resources.

In the Netherlands, public funding depending on contracts has been scaled down over the last decade, with today's "quality agreements" making up for less than 4% of the core public funding (compared to 6 to 7% dependent on contracts around 2013). This fund is financed from the reduction of student grants since 2015 and covers six main objectives:

- More intensive and small-scale education
- More and better supervision of students
- Academic success of students
- Education differentiation
- Appropriate and good educational facilities
- Further professionalisation of academic staff

The universities translate these themes into concrete measures and policy. The plans are assessed by the Dutch-Flemish Accreditation Organization (NVAO) and approved by the ministry. A full-scale assessment is planned for 2022. According to Universities of The Netherlands, in October 2021, an inventory was made of how much the universities are investing per theme. This showed that the funds are mainly invested in small-scale education and tutoring.[27]

3.5. FUNDING REFORMS IN NATIONAL RECOVERY AND RESILIENCE PLANS (NEXTGENERATIONEU)

At the time of the initial data collection, various national university associations reported that work was under way to reform the funding allocation model. Nevertheless, these processes were often halted or postponed in light of the disruptions caused by the Covid-19 pandemic. Many reforms were shelved in 2020, only to reappear as part of National Recovery and Resilience Plans (NRRP), in the context of the NextGeneration EU recovery package. In work published in Autumn 2021, EUA analysed some of the ambitious funding model reforms included, such as in Slovakia, Croatia, Latvia or Spain. As mentioned in the report, "the general narrative is of a greater focus on the efficiency of public investment in higher education, research and innovation, through performance-based funding and competitive funding schemes".[28] Box 7 outlines some of the funding reforms included in the plans submitted by EU member states and included in the dedicated EUA report.

27 https://www.universiteitenvannederland.nl/nl_NL/kwaliteitsafspraken.html

28 Bennetot Pruvot, E., and Estermann, T. (2021) *NextGeneration EU: What do National Recovery and Resilience Plans hold for universities?*, EUA, Brussels

Box 7 Examples of funding reforms included in the NRRP

Bulgaria intends to "gradually increase the share of project financing in the budgetary structure of public research organisations and higher education institutions, thereby creating a sustainable platform for the introduction of mechanisms for monitoring and evaluation of their work and continuation of result-oriented financing". It also plans to introduce a distinction into the funding model that will favour newly labelled research universities. Research universities will be given research and innovation subsidies at the rate of 40% of the subsidy for education. The other higher education institutions will receive up to 10%. Through this differentiated approach, the country expects to sustainably enhance public R&D spending. The total planned resources for both programme components amount to BGN 318 million and the implementation period is 2021-2026.

Croatia intends to pass a new, modernising, Science and Higher Education Act and a new law on quality assurance (component 3.1), but a major element appears to be the adoption of a new HEI funding model. The Croatian authorities want to develop a system of "programme agreements" focused on innovation, research and development to fund universities and research institutes. External experts will be invited to come up with a proposal to develop this contract-based model. Furthermore, a support scheme to deliver institutional funding for the universities and research institutes that have signed those agreements will be introduced.

Latvia envisages a change in the funding model, together with university governance reform (component 5). The authorities particularly want to increase the share of performance-based funding to 20%. The Latvian government also seeks to introduce financial incentives to consolidate and implement joint study programmes (to reduce duplication and pool resources). The plan also specifies that funding will be distributed to programmes rated as "excellent" and "good" in the new accreditation cycle and considering various indicators such as student results or internationalisation. Work is underway, and changes in the regulatory framework are planned for 2022.

Lithuania mentions funding under component 5: "Higher education, a coherent framework for stimulating research and innovation and high-value added business". Specifically, the Lithuanian authorities plan to improve higher education funding and student admission systems. The former will involve aligning the funding system with national strategic goals.

