

DEFINE PROJECT

DEFINE THEMATIC REPORT: PERFORMANCE-BASED FUNDING OF UNIVERSITIES IN EUROPE

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ABBREVIATIONS

Higher education systems

AT: Austria
 BE-FL: Flanders in Belgium
 BE-FR: French speaking Community in Belgium
 CZ: Czech Republic
 DK: Denmark
 DE-BB: Brandenburg in Germany
 DE-HE: Hesse in Germany
 DE-NRW: North Rhine-Westphalia in Germany
 EE: Estonia
 ES-CA: Catalonia in Spain
 FI: Finland
 FR: France
 HU: Hungary
 IS: Iceland
 IE: Ireland
 IT: Italy
 LV: Latvia
 LT: Lithuania
 NL: Netherlands
 NO: Norway
 PL: Poland
 PT: Portugal
 RO: Romania
 SK: Slovakia
 SE: Sweden
 CH: Switzerland
 TR: Turkey
 UK-EN: England in United Kingdom

Other abbreviations

CBS: Copenhagen Business School

EAS: External allocation system

HEI: Higher education institution

IAS: Internal allocation system

NRC: National Rectors' Conference

PBF: Performance-based funding

STEM: Science, Technology, Engineering and Mathematic

1. INTRODUCTION

1.1 The DEFINE Project

Higher education institutions across Europe today face a challenging and complex financial situation in which traditional modes of funding have been transformed and continue to evolve. Moreover, public sources in many countries are not as generous as they were in the past and often have become more demanding and competitive. The changes are particularly significant in Europe due to the traditional reliance of universities on public funding. The current economic and financial crisis has exacerbated even further these problems, with growing pressures upon the sustainability of funding regimes of public higher education and mounting pressure to explore new sources of income. The efficiency of funding in terms of the capability to meet certain policy goals in a cost-effective way is becoming increasingly important (Teixeira, Biscaia, Rocha 2014).

The [DEFINE project](#), the findings of which build the basis for the present analysis, makes funding efficiency in higher education the main focus of research and activities, thereby providing data and recommendations which will support the development of strategies to increase the efficiency of university funding. The project notably included the setting up of international focus groups of university practitioners to determine good practice, challenges and pitfalls, as well as the impact of funding efficiency measures such as performance-based mechanisms, institutional mergers and excellence schemes.

The project aims at contributing to the improved design and implementation of university funding policy and thereby to enhanced funding efficiency in the sector.

The European University Association will exploit this study's findings in the context of current and future policy development at national and European level and with the aim to support universities in responding to these changes.

1.2 Performance-based funding: defining the terms

A policy discourse is emerging at European level

Linking public funding to institutional performance is an idea that often comes up in discussions on university funding policy at national as well as at European levels. In the Communication of the European Commission on “Supporting Growth and Jobs – and Agenda for the Modernisation of Europe’s Higher Education Systems” (European Commission 2011) member states and higher education institutions are encouraged to implement funding mechanisms *“linked to performance including an element of competition”*. This was echoed by the ministers responsible for higher education in the Conclusions of the Council of the EU (28-29 November 2011) where they *“encourage more flexible governance and funding systems in higher education institutions, including mechanisms linked to performance and competition (...)”* (Council of the EU 2011, p. 9). Following on from this, performance-based funding (PBF) was discussed at European level on several occasions, such as at EU Council Presidency events (e.g. Meetings of Directors General for Higher Education) and Peer Learning Seminars for EU Member States’ ministries organised by the European Commission as part of the Open Method for Coordination in the field of education.

The term is used and understood very differently across Europe

However, the term “performance-based funding” is understood very differently across Europe. In many cases it is used as a synonym for formula-based funding, often without taking into account the “input” or “output” related nature of the criteria composing the formula. Often performance-based funding is also perceived as competitive funding due to the fact that in many systems it is based on the principle of a closed envelope, meaning the amount available for distribution is prefixed and limited by public budgets. Consequently money is distributed based on relative performance with regard to certain indicators, but the overall amount of money to be distributed remains stable which makes the allocation a zero-sum-game.

Performance or development contracts and target agreements, whereby certain goals are agreed between the funder and universities, are also associated with performance-based funding, although they do not always have a direct impact on the level of funding.

Consequently the present report looks at formula-funding and contracts or agreements between public authorities and universities and tries to identify elements of performance-based funding; Performance is 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).

Different aims and policy goals are associated with PBF

Apart from the differences in definitions, the ideas on the purpose of performance-based funding are also quite diverse. They range from using it as simply one way of distributing money to institutions, to the idea of a steering tool or incentive mechanism to influence institutional behaviour and increase the performance of universities in certain areas of activity that are linked to specific policy goals (e.g. increasing higher education attainment; fostering knowledge transfer; increasing university-industry collaboration etc.).

The efficiency of funding in terms of the ability to meet certain policy goals in a cost-effective way is becoming increasingly important. Due to major budget cuts in a number of countries across Europe over the last years, public funding for universities is becoming scarce and the competition with other sectors is increasing. This also increases the pressure for more accountability of public spending. In this context performance-based funding is often perceived as a useful tool by policy makers, both in order to connect funding to measurable indicators and thus increase the transparency of spending, as well as to incentivise and reward the achievement of certain policy goals.

1.3 The present report

The present report focuses on public funding mechanisms and steering instruments that include performance-based elements.

Central questions

It addresses three main questions:

1. To what extent is university funding across Europe based on performance and how are performance elements embedded in public funding for universities?
2. What is the impact of performance-based funding on universities and their activities as well as the higher education system as a whole?

3. What should policy makers and institutional leaders bear in mind when integrating performance elements in their university funding system?

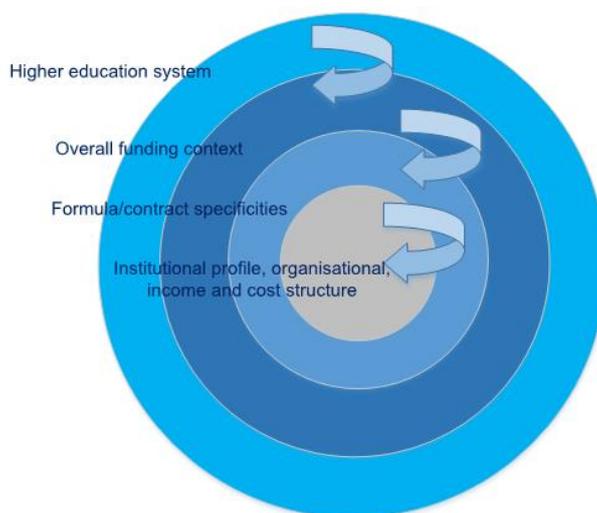
Structure

The effects of performance-based funding and steering tools are contingent on the overall funding context of a specific university system as well as the characteristics of its institutions.

To assess the effects one has to look at the interplay between the following factors:

- **Contextual factors:** the overall funding system and the importance of the performance-based elements with regard to funding allocation (*→ What is the share of funding distributed based on performance?*)
- **Formula/contract inherent factors:** the number, combination and weight of indicators or the nature of the contract and the conclusion procedure (*→ Does the formula/contract give clear incentives?*)
- **Institutional characteristics:** the size and the profile of the university, the internal governance and management structure as well as the institutional income and cost structure (*→ How does the internal funding distribution work? What is the share of PBF in the overall institutional income structure? How is funding related to costs?*)

Figure 1: Factors influencing the effects of performance-based funding



Therefore the report firstly provides an overview of allocation mechanisms for core public funding to universities across Europe and identifies performance elements, notably in funding formulae and contracts between universities and public authorities. Secondly, it assesses the impact of performance-based funding at both system and institutional level and highlights possible unintended effects with a view to provide recommendations to policy makers, funders and university managers.

Scope and methodology

Data was collected from 28 European university systems¹ through a questionnaire, several rounds of consultation and interviews with EUA's collective members, the national university associations. This was complemented by institutional case studies obtained through an institutional self-evaluation report and a site visit to the Copenhagen Business School (CBS) (Denmark) and the work of a focus group where university managers and leaders from 13 higher education institutions in 11 European countries discussed their experiences with performance-based funding and its impact on universities. Furthermore, discussions which took place at the 2nd EUA Funding Forum in Bergamo (Italy) on 9-10 October 2014 and presentations given in a dedicated session were used as an additional source of information feeding into the analysis. The whole data collection and verification took place in the first two years of the project (from autumn 2012 until autumn 2014).

¹ N.B. Due to the lack of comparable data for some aspects of the analysis, not all systems are included in all tables, figures or overviews.

The analysis takes into account developments over the last two decades with a focus on more recent evolutions since the beginning of the economic crisis in 2008. Since 2008 comparative data has been available on the evolution of the amount of public funding to higher education institutions through the annual [EUA Public Funding Observatory](#). This helps to put into perspective the changes in the modes of public funding and the evolution of performance-based elements, and thus strengthens the analysis. The report draws on these different sources of information and presents EUA's analysis of the use of performance-elements in university funding across Europe and its impact on institutions.