As part of its wider focus on enhancing university performance, Slovakia plans to introduce performance-related contracts and revise the funding formula used to distribute financing to its higher education institutions. It wishes to move away from a model based on past activity to develop a system that supports strategic university profiling. While the proposed model is not described in detail, the plan includes potential indicators and mentions U-Multirank as a way to evaluate university performance. As for the implementation of the new model, the plan states that the Ministry of Education, Science, Research and Sport will consult the sector during 2021, and will carry out audits with a view to drafting performance-related contracts that would come into force as of 2023 and for a three-year period.

Spain aims to modernise its university system by adapting university course organisation to contemporary society and technological transformation. The plan introduces more performance-based elements into education and research institutions financing.

4. Principles for designing funding models

Constant activity around funding models in the past years, discussions focused on funding mechanisms and tools rather than objectives, and recurring questions around the "ideal" funding model all make it necessary to lay out basic principles for the design of sound funding models.

This is all the more important as the topic is gaining renewed attention in the wake of the pandemic and ahead of possible budgetary constraints in Europe.

Considering the findings of the present analysis and of previous EUA work, it is worth highlighting the following principles, which should guide any reflection on the funding model, based on a full recognition of its specificities.

A sustainable university funding system shall:

1	help implement a vision and clear objectives for the system;
2	be understandable and transparent;
3	involve the sector in its design;
4	allocate sufficient resources and adapt funding to evolving costs and demands to support the financial sustainability of the sector;
5	combine funding instruments in a balanced way that is coherent and fit-for-purpose, in line with the long-term vision and objectives for the sector;
6	ensure that selected funding instruments correspond to the retained purpose (funding distribution, coverage of core costs, policy steering, behavioural incentives);
7	take account of typically rigid institutional cost structures, and cover fixed costs adequately;
8	avoid depending for a large part on historical allocation, which does not reflect the increased pressure on institutions linked to rising costs, large student cohorts and additional tasks;
9	be based on fit-for-purpose data that is available and consistent throughout the sector, the scope of which is clear and whose impact can be estimated by the institutions themselves;
10	acknowledge that institutions may have limited influence on some variable costs (e.g. student numbers in free admission systems) and connect these costs with appropriate proxies;
11	reward performance through positive incentive mechanisms rather than penalties;
12	generate the space for strategic profiling by allowing for a tailored, individual approach to institutions, while maintaining transparency and trust in the system;
13	accommodate both objectives of steering and greater institutional autonomy; in this context, target setting offers a steering tool by defining investment priorities;
14	strike the right balance between evaluation-based evolutions and stability so as to enhance certainty and planning capacity for universities.

In this context, the use of performance-based funding instruments, including contracts, must:

- be considered as an option among other funding mechanisms
- be complementary to stable, cost-connected funding mechanisms
- be linked to a limited number of well-identified goals/targets
- remain simple and not be overly prescriptive
- avoid generating cumbersome reporting processes
- be combined with additional funding rather than at constant resources
- be assessed against possible unintended consequences and regularly evaluated in terms of fitness for purpose.

Public authorities should strive to design a coherent funding landscape, and particularly:

- avoid the accumulation of unarticulated and independent schemes with specific objectives, scopes, participation modalities and requirements, which contribute to the overall complexity of the funding landscape;
- carefully consider the merits and limits to making changes in the core funding model vs. creating ad-hoc schemes (see Box 8);
- aim at creating consistency and synergies with existing funding instruments, at all levels of public intervention, including European programmes.

Box 8 Questions to consider before reforming/designing new funding instruments

- ➤ Status quo analysis (what works and what does not, what is the need for reforming/designing?)
- ➤ What is/are the objective(s) pursued?
- ➤ What timeframe is considered? Could it be considered a recurrent or a one-off initiative?
- ➤ Is the objective pursued valid for the entire sector, or for some institutions? Is it meant to enhance competition, or should it be applied to and benefit all?
- ➤ Is this objective best addressed via the funding model, or via other channels (regulatory frameworks)?
- ➤ Does it require a change in the existing funding model, or may it be better addressed via a dedicated, time-bound specific funding scheme or instrument?
- ➤ What is the impact on institutional autonomy?
- ➤ What is the impact on the overall complexity of the funding landscape for universities? Is this initiative mindful of greater alignment and coherence of the funding landscape for universities?
- ➤ How is the sector involved in the design of the initiative?

Annexes

ANNEX 1: FOCUS ON FEDERAL SYSTEMS

1.1 Germany

Fundamentally, in Germany public higher education institutions are funded by the *Länder* (states), whose autonomy in cultural and educational matters is stated in the Basic Law. Each *Land* implements a different funding model based on its own political agenda, available resources and context, so that no unique or homogenous German funding model can be drawn.

However, the federal government has become an increasingly important actor of university funding, as needs have grown for considerable additional investments in university capacities and infrastructure. Following an amendment to the German Basic Law, since 2015, higher education institutions can now also be permanently supported by federal funds, whereas this only used to be possible through fixed-term programmes such as the Higher Education Pact or the Excellence Initiative.

Basic funding from public grants represents around 80% of the institutional income of universities, and is allocated through different procedures, often used in a mix:

- Formula-based (i.e. indicator-based)
- Contract-based (i.e. through a framework agreement)
- Through historical allocation (this is a rather non-competitive component, as it carries forward the previous annual budget with only slight adjustments.

In the past decade, there has been a clear trend in many Länder to allocate the public grant on the basis of formulas. Many *Länder* require HEIs to submit annual spending plans for approval and nearly all *Länder* use performance-based indicators to set a share of tertiary funding. The teaching indicators of the formula often consist of the number of students completing their studies within the regular programme duration, or the number of graduates, whereas the research component consists, for instance, of indicators pointing to the number of doctoral candidates and amount of external funding secured. Some *Länder* also added a gender dimension among the indicators, for instance the number of female professors.

On top of this, in many *Länder*, framework agreements on funding for higher education institutions are concluded between the *Land* and its institutions of higher education for a period of several years. Such framework agreements define, for instance, the strategic development of the higher education institutions, their development goals and how they respond to the objectives of the *Land*. These framework agreements are used as complementary steering instruments, contributing to the development of a diversified higher education system, as they are directly linked to institutional profiling. However, in most cases the amount of funding attached to the framework agreements remains small. In certain *Länder*, such as North-Rhine Westphalia, higher education institutions may be penalised if they do not meet the targets set in the framework agreements. Details on the financial consequences of failure to meet targets will be mentioned in the framework agreements between the ministry and the higher education institution.

1.2 Switzerland

In Switzerland, higher education institutions as well as universities of applied sciences are mainly funded by the cantons, with the exception of the two federal institutes of technology. Since 1994, the cantons (52%) and the Confederation (28%) have been responsible for most funding of the cantonal universities.

Universities generally receive funding via annual block grants from the cantonal authorities without restrictions on internal allocation. The cantons conclude service agreements with the higher education institutions. The cantonal parliaments need to approve the service agreements. Periodical performance reports need to be submitted to the funding bodies, in order to ensure accountability.

The Confederation partially finances the operational costs of cantonal universities (basic contributions), and it may also co-finance expenditure for construction and use of buildings, as well as strategic projects. Basic contributions are allocated based on certain performance-based indicators in teaching and research, namely:

- Number of students enrolled
- Number of students who successfully complete their studies
- The average duration of studies
- Teacher-student ratios
- The number of students enrolled in specific disciplines or fields of study
- The quality of education and training
- Research performance
- Acquisition of third-party funding, particularly funding from the Swiss National Science Foundation, EU research framework programmes, the Commission for Technology and Innovation as well as from other public and private sources.
- Number of foreign students

Each canton pays lump-sum contributions for its students who attend university in another canton. This ensures that students from outside the canton do not pay higher tuition fees than students residing in the canton in which the higher education institution is located. Each canton decides whether to sign a certain intercantonal agreement. In addition to these national agreements, regional education agreements also regulate burden equalisation.