Figure 2: Systems covered by the analysis



2. UNIVERSITY FUNDING IN EUROPE

With regard to university funding the situation in Europe is very diverse, both concerning the share of public funding in the overall income structure as well as the modes of allocation. Direct public funding to universities accounts, for example, for about 40% of the overall income of universities in England,² while it accounts for almost 90% in Denmark and Norway (see Figure 3) and within this only a certain amount is allocated based on performance. Besides the income sources, the cost structure is also important with regard to universities' financial sustainability. Therefore the following chapter briefly outlines the income structure as well as the cost structure of universities in different systems and provides an overview of the different modalities used to distribute public money to the institutions before the performance-based elements are more closely analysed in Chapter 3.

2.1 Income structures

There are important variations in the income structure of universities across Europe and because of the differences in funding systems and allocation methods, as well as institutional profiles, it is very difficult to obtain comparable data. There have often been significant changes in the modalities through which public funding is delivered. In addition, one should bear in mind the important cuts that have been made in the public budgets for universities in a number of countries since 2008. In 2014, 13 systems had lower public funding available to higher education institutions than in 2008 (taking into account inflation).³ Given the importance of this funding source for universities, changes in both the nature and overall amount potentially have the greatest effect on universities' long-term financial sustainability.

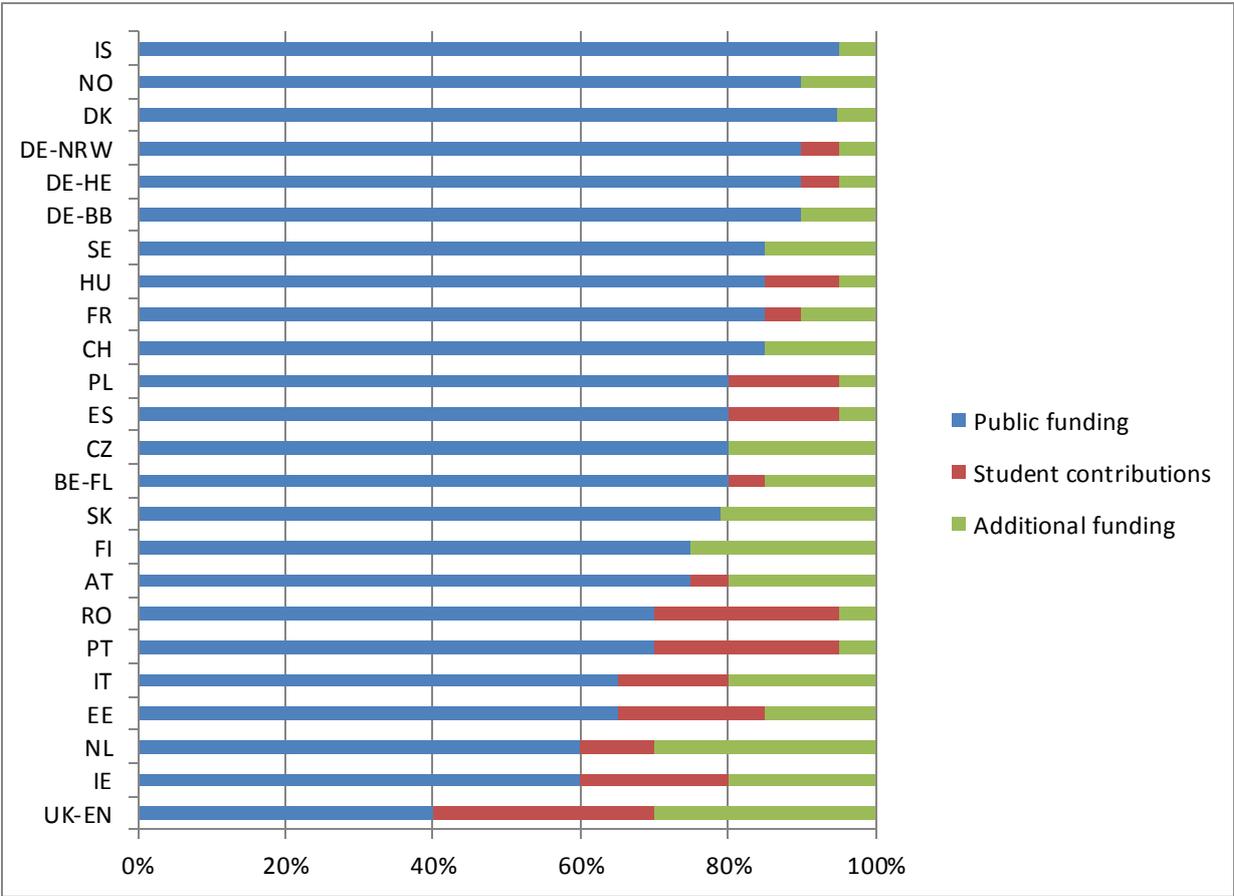
Apart from direct public funding, tuition fees and administrative fees represent another income source for universities in several countries. However, there are considerable differences between systems. In 2013 the share of tuition and administrative fees in the overall average income ranged from about one third in England to, for example, none in Norway or Iceland (see Figure 3). These differences are also linked to the different policies and legal frameworks regarding tuition fees as shown in the EUA University Autonomy Scorecard (Estermann, Nokkala & Steinel 2011). In the six systems covered by the analysis there are, for instance, no

² Wherever England is mentioned in the present report this only covers the English higher education system and not the United Kingdom as a whole.

³ See [EUA's Public Funding Observatory tool](#) for more details and data.

tuition fees at all (neither for national/EU, nor for international students at any level) (Brandenburg, Czech Republic, Finland, Hesse, Iceland, Norway) while in some of those there might still be some administrative fees linked to enrolment (e.g. Hesse). In many other systems universities face restrictions in setting the level of tuition fees and often public authorities can decide either on a ceiling or whether to charge or abolish tuition fees at all. Due to political changes the situation of tuition fees in Europe is constantly evolving.⁴

Figure 3: Simplified average income structure of public universities (rounded up to the nearest multiple of 5)



Generating additional income from other sources is perceived as ever more important for the long-term financial sustainability of universities. Here we consider income generated by contracts with business and industry and provision of services (such as renting of facilities, catering services, consultancy, etc.), philanthropic funding and when possible, European

⁴ Eg. After the elections in spring 2015 the new Finnish government announced plans to introduce tuition fees for non-European students.

funding.⁵ Overall, these types of additional income sources exceed 10% of the average universities' income in most systems (Estermann & Bennetot Pruvot, 2011, p. 27).

It should be noted that due to different methods of data collection and availability of data at national level it is difficult to make a precise Europe-wide comparison and therefore not all systems could be included. Figure 3 tries to give an indication of the proportion of public funding in relation to the overall income of universities in comparison to student contributions and additional funding. This income structure is subject to change notably due to alterations in regulations (e.g. tuition fees) and decisions on public budgets (e.g. funding cuts in many systems as a consequence of the economic crisis).

2.2 Cost structures

In addition to the income structures, cost structures play an important role in universities' financial sustainability. It is important to consider in this regard the high share of personnel costs which account, on average, for around two thirds of the overall expenditure of a university, whereby considerable variations exist between institutions. The first EUA study on funding showed that participating universities' personnel costs ranged from 44% to 73% (Estermann, Kanep & Smith, 2008, p. 25). In addition usually also costs for renting and/or maintaining infrastructure and buildings are a very important cost factor for universities depending on the system and whether the universities own their buildings.

This high share of fixed costs on the overall expenditure limits the flexibility of universities to adjust by reducing costs, also because in many systems the autonomy of universities with regard to financial and staffing matters is limited. Only in eight out of 29 systems covered by the EUA autonomy scorecard universities are allowed to sell their buildings without restrictions. Universities can freely decide on salaries of senior academics in only five systems and only in 10 systems for senior administrative staff. In all other systems different types and degrees of restrictions apply (Estermann, Nokkala & Steinel, 2011, pp. 41, 59).⁶ Public funding modalities have to take account of this and provide a high share of funding based on input (e.g. number of

⁵ It should be noted that European funds are not always identifiable in the universities' income structure; this may be, e.g. the case of structural funds, which are delivered by the national or regional authorities, and may thus be labelled as national/regional funds.

⁶ See also: <http://www.university-autonomy.eu/dimensions/staffing/>

staff, floor space, etc.), which signifies that the extent to which university funding can be based on real performance is rather limited in most systems.

2.3 Public funding modalities

In most systems in Europe universities receive basic recurrent public funding to cover their core activities through a block grant. A block grant is understood as *“financial grants meant to cover several categories of expenditure such as teaching, ongoing operational costs and/or research. Universities are responsible for dividing and distributing such funding internally according to their needs (the flexibility may be curtailed by minor restrictions)”* (Estermann & Bennetot Pruvot, 2011, p.14).⁷

As shown by Figure 4, the overall amount of the block grant may be determined in different ways, such as through negotiation, on a historical basis, via a funding formula or through a performance contract. Often these elements are combined, such that a part of the block grant is negotiated, while another part might be determined on a historical basis or allocated via a funding formula or a contract. The importance of these different elements in determining the overall amount of the block grant varies across the systems.