It is worth noting that over 90% of the budget for the federal institutes of technology (EPFL/ETH), which are the responsibility of the Confederation, are met by federal funding sources. The federal institutes conclude a service agreement with the Confederation.

1.3 Spain: example of two "Comunidades autónomas"

In Spain, the Autonomous Communities (CCAA) develop the funding model for their universities and set tuition fees (within a frame set at federal level). The Spanish law stipulates that CCAA may connect public funding to multi-annual contracts/ agreements including objectives, financing and assessment of achievement of said objectives. Several funding models thus exist throughout Spain, but their implementation has been suspended since 2012.

Comunidad Autónoma de Madrid

In Madrid, the university system governance is overseen by the public authorities, including universities via the University Council, a multi-stakeholder consultative body. The funding model currently in place is derived from the model established in 2006. It comprises three main parts:

Basic funding stream • 70% for teaching • 30% for research	85% of direct public funds (note: the shares evolved during the transition period)
Objective-based funding stream (PBF) linked to areas of strategic interest	10%
Specific needs funding stream	5%

1.1 The **basic funding stream for teaching** is based on a funding formula that takes into account costs linked to capacity (personnel costs, current expenses, costs of necessary infrastructure for teaching) and activity (student numbers in FTEs).

1.2 The **basic funding stream for research** follows a similar logic, based on the measure of the research capacity and activity of the university. Capacity refers to personnel costs, current expenses and cost of necessary infrastructure and equipment for research. Activity is based on a complex formula that includes:

- share of established researchers (laureates of the so-called "sexenio")
- share of external research funds
- share of doctoral theses submitted, specific grants, visiting professors
- technology transfer
- scientific publications

The capacity & activity of each university is assessed as a share of the overall capacity & activity of the university sector in the Community of Madrid. All formulas use weightings.

2. Objective-based funding

The funding stream, which represents 10% of the total direct public funds, comprises eight objectives, whose attainment is measured via several indicators.

Restructuring of the academic offer	7 indicators linked to enrollment
Improvement of performance in teaching activities	4 indicators including completion of studies within standard duration, ECTS obtained over ECTS registered for, lowering of average study time
Graduate employment	1 indicator (share of graduates in employment in 3rd year post-graduation)
Innovation in teaching and ICT	2 indicators (ECTS earned by students in companies, and share of costs linked to ICT)
« Cualificación de Plantillas y Cobertura de Créditos Matriculados »	3 indicators related to academic staff (share of full time academic staff, share of staff holding a doctoral degree, enrolled credits over total enrollment)
Lifelong learning	1 indicator (share of income from LLL activities over income generated by total enrollment)
Quality of services (improvement)	1 indicator measuring "quality" of university
Research results	3 indicators measuring variation of: share of established researchers; share of external funds; share of submitted doctoral theses

Implementing some of the elements of the formula was acknowledged as difficult at the time of designing the model, because of the lack of reliable data in certain areas.

Comunidad Autónoma de Cataluña

The funding model was established in 2002. The goal is to distribute the available resources among the Catalan universities in an objective manner. It is composed of four parts:

Fixed grant	14% total direct public funding	1 part if identical to all universities, 1 part is based on 3 indicators, mostly academic staff numbers and enrollment data
Basic grant	50%	Indicators: enrollment, submitted theses, established academics, square metres
Derived grant	+20% (increasing)	To cover costs linked to staff but not depending on universities (social security etc.)
Strategic grant	+15%	Temporary funding to support strategic changes of the university policy, for instance to establish new study tracks

Since 2008, an extra source of funding has been established, linked to the completion of agreed strategic objectives. The funding is composed of three parts:

Research	45%	6 indicators: ◆ number of established researchers ◆ participation / coordination of European projects ◆ Income from competitive public funding ◆ Income from non-competitive funding (services and contracts) ◆ income from patents ◆ Number of spin-offs
Teaching	35%	6 indicators, including reduction of drop-outs, language competences, study tracks with 30+ students, teaching commitment, performance, efficiency rate
Management	20%	5 indicators linked to budgeting and accounting