Besides this, public funding is also increasingly tied to projects that are awarded based on competition, notably in research. In addition several systems have established funding streams for excellence in various ways, sometimes as large-scale schemes such as in Germany and France, or even embedded in regular recurrent funding as in the UK (Bennetot Pruvot & Estermann, 2014).⁸

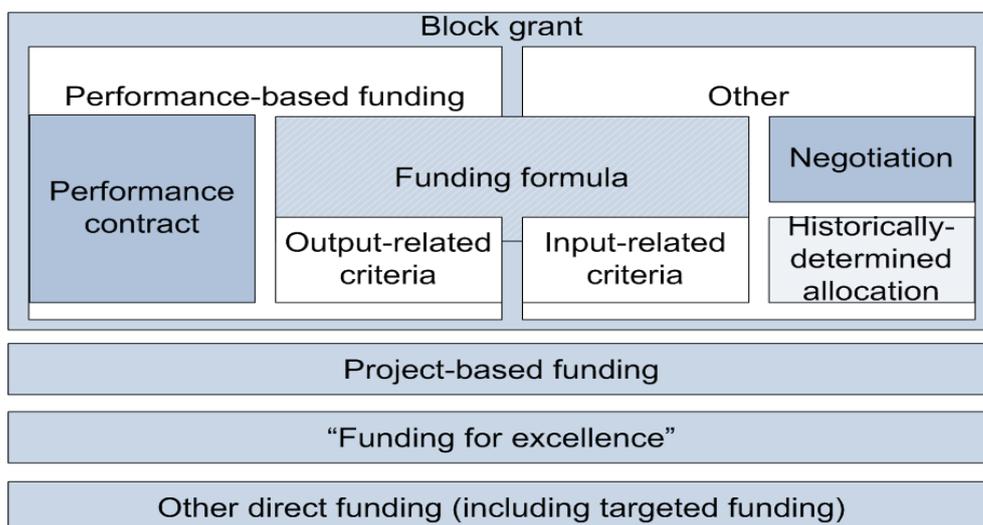
Finally, other direct funding mechanisms also exist, for instance targeted or earmarked funding for specific purposes, which may be allocated on a competitive basis, such as the Strategic Innovation Funding in Ireland, established as a mechanism for institutional restructuring and modernisation. Such funding may also be allocated directly to institutions: this is the case for

⁷ For further details on the level of autonomy universities have in different systems as regards the use of recurrent public funding, see Figure 7.

⁸ The Research Assessment Exercise in the UK might be considered as another type of performance-based funding as it awards money to institutions based on past performance in research. However, as this is a specific mechanism to foster excellence in research, this was studied in the DEFINE thematic report on excellence funding and is not further considered in the present report. For more information on funding for excellence see the respective DEFINE thematic report.

the Higher Education Innovation Funding scheme in the United Kingdom, which focuses on knowledge exchange, or the “Successful Bachelor degrees” plan in France, which funds concrete measures aiming at improving the overall success rate in Bachelor degrees (e.g. individual supervision, new teaching methods).

Figure 4: Simplified overview of public funding allocation mechanisms



The present report focuses on allocation mechanisms for block grants as in most cases they are the main method of distributing public funding to universities in Europe. Although formula-based block grants are the main way of delivering public funding in the majority of the systems considered, negotiated block grant/historical allocation remains the most important mechanism in some large systems such as in France, Italy and Poland (for teaching only in the latter two) as well as some smaller ones (see [Table 1](#)). Most countries, however, have a mix of different allocation modalities and the analysis shows a great diversity between systems.

[Table 1](#) is an attempt to provide an overview of allocation mechanisms for block grants across the systems considered. It also tries to group them according to the allocation mechanism used and its importance with regard to the overall block grant allocation, whereby a main mechanism is referred to as the mechanism which allocates the largest share of the block grant and a minor mechanism is any other mechanism used for this purpose. The table is a simplified way of grouping systems in order to enable comparisons. The complexity of funding mechanisms across Europe makes this a challenging exercise as sometimes different allocation mechanisms are combined (e.g. Austria see [Example 2](#)).

Table 1: Overview of allocation mechanisms for block grants

	Funding formula	Performance contract with impact on funding	Negotiation/historical determination
Primary mechanism	BE-FL; BE-FR*; DE-BB; CZ; DE-HE; DK*; ES-CA; FI; HU; IE; IS; LT; LV*; NL; PT; RO*; SE*; UK-EN	AT	BE-FR+; CH; DE-NRW; DK+; EE; FR; IT*; NO; PL*; SE+
Secondary mechanism	CH; DE-NRW; DK+; EE; FR; IT*; NO; PL*+; SE+	DE-BB; DE-HE; FI; FR; IE; IT; LV+; NL; UK-EN	DE-BB; DE-HE; ES-CA; HU; NL

* teaching funding only
+ research funding only

In most systems the block grant covers teaching and research activities, while in some there is no basic funding for research as this is exclusively allocated on a competitive basis, indicating that not all universities always receive it (e.g. Italy, Romania). Many systems have more than one mechanism to determine the block grant given to institutions, but only in some the mechanisms for teaching funding and research funding are clearly distinguished.

In Table 1 teaching and research funding are therefore only distinguished if there are separate mechanisms to determine the block grant linked to these two areas (e.g. two different formulae as in Sweden; or a formula for teaching and a mixture of historical allocation and a formula for research as in Denmark) or if, for instance, the block grant only determines teaching funds (e.g. Romania).⁹ As funding mechanisms are subject to change and reforms the table above provides a simplified snapshot of the situation at the time when the data was collected.

⁹ N.B. This is independent from the question of whether and to what extent universities are free to reallocate those funds to other activities internally. More information on this can be found in Chapter 5.

3. PERFORMANCE-BASED ELEMENTS IN UNIVERSITY FUNDING

The following section looks at performance-based elements in the allocation of basic recurrent public funding to universities across Europe through funding formulae and performance contracts. As explained previously the notion of performance is linked to an effort that an institution has to make to produce a certain outcome such as a graduate or a research result which can also include intermediary steps, for example, students who passed a year of studies or for instance, patent applications (not just the number of patents obtained) in research. Therefore throughput indicators (such as students who took exams) as well as output indicators (such as the number of graduates, the number of citations in research publications, etc.) used in funding models can be classified as performance-based. Some other indicators linked to internationalisation or diversity can also be considered in this regard as they are linked to the achievement of specific policy goals (see [Table 2](#), typology of indicators). The fundamental difference between the two instruments, funding formulae and performance contracts, is that they start from a different point in time. Funding formulae work with indicators to measure past performance. Performance contracts include goals and targets for the future and, depending on how detailed and specific they are, also have a set of indicators to measure the achievement of those at a later point in time. Both mechanisms might also be used in combination.

3.1 Funding formulae

Definition

A funding formula in this context is understood as 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. The variables in a funding formula refer to the past (e.g. past year).

Purpose

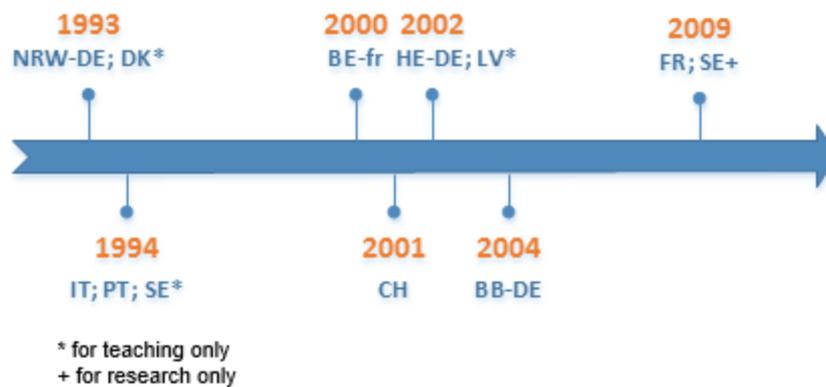
Funding formulae are often introduced to make funding allocation more transparent by linking it to measurable indicators. Compared to historical allocation this allows taking into account

changes over the years, such as an evolution of student numbers, as the data is collected at regular intervals.

Introduction

Funding formulae were introduced in several European systems during the 1990s. A second wave of introduction followed in the early 2000s as shown in Figure 5.¹⁰

Figure 5: Timeline of introduction of funding formulae



A common feature at the introduction stage are thresholds, adjustments and moderating mechanisms to minimise or completely avoid losses for universities compared to the previous system and allow for a smoother transition. In all systems concerned the formula has been revised and adapted since then.

¹⁰ This information was available from the NRCs for only 11 out of the 28 systems covered by the analysis.

Example 1: Ireland - Limiting funding changes through a moderating mechanism

The recurrent core funding is allocated to universities through a block grant based on the Recurrent Grant Allocation Model (RGAM). The block grant is supposed to cover core teaching and research activities within institutions; however each institution is autonomous with regard to the internal allocation of funds.

Finally the RGAM operates using a moderating mechanism. The moderating mechanism aims to avoid significant fluctuations in grant allocations across institutions on a year-to-year basis by limiting the funding changes each year to within +/- 2% of the overall sectoral increase or decrease.

The model was introduced in 2006 to be phased in over a three-year period. Some minor changes have been introduced, primarily in respect of the categories of students who are eligible for inclusion in the student numbers for grant allocation purposes.

A review of the funding model/formula is however currently being undertaken by the Higher Education Authority.

Source: DEFINE Focus Group Feedback and Irish Universities Association

As already mentioned, there are considerable disparities as to the share of core public funding distributed via a formula.

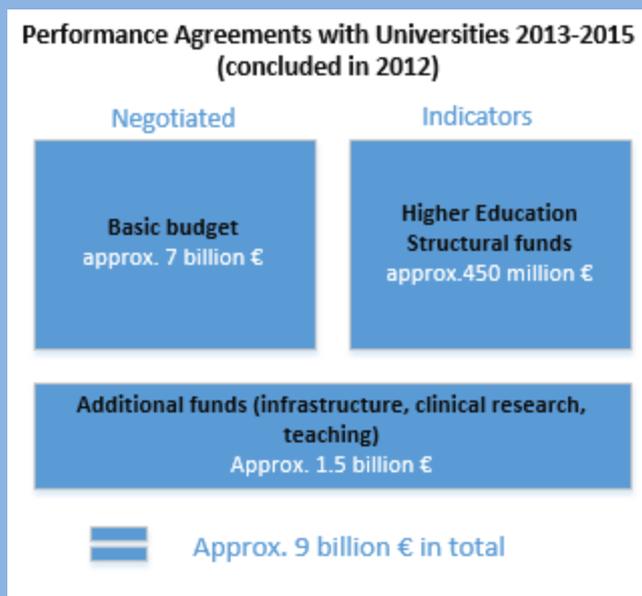
The share varies from almost entirely formula-based models (e.g. Brandenburg and Hesse in Germany) to models where the formula only determines a small part of the block grant (e.g. France, North-Rhine Westphalia). In a few systems a formula is or was previously used only for the distribution of teaching funds (e.g. Denmark, Latvia, Romania, Sweden¹¹).

Austria (see Example 2) is the only system which completely abolished the automatic allocation via a formula after having used it for parts of the block grant for nearly a decade. Since 2013 this has been replaced by the negotiation of a performance contract for the whole block grant, albeit still substantiated by data on enrolment, knowledge transfer, private income and cooperation.

¹¹ Sweden between 1994 and 2009. In 2009 another formula for research funding was introduced.

Example 2: Austria - Performance agreements for three years

In Austria an individual contract between each university and the ministry is concluded to define the tasks that the university fulfils as a public service on behalf of the state and the financial means the state provides in return. The contracts are valid for three years. Core public funding is delivered as a global budget (block grant) to universities and consists of two pillars, the basic budget and the higher education structural funds. Additional public funding is granted for infrastructure, clinical research and teaching.



The basic budget is negotiated for the entire duration of the contract (to a large extent covering salaries) and the part that each university receives from the higher education structural funds is determined based on indicators linked to quantity, quality and performance targets agreed in the contract. These targets are related to teaching, research or development of the arts, and societal goals such as gender equality, inclusion, integration of minorities and accessibility, lifelong learning or internationalisation and knowledge transfer.

The contract also includes measures to be taken in the event that the targets cannot be met (such as an obligation for the university to build up reserves) or the state does not have enough means to deliver the agreed amount of funding as well as procedures for reporting and accountability. These provisions usually emphasise the need for a dialogue between the ministry and the university so that action can be taken in time as soon as any problems surface to prevent possible underachievement of the target.

Source: Austrian Federal Ministry of Science and Research

Other countries have cut or even abolished formula funding due to the economic and financial crises (e.g. Spain, Portugal). For example, in the Madrid region the use of the formula has been suspended as part of the austerity measures and the government resorted to historical allocation with cuts every year.

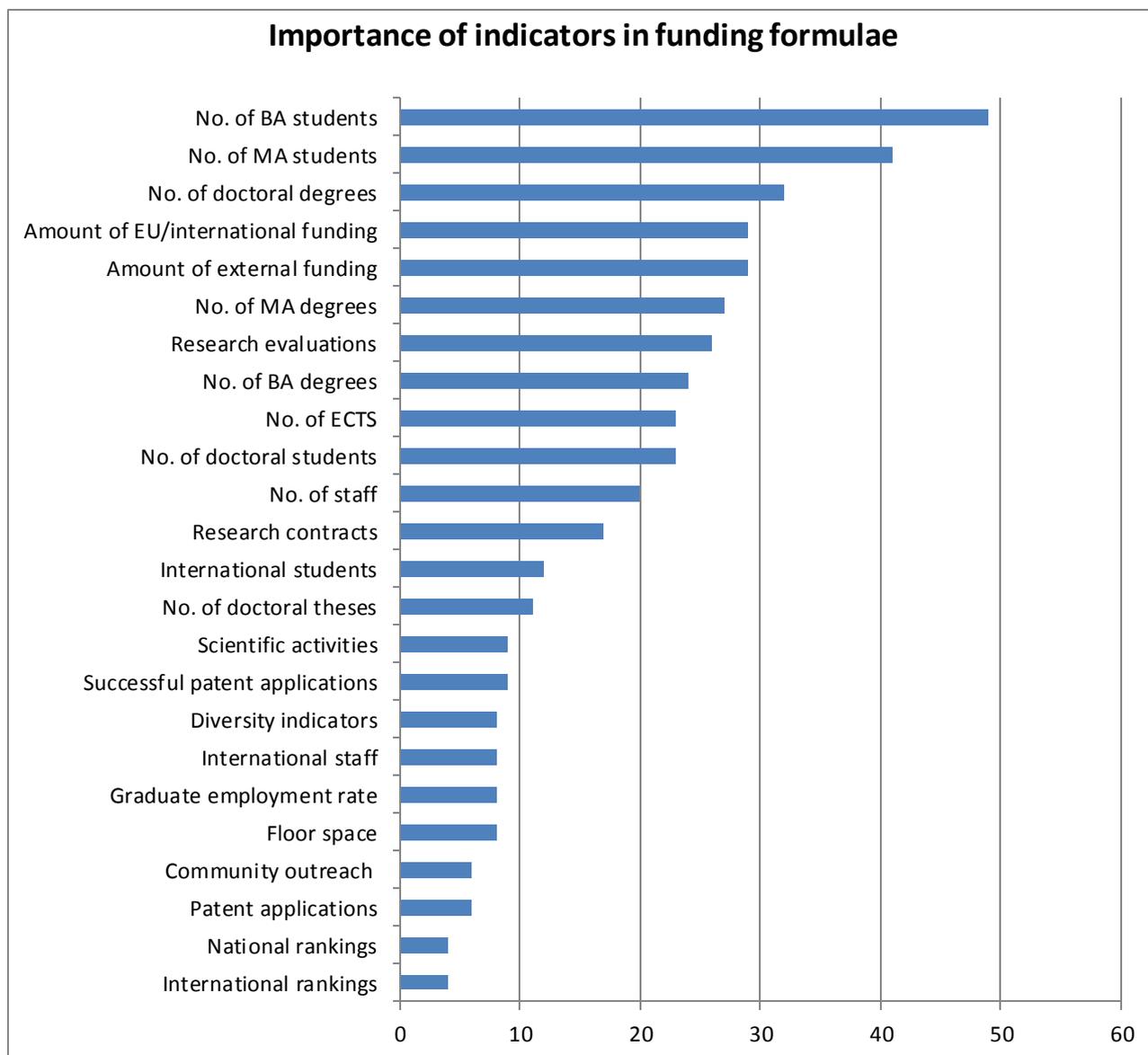
Composition

Besides the differences in importance of the formula funding with regard to the amounts distributed, the composition of the formulae also varies greatly. In many systems with formula funding, input indicators such as student numbers (at Bachelor and Master level) often play the most important role in determining the amount of funding a university receives via a block grant (see Figure 6).

The corresponding output-oriented indicators (number of Bachelor and Master degrees), are used less frequently and/or have often less weight in a formula. It is interesting to note the importance of some output-oriented criteria, which are usually linked to research output: doctoral degrees, international/European funding and external funding are considered the most important criteria, followed by teaching-related output criteria of Master and Bachelor degrees and the number of credits obtained. Other commonly used output indicators are research evaluations and research contracts.

Figure 6: The importance of indicators in funding formulae

Predefined list of indicators which were rated by National Rectors' Conferences of 21 systems according to their importance in the funding formula. The length of the bar indicates the importance of the indicator.



Current important policy priorities such as internationalisation and student and staff mobility are also mirrored in funding formulae in several systems through indicators such as the number of international students and, although to a lesser extent, the number of international staff members.

Example 3: Denmark - the internationalisation taximeter

As part of the funding formula for teaching, universities in Denmark are rewarded for their internationalisation efforts based on the number of Danish students going abroad and international students coming to Denmark. For every incoming and outgoing student who either studies or carries out an internship linked to their studies, a university receives a fixed amount of 5,000 DKK (roughly 670 € in current prices).

Source: CBS DEFINE self-evaluation report (unpublished)

Example 4: Finland - rewarding internationalisation

Finland takes into account the universities' international teaching and research personnel in its funding model, and all internationalisation-related criteria (including competitive international research funding) account for 9% of the public funding:

- Master's degrees awarded to foreign nationals: 1%
- Student mobility to and from Finland: 2%
- PhD degrees awarded to foreign nationals: 1%
- International teaching and research personnel: 2%
- Internationally competed research funding: 3%

Source: Finnish Ministry of Education and Culture

Most formulae include a combination of input- and output-related indicators as well as several other indicators linked to specific policy goals (e.g. internationalisation, gender aspects, interaction with society, etc.). Where formulae for teaching funds and research funds can be distinguished, those for teaching funds are in most cases primarily input-oriented (Ireland, Poland, Romania, Sweden), while those for research funds are mostly primarily output-oriented (Ireland, Poland). For systems that have one formula (including indicators for teaching and research) the majority are primarily input-oriented.¹² Only the Danish taximeter system for teaching funding is exclusively output-oriented, largely based on the number of degrees awarded.