ANNEX 2: REFERENCES

European University Association publications (ordered by date)

Bunescu, L., Estermann, T. and Bennetot Pruvot, E. (2022) *Public Funding Observatory 2021/2022 Part 1*, EUA, Brussels, https://www.eua.eu/resources/publications/1006:public-funding-observatory-2021-2022-part-1.html

Universities without walls – A vision for 2030, 2021, EUA, Brussels, https://www.eua.eu/downloads/publications/universities%20without%20walls%20%20a%20vision%20for%202030.pdf

Bennetot Pruvot, E., and Estermann, T. (2021) *NextGeneration EU: What do National Recovery and Resilience Plans hold for universities?*, EUA, Brussels, https://www.eua.eu/downloads/publications/nextgen.pdf

Pathways to the future – A follow-up to "Universities without walls – A vision for 2030", 2021, EUA, Brussels, https://www.eua.eu/downloads/publications/pathways%20to%20the%20future%20report.pdf

Bennetot Pruvot, E., Estermann, T. and Stoyanova, H., (2021) *Public Funding Observatory report 2020/2021 Part 2*, EUA, Brussels, https://www.eua.eu/resources/publications/969:public-funding-observatory-2020-2021-part-2.html

Loukkola T., Peterbauer H. and Gover A. (2020) *Exploring higher education indicators*, EUA, Brussels, https://www.eua.eu/downloads/publications/indicators%20report.pdf

Public Funding Observatory 2020/2021 Part 1: Financial and economic impact of the Covid-19 crisis on universities in Europe, EUA, Brussels, https://www.eua.eu/downloads/publications/pfo%20part%201_ppt%20-%20im.pdf

Estermann, T. and Kupriyanova, V. (2019) *Efficiency, Effectiveness and Value for Money at Universities – A USTREAM report*, EUA, Brussels, https://www.eua.eu/downloads/content/efficiency%20effectiveness%20and%20value%20for%20money.pdf

Bennetot Pruvot, E., Claeys-Kulik, A.-L. and Estermann, T., (2015) *Designing strategies for efficient funding of universities in Europe*, EUA, Brussels, https://www.eua.eu/resources/publications/358:designing-strategies-for-efficient-funding-of-universities-in-europe-define-final-publication.html

Other sources

Eurydice National Education Systems: https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en

OECD Education Policy Outlook country profiles: https://www.oecd.org/education/profiles.htm

Participating national university associations (see list in Annex 3)

Websites of public authorities of the systems surveyed (as included in the footnotes)

ANNEX 3: PARTICIPATING NATIONAL UNIVERSITY ASSOCIATIONS

Universities Austria (UNIKO)	AT
Flemish Interuniversity Council (VLIR)	BE-nl
Rectors' Conference, French Community of Belgium (CREF)	BE-fr
Croatian Rectors' Conference (CRC)	HR
Czech Rectors Conference	CZ
Universities Denmark	DK
Universities Estonia	EE
Universities Finland (UNIFI)	FI
France Universities	FR
German Rectors' Conference (HRK)	DE
Hungarian Rectors' Conference	HU
Icelandic Rectors' Conference	IS
Irish Universities Association (IUA)	IE
Conference of Italian University Rectors (CRUI)	IT
Lithuanian Universities Rectors' Conference	LT
University of Luxembourg	LU
Universities of the Netherlands (UNL)	NL
Universities Norway	NO
Conference of Rectors of Academic Schools in Poland (KRASP)	PL
Romanian Council of Rectors	RO
Conference of the Universities of Serbia	RS
Slovak Rectors' Conference	SK
The Conference of the Rectors of the Spanish Universities (CRUE)	ES
Association of Swedish Higher Education (SUHF)	SE
swissuniversities	CH
Turkish University Rectors' Conference	TR
Universities UK (UUK)	UK-en
Universities Scotland	UK-sc

EUROPEAN UNIVERSITY ASSOCIATION

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