Table 2 tries to group the different indicators according to their nature. Table 3 provides a comparative overview of indicators used in funding formulae across Europe. It is based on a non-exhaustive list that was developed with National Rectors' Conferences.

¹² Brandenburg (Germany), Catalonia (Spain), Czech Republic, French-speaking Community of Belgium, Hesse (Germany), Hungary, Iceland, Latvia, Netherlands, Portugal

Table 2: Typology of indicators in funding formula

	Input	Throughput	Output	Other
Teaching	BA/MA students; student/staff ratio	Students who took exams; ECTS attained; exams passed; year completed	BA/MA degrees obtained; degree completion in standard time of study	Graduate employment rate; added value of diploma; international students
Research	Doctoral students/ candidates	Patent applications	Doctoral degrees/theses completed; research evaluation; successful patent applications; external research funding obtained; scientific activities; research contracts obtained; publications/citations; income from science and technology transfers; publishing researchers	
Other	Staff; floor space		External funding obtained; EU/international funding obtained (can be linked to teaching and research); rankings outcomes	International staff; diversity-related indicators; community outreach; review of strategic plans of universities; staff structure/quality

Table 3: Overview of indicators used in funding formulae¹³

	BE-FL	BE-FR	CH	CZ	DE-BB	DE-HE	DE-NRW	DK	ES-CA	FI	FR	HU	IE	IS	IT	LT	LV	NL	NO	PL	PT	RO	SE	SK	TR	UK-EN
No. of BA/MA students	x	x	x	x	x	x			x		x	x	x		x	x	x	x	x	x	x	x	x	x	x	
No. of doctoral students/candidates		x		x					x			x	x		x		x			x	x	x		x	x	
No. of staff					x				x	x	x		x		x	x				x	x	x				x
Floor surface									x			x				x							x			x
ECTS attained/exams passed/year completed	x								x	x	x				x					x	x	x	x			x
BA/MA degrees obtained	x			x	x		x	x	x	x	x			x	x					x	x			x	x	
Doctoral degrees obtained/theses completed	x	x			x	x				x	x		x							x	x	x		x	x	
Research evaluation mechanisms				x					x		x	x			x						x	x	x	x	x	x
Patent applications				x					x														x			x
Successful patent applications																					x		x			x
External funding obtained			x	x	x	x	x		x	x		x	x		x					x	x	x	x	x	x	
EU/international funding obtained			x	x					x	x		x			x						x	x	x	x	x	x
Scientific activities				x							x				x						x	x	x			x
Research contracts obtained				x					x		x		x		x						x	x	x			x
International ranking outcomes											x	x											x			
National ranking outcomes											x	x											x			
Graduate employment rate				x						x		x			x							x	x		x	
International students				x	x	x		x	x			x			x						x	x	x	x		x
International staff				x		x				x											x	x	x			x
Diversity-related indicators					x	x	x		x													x				x
Community outreach									x			x											x			x
Review of strategic plans of universities										x									x							
Publications/citations	x			x						x		x									x	x				x
Student-staff ratio																										x
Income from science and technology transfer				x		x			x																	
Degree completion in standard time of study								x						x												
Students who took exams											x			x												
Staff structure/quality				x								x														
"Added value" of a diploma											x															
No. of publishing researchers											x															

¹³ For the sake of comparability, Table 3 includes the main elements of indicators, but not the exact way of calculation, e.g. the Finnish funding formula includes the percentage of students who completed 55 ECTS/year as an indicator which is in the table included under the category “ECTS attained/exams passed/year completed” to be able to compare the main element to formulae in other systems.

Redistribution or rewarding performance?

One very important element of the funding formula is how it accounts for change in the value of an indicator. In most of the systems, funding allocation is based on the principle of a closed envelope, meaning the formula is a pure distribution mechanism for dividing the basic funding foreseen for research and/or higher education within the state budget among the universities. Therefore, caps and scaling factors are usually embedded in the formula to control, for example, growth in student numbers/credits awarded.

Example 5: Poland - redistribution of teaching funds

In Poland universities receive funding for teaching through a block grant that is to a large extent based on historical allocation (65% of previous year's grant), while the part related to current parameters is formula-based being a weighted sum of: the overall number of students (weight 0.35); the number of academic staff (weight 0.35); a parameter reflecting the students-per-teacher ratio (weight 0.10); the number of research grants (weight 0.10); the number of disciplines in which the university has rights to award doctoral degrees (weight 0.05); and the number of students exchanged with other universities in the framework of mobility programmes (weight 0.05).

The parameters used (like the overall number of students, the number of academic staff) are themselves calculated as weighted sums of different categories of students, different categories of staff etc. For example, in calculations of the number of academic staff, professors are counted with a weight of 2.5, while lecturers with a doctoral degree account for 1.5.

This model is a distribution mechanism for dividing the state educational budget among universities. The total budget size is thus the input parameter, while the amount per student is the outcome, and not vice-versa. This means if the budget is constant, an identical change in all universities (e.g. an increase in student numbers of 5%) does not change the absolute amount received by a university, but the amount per student decreases.

Source: DEFINE Focus Group Feedback

A different example is Denmark where funding increases with the number of students who successfully complete parts of their studies.

Example 6: Denmark - increasing HE budget due to taximeter principle

In order to fund its teaching activities a university in Denmark receives public money each time a student makes progress in his/her studies, i.e. when he/she has passed an exam. The amounts differ according to subject area and are determined in a yearly Finance Act. Each year all the exams passed are taken together and are re-calculated into full time equivalent students passing exams on the basis of ECTS credits (60 ECTS = 1 FTE), whereby the number of FTE determines the funding. In addition the institution receives a completion bonus for each student who graduates in a fixed time frame from a specific study programme. This means funding for a specific year is based on the FTE production of the previous year. As the FTE production has been increasing over the years and since Danish universities are free to determine student numbers and the demand has been increasing, the funding of the higher education sector through the taximeter system is growing numerically and thus becomes an increasing post in the national budget.

Source: CBS DEFINE self-evaluation report (unpublished)

3.2 Performance contracts

Definition

Another way of steering institutional behaviour are so-called performance contracts, target agreements or development contracts, whereby certain goals are agreed between public authorities and universities.

Purpose

They can have various purposes such as:

- strategic positioning of universities and profiling
- structuring the dialogue between the ministry and universities
- increasing transparency
- detailed steering and setting targets

Types

Different types of performance/target agreements and development contracts exist in 14 of the systems considered in the study. In ten systems they can have an impact on funding, albeit to

very different extents. In the majority of systems they are seen more as a governance tool than as a funding instrument.

Table 4: Simplified overview of performance contracts and their link to funding

Systems with performance contracts		
AT; CH; DE-BB; DE-HE; DE-NRW; IT; DK; EE; FI; FR; IE; LV; NL; UK-EN		
Direct link to funding		No direct link to funding
AT; DE-BB; DE-HE; IT; FI; FR; IE; LV; NL; UK-EN		CH; DE-NRW; DK; EE
Basic recurrent funding	Additional funding	
AT; DE-BB; DE-HE; FI; FR; IE; LV; NL	IT	

Format and content

While performance-based elements in funding formulae always relate to past-performance, performance contracts are agreements about future performance setting goals to be achieved. The goals can be specific to the university and more or less aligned with its strategy or they might be derived from more general higher education and research policy goals of the ministry. They can be defined in more or less detail, but usually not all elements are strictly linked to the performance of a university. Targets might be described as results to be achieved leaving it up to the university to decide how or which concrete actions are to be undertaken within a given timeframe. They might be described as more qualitative measures (e.g. improve equal access of men and women to leading academic positions) and/or be linked to quantitative indicators (e.g. increase the number of female professors) similar to those included in funding formulae. Depending on the nature of the goals and targets, the procedures for assessing their achievements also vary and are more or less complex. In some cases the evaluation might simply take place in the form of discussions between the ministry and the university, for others a complex data collection is necessary.

Below are some examples to illustrate the differences:

In Austria, since 2013 the contract is the outcome of a budget negotiation between the ministry and each university to determine the amount of funding per institution, whereby the minimum

level is prefixed by law. The achievement of the contract's objectives can have an impact on the negotiations for the next funding period, but there is no automatic link (see Example 2).

In the Netherlands performance contracts were introduced in 2012 and since then a set amount of the block grant (currently 7%) is distributed on the basis of objectives agreed between the Ministry of Education and individual universities. After three years a review commission will assess whether these objectives have been met, but it remains to be seen whether this will really have a direct impact on funding (see Example 7).

Example 7: The Netherlands – foster institutional profiling

In 2009-2010 the Dutch government established a committee of national and international experts to give advice on reforming the Dutch higher education system to equip it for the expected massive increase in student numbers (according to forecasts about 1/3 by 2020), reduce the drop-out rate and make the system more responsive to the needs of the knowledge economy. Following the main recommendation of the committee, which was to improve quality and diversify the higher education system, the government developed plans to change the funding system in order to encourage institutional profiling and stimulate differentiation in the educational offer.

The plan was to strengthen the performance component in the funding system which previously was mainly input-based for all higher education institutions (60% of the block grant was allocated based on enrolment, 20% on a fixed (historical) basis and 20% based on the number of diplomas awarded). Therefore performance agreements between the ministry and individual higher education institutions were established. As a first step HEIs were asked to draft a strategic plan with their objectives for 2012-2016 regarding the following policy priorities:

- **Improve education achievements** (7 indicators; graduation rate; drop-out rate; study switch; quality assessment or number of students in excellent tracks; educational intensity; overhead)
- **Strengthen education and research profile** (educational portfolio; priorities in research; response to strategic priorities in national innovation policy and grand challenges)
- **Increase the impact and utilisation of research** (exploitation)

The universities were free to choose the format of their strategic plan as well as develop their own objectives but it had to include targets for 2015 in relation to the seven educational indicators mentioned above. In summer 2012 all strategic plans were assessed by an independent review commission taking into account their alignment with the national policy goal of institutional profiling and their feasibility. In case of a positive evaluation the minister then signed a performance agreement with the institution.

7% of the block grant was foreseen to foster quality and profiling separated into two streams:

- 5 % is conditional funding (for universities to obtain their share of this stream they have to have a performance agreement with the ministry), and
- 2% is selective funding (this stream includes a competitive element as those universities which have achieved a higher score in the assessment of their strategic plan receive relatively more money).

In 2016 the review commission will evaluate the performance of HEIs with regard to their targets. In case that a HEI does not reach its targets related to the seven educational indicators in 2015, it is foreseen that the HEI receives a smaller share of the conditional funding for the period 2017- 2020.

Source: Ministry of Education, Culture and Science of the Netherlands

In Brandenburg and Hesse, two of the three German “Länder” included in the study, a certain percentage (2% and 5% respectively) of the block grant is linked to the achievement of the objectives agreed upon in the performance contracts specific to each university. However, the assessment is not very rigorous and underperformance has so far never been sanctioned by funding cuts.

Italy is an example of a system where the performance contract is not linked to the block grant distribution, but to additional funding (see Example 8).

Example 8: Italy - performance contracts linked to additional funding

In Italy the ministry and the universities conclude three-year contracts, whereby the achievement of the agreed objectives determines the allocation of additional resources. In 2013 the additional funds available were limited by law to a maximum of 2.5% of the public funding received by the university. The objectives can be linked to the following areas:

- Student services
- Internationalisation/interaction with the local environment
- Foreign staff
- Cooperation among universities
- Rationalisation via redistribution of courses at regional level

The university chooses among these areas and sets a starting point as well as targets; funding is partly provided at the beginning (to facilitate investments) and partly at the end of the period (upon meeting the targets).

Source: Italian Ministry for Education, Research and University

A performance contract may also be used as a complementary instrument to a funding formula either to align the contract’s objectives with the formula or to mitigate some of the negative effects of a formula by, for instance, setting additional objectives for the quality of teaching and research.

Example 9: NRW - aligning different mechanisms

In North Rhine Westphalia (NRW) (Germany) each university has an individual performance and target agreement with the regional ministry which runs over a period of two years. It includes objectives that are negotiated between the ministry and each university and they are mainly linked to teaching (e.g. quality of the offer; successful completion) and for some universities more specifically to programmes preparing future school teachers. The achievement of the objectives is not linked to additional funding.

A paragraph in the target agreements refers to the fact that the ministry provides “sufficient and sustainable” funding to universities’ contingent on the overall budget of the region and with these means the universities should achieve the objectives. Although there is no direct link to funding in the agreements, the achievement of some of the objectives still matters to some extent with regard to funding. Some of the objectives relate to the performance indicators that are used to distribute 23% of the block grant. In general the performance and target agreements in NRW are rather a soft steering mechanism, the purpose of which is more to provide a means for coordination between the universities and the ministry than a funding instrument.

Source: German Rectors’ Conference (HRK)

Table 5 gives an overview of the extent to which performance contracts are linked to funding in the different systems. Due to the lack of comparable data, not all of the systems in which performance contracts with an impact on funding exist could be included in the table.

Table 5: The share of funding allocation through performance contracts

System	Funding
IT	Additional funding of max. 2.5% of public funding received by university
AT	Overall block grant linked to performance contract
NL	7% of block grant
DE-HE	5% of block grant (but no rigorous sanctions so far)
DE-BB	2% of block grant (however no rigorous sanctions so far)
IE	around 1% of block grant
LV	< 1% of block grant

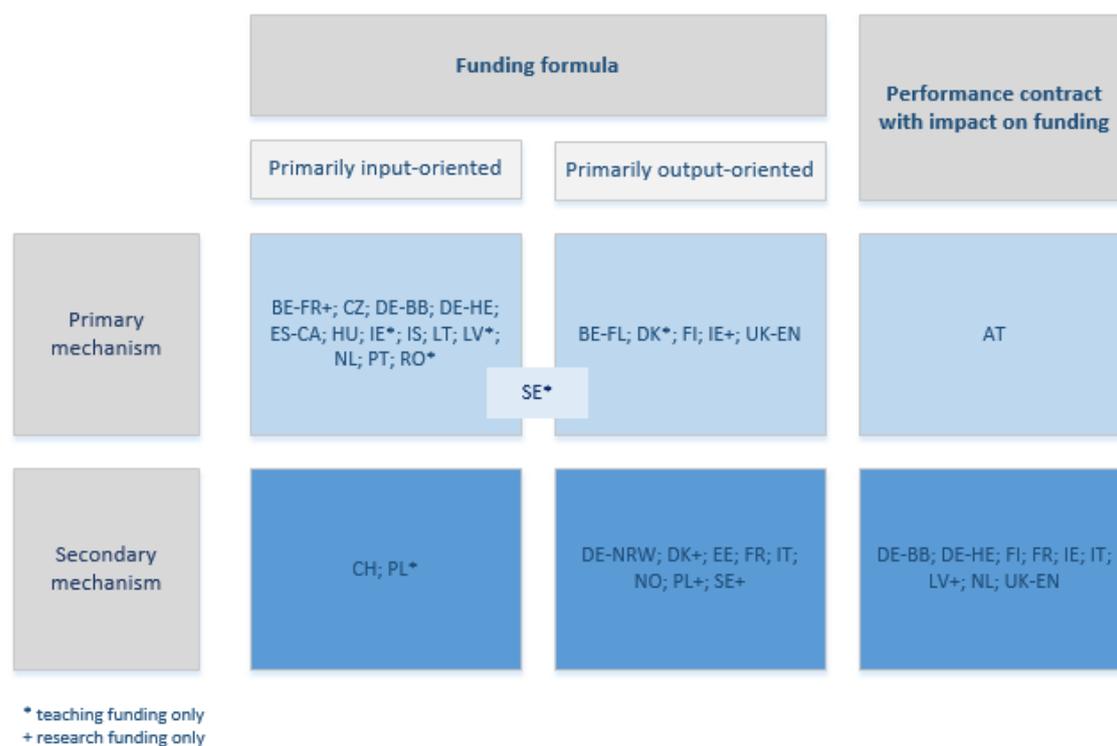
This does not mean that funding is in all cases entirely dependent on performance, as the contracts may include a variety of different elements which are not related to performance.

In Denmark, the development contracts are purposely not linked to funding, but they are nevertheless seen as an important steering mechanism, also by university management, as they can be used in discussions on the institutional strategy and internal funding allocation. In this case the impact on institutional management very much depends on the structure and the governance model of the institution (see pp. 41 and pp. 45). If it is an individual contract this is also the opportunity to create a dialogue between the ministry and the university and it can then be used as an effective management tool even if it is not directly linked to funding.

3.3 Overview of performance-elements in block grant allocation

When looking at the overall allocation of block grants, it can be noted that a majority of systems consider their funding allocation mechanisms at least partially performance-based for teaching (via graduate-related criteria), with the most extensive case being Denmark, and partially or mainly performance-based for research, where indicators related to publications and external research funding are normally taken into account. However, [Table 6](#) shows that a primarily input-based formula whereby the largest part of recurrent public funding is distributed in this form is the most common method of allocation which is used by 13 of the systems considered in the study. It is often combined with other mechanisms such as performance contracts or budget negotiations and historical allocation.

Table 6: Performance elements in recurrent public funding for universities¹⁴



Due to the complexity of funding mechanisms across Europe it is, however, not possible to provide the exact share of funding linked to performance in each system. As illustrated by Table 6, one mechanism, whether it be a formula or a performance contract, often contains a mixture of different elements of which only some are linked to performance and which makes it difficult to disconnect them. A good example of this complexity is the performance contracts in Austria. They combine a budget negotiation with defining detailed individual objectives for a university and some targets and indicators to measure the achievement of broader education and research policy goals. This implies that even if the instrument is referred to as a performance contract, the provision of funding is not entirely dependent on performance.

In several systems the amount of funding allocated based on performance has been increasing over time. Here are some examples:

¹⁴ Sweden* is placed in the middle of two categories as half of the teaching funding is based on input indicators and half of it on output indicators, thus the formula for teaching funding is neither primarily input-oriented nor primarily output-oriented.

Example 10: Czech Republic - increasing the importance of performance elements

In the Czech Republic performance indicators were introduced into the funding formula in 2009. At first only 9% of public funding was allocated based on these indicators, but this share increased to 20%.

Out of this 20% of public funding, 39% is allocated based on performance in research and artistic activities (publications, patents, competitive grants obtained, income generated, artistic performance indicators). A further 34% is distributed according to the quality of studies and the employability of graduates (quality of staff and staff structure; employment rate 6 months/1 year after graduation) and an additional 27% based on criteria linked to internationalisation and mobility (foreign students, international collaboration, student mobility of self-funded students).

Source: DEFINE Focus Group Feedback

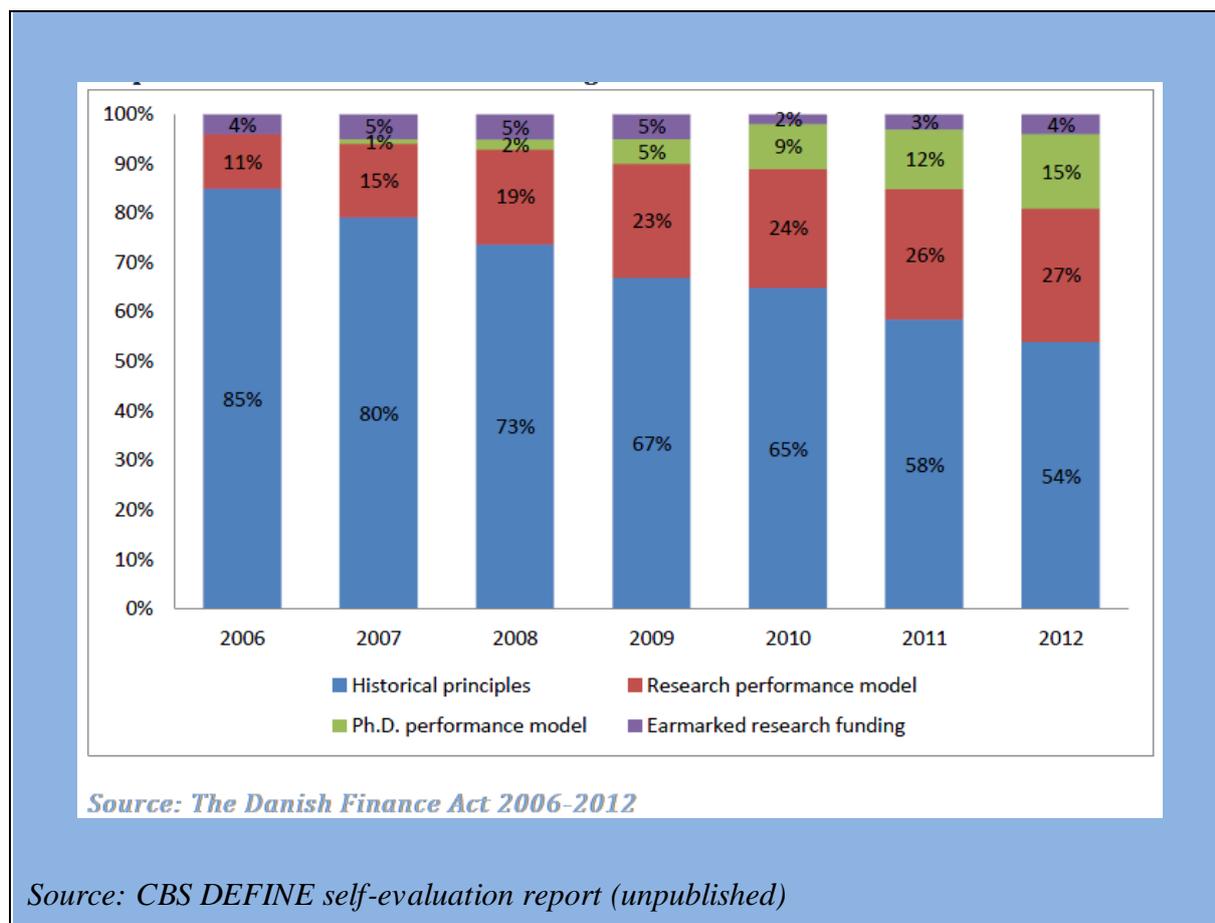
Example 11: Italy - increasing the share of performance-based funding

Criteria to distribute state funding	2013	2014	2020
Students' achievements	13.5%	17%	28%
Research evaluation			
Multiannual performance agreements	1%	1%	2%

Performance-based funding

Source: Italian Ministry for Education, Research and University

Example 12: Denmark - gradually increasing performance elements in basic research funding



The system level analysis has shown that most countries in Europe allocate a certain amount of public funding based on performance. Although the importance of performance elements has been increasing in some systems (e.g. Czech Republic, Denmark, Italy) it varies considerably and in the large majority of systems only a small part of public funding is distributed according to performance. Input indicators remain very important, notably with regard to teaching, while output-based funding seems to be more common with regard to research activities.

4. THE IMPACT OF PERFORMANCE-BASED FUNDING

As already explained in the introduction the effects of performance-based funding and steering tools are contingent on the overall funding context of a specific university system as well as the characteristics of different institutions. This makes it challenging to draw general conclusions on the impact of performance-based funding. Nevertheless the data and case studies collected in the DEFINE project help identify a few common challenges and risks associated with performance-based funding as well as opportunities it may offer both at system and institutional level. It is important to note that one mechanism or even one indicator can offer opportunities as well as bear challenges and risks.

4.1 Effects on enrolment, teaching quality and completion

Study completion criteria such as the number of Bachelor's and Master's degrees awarded are included in a formula with a view to fostering quicker graduation, increasing the completion rate and higher education attainment in general – a policy goal which is often expressed at national as well as European level.

Opportunities

In systems where universities are free to decide on student numbers, completion criteria linked to the number of graduates (not the graduation rate) provide a clear incentive to increase enrolment, so that universities offer as many study places as possible. This is also important because enrolment usually needs to be proportionally higher than the desired number of graduates due to students dropping out. This potentially leads to an increase in the number of study places available. According to the [EUA University Autonomy Scorecard](#), however, only in eight out of 29 systems covered universities are completely free to decide on student numbers while in others different restrictions apply.

In contrast to input indicators such as student numbers, completion criteria have the advantage that they force institutions to focus on the end product of the teaching and learning process and certainly discourage institutions from keeping students enrolled as long as possible. This can be a driver for the development of measures that support students proceeding to graduation

more quickly and to reduce the number of dropouts (e.g. tutoring, guidance and counselling, increased contact hours, etc.).

Challenges and risks

Increasing enrolment can be challenging for institutions given the limited space and facilities. In addition, completion criteria bear the risk of decreasing educational quality and standards to be able to produce more graduates in less time. As a consequence big lectures might be privileged over smaller seminars leading to less close contacts between professors and students.

4.2 Effects on research

Output indicators in research funding try to measure the productivity of an institution and its researchers, for example, through bibliometric criteria, the amount of external funding obtained, the number of contracts with business and industry, etc. The aims are often to reward high quality research and to foster the use of research results also outside of academia, as well as to encourage collaboration with external partners.

Opportunities

The above-mentioned indicators incentivise the dissemination of research results in academia (bibliometric criteria) and cooperation with external partners such as business and industry. The latter has not only the potential to foster knowledge transfer but helps to ensure that research results are used outside of academia and are relevant to other stakeholders which can enhance the impact of research on society.

Challenges and risks

Nevertheless, output-indicators in research funding combined with the tendency to give money to research units within an institution bears the risk of a “Matthew-effect” both at system as well as at institutional level where funding is given to those that already perform well and score high, while others will be further disadvantaged due to a lack of investment possibilities. This can potentially have strong profiling and differentiation effects if it is connected to a large level of funding.

Similarly, criteria focused on contract research with external partners tend to privilege applied research over basic and high risk research. Therefore it has to be made sure through other means that enough public funding is provided for this type of research.

Bibliometric criteria might represent a relatively easy way to measure research outputs, but their use is very controversial as they put much pressure on academics to publish early and frequently and thus have the potential to foster slicing of papers or name dropping and make academic staff privilege research over teaching. Furthermore they disadvantage certain disciplines, notably humanities, which traditionally have a lower research publishing rate than science subjects.

4.3 Effects on university governance and institutional autonomy

Opportunities

Notably performance contracts can be an opportunity to create an active dialogue between ministries and individual universities as equal partners and a way to align policy and implementation. Performance-based funding might help to focus institutional activities and thus support strategic planning and decision-making, therefore being a useful governance and management tool.

Challenges and risks

However, if performance-based funding is used as a strong steering tool to influence institutional behaviour and make universities perform towards externally set policy goals, it interferes with institutional autonomy which is one of the fundamental principles of European higher education systems. This risk is higher if a large share of funding is allocated based on performance, if universities are not involved in defining the goals and indicators towards which they are supposed to perform and if the same are applied to all institutions independently of their profile and specificities.

4.4 Effects on funding allocation and financial management

Opportunities

Performance indicators may increase the transparency in funding allocation provided they are understandable and of limited complexity. This can help institutions as well as public authorities to better plan funding allocation, work towards certain objectives, prioritise and increase efficiency. It can thus be useful to rationalise the distribution of public money to universities and to reward those institutions that perform well with regard to the indicators, provided additional money is attached to this.

With indicators linked to the amount of external funding obtained by an institution or the number of external research contracts, incentives can be set to foster the diversification of income streams which in principle can be positive for the financial sustainability of universities.

Challenges and risks

However, to use performance-based funding as an effective incentive mechanism for institutions to perform, it has to reward growth with regard to an indicator with additional money. This makes it challenging for public budgets that are usually pre-fixed. The principle of a closed envelope applied in most systems in Europe (see 3.1 Funding formulae) limits the incentive for institutions to enhance their performance e.g. by enrolling more students and producing more graduates as above a certain threshold the funding per unit (e.g. graduate) decreases. Furthermore performance-based funding based on the principle of a closed envelope also increases the competition between universities which can have negative effects on their willingness to cooperate in certain fields.

The strong past performance orientation of output-oriented funding also bears the risk of a Matthew-effect both at system as well as institutional level. Those who perform well receive more money and thus have a relatively better position to perform in the next period, while those who performed less well receive less money and are thus in a weaker position for the future. This can lead to a stronger differentiation of the institutional landscape.

This effect can be repeated at institutional level as the internal re-distribution of funds is often strongly driven by the external allocation model, and also because the institutions try to maximize their public income. Furthermore the past performance orientation makes funding very volatile and does not leave much room for adaptation with buffer budgets becoming very small. In addition universities have a cost structure with a high amount of fixed costs such as staff salaries accounting on average for around two thirds of the overall expenditure (see [Chapter 2.2 as of p. 15](#)). This constellation limits the possibilities to invest in innovations such as new modes of teaching, new programmes or high risk research.

External funding, which may be acquired through research contracts with private partners, EU funds, or other types of competitive funding or philanthropic sources, appears quite frequently as an indicator in funding formulae, which in turn sets the value of the core funding that the university receives.

Creating a direct link between external funding and core funding may be used as an incentive for universities to actively develop partnerships and strengthen income diversification strategies. However, when using this it should be taken into account that external funding often offers only partial coverage of costs. Universities then need to bridge the gap with their core resources which can potentially increase the funding gap if there is no other mechanism to cover these costs.

The latter illustrates how important it is to take a holistic view on the overall funding system when introducing performance-based funding. The linkages between different funding streams and the ability of universities to manage those impact on the financial sustainability of individual institutions as well as the system as a whole.

4.5 The limits of performance-based funding

Apart from the opportunities, challenges and risks it is also important to highlight what performance-based funding cannot do, where its impact is limited and for which purposes other or additional policy tools might need to be considered.

In general, performance-based funding can have an impact on the educational and research offer of an institution, but its impact on the demand side is very limited.

As an example, a performance-based funding mechanism might be used to encourage institutions to offer more study places in certain fields e.g. through a relatively better cost coverage for graduates in this field. However, this incentive only functions if universities are free to decide on their student numbers, which is only the case in eight out of 29 systems in Europe included in EUA's Autonomy Scorecard (Denmark, Ireland, Italy, Latvia, Luxembourg, Norway, Poland, Sweden).

It nevertheless has a very limited impact on students' choices of a specific subject area (the demand side) which can be influenced by multiple other factors (such as personal preferences, employment opportunities, social-economic background, specific financial support systems for students, etc.). Therefore performance-based funding alone does not seem to be an efficient tool to balance the lack of graduates and experts in certain fields such as STEM subjects.

Similarly, it is not sufficient to include study completion criteria in a funding formula in order to increase higher education attainment in general and shorten the time to graduation. The progression paths of students are influenced by multiple factors on which the institution has only limited impact in some cases. Even in the case of the Danish taximeter system, the most prominent and highly completion-focused funding mechanism, the effect on completion rates is unclear and difficult to disentangle from other influencing factors (e.g. when the completion bonus was introduced in the formula at the Copenhagen Business School, the Bachelor completion rates went up, but Masters completion rates went down.).

Furthermore, performance-based funding has to be considered in the context of the broader regulatory framework in which universities operate. For example, in order to increase the number of international students and staff it is not sufficient to set financial incentives for this. Also the regulatory framework has to be favourable to facilitate, for instance, the recruitment of international staff.

These are just a few examples to illustrate that performance-based funding has its limits and its use should be considered in the context of other policy measures and tools.

5. STRATEGIES AND REQUIREMENTS FOR MANAGING PERFORMANCE-BASED FUNDING

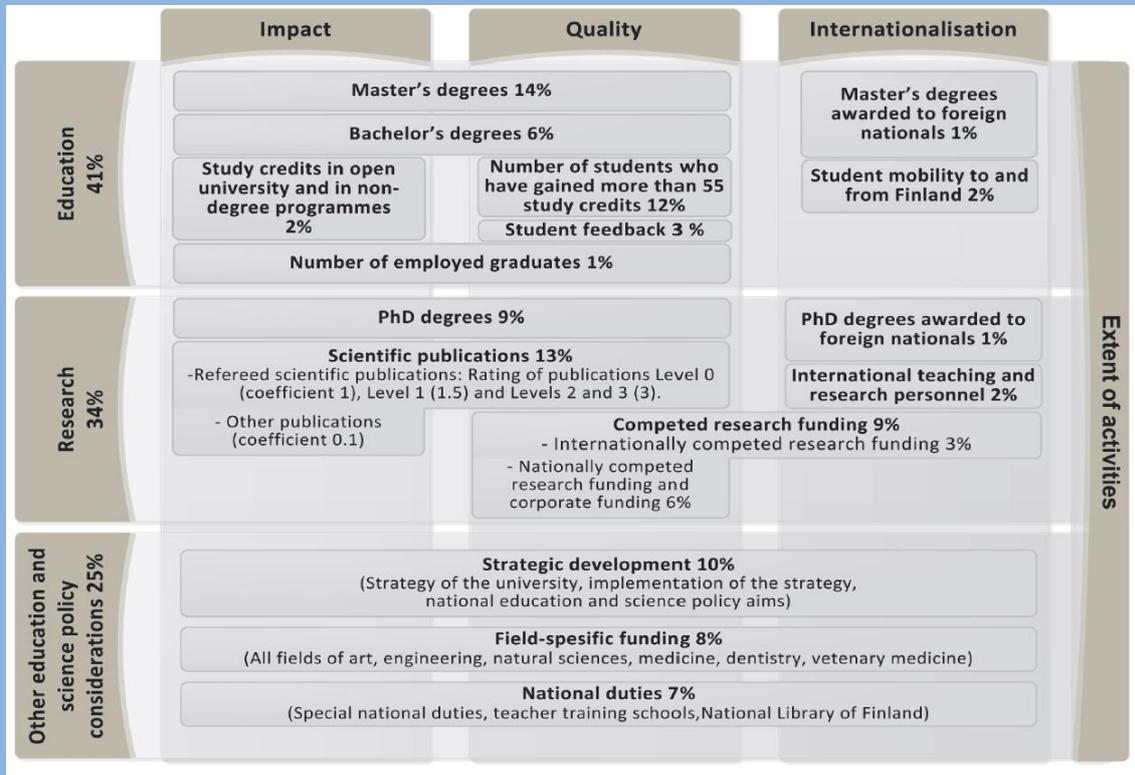
The following chapter presents strategies at system and institutional level to manage performance-based funding, use the opportunities it may offer and mitigate some of the risks and negative effects it may have. Wherever possible this is accompanied by examples that have been collected throughout the project.

Ensuring transparency of the funding system

Transparency is a key aspect of any efficient funding system and it is particularly important when it comes to allocating funds based on performance, no matter whether it is used as a steering and incentivising mechanism or simply for redistribution. A distribution mechanism should be transparent to ensure accountability of public spending and create a level playing field for the beneficiary institutions. Likewise, incentivising institutional behaviour only works if the mechanism is clear and understandable to the universities. An example of how to provide a transparent overview of funding allocation to universities comes from Finland.

Example 13: Overview of block grant allocation in Finland in 2015

In Finland core public funding is allocated to universities based on a formula, which includes strategic funding as well as the financing of education and research.



The government adopts a development plan for education, academic research and R&D every four years which outlines the policy for the following few years. Apart from the government programme, development plan and legislation, universities are governed by performance agreements concluded with the government.

Each university and the ministry conduct negotiations at the beginning of every three-year agreement term, in which operational and qualitative targets for the university, as well as the required resources, are determined. The agreement also provides for the monitoring and evaluation of target attainment and the development of operations.

In this model performance agreements and the funding formula with performance indicators are considered as complementary tools.

Source: Finnish Ministry of Education and Culture and Universities Finland (UNIFI)

Keeping the share of performance-based funding limited

A way to render funding less volatile is to balance output-indicators with more input/throughput-oriented indicators and to keep the share of funding that is allocated based on performance limited, concerning the overall amount of funding. In this regard it is interesting to note that in the majority of systems in Europe, including performance-based criteria,

elements have been implemented to either guarantee a minimum level of funding to institutions or at least limit the loss for an institution to a certain percentage of the previous budget which increases predictability and helps financial planning which is important for the financial sustainability of the sector.

Taking account of the costs of universities' activities

Another way of fostering financial sustainability is to take into account the costs of universities' activities in the funding model. An example of how this can be done is the new Italian funding model whereby historical allocation is replaced by a calculation based on the standard cost per student.

Example 14: Italy – incorporating a standard cost per student

The Italian system to allocate public funding to universities is based on three main pillars: performance agreements, performance-based funding and historical allocation. The share of these three pillars has evolved over time. In 2012 the government decided to gradually increase the share of performance-based funding and performance agreements and to replace the historical allocation by an allocation based on the standard cost per student as of 2014. The aim is to mitigate inequalities of the historical allocation whereby universities of the same size and profile received different amounts of public funds per student in the standard period.

Criteria to distribute state funding	2013	2014	2020	
Based on previous allocation	77.5 %	74%	70%	Standard cost per student
Students' achievements	13.5%	17%	28%	
Research evaluation				Performance-based funding
Multiannual performance agreements	1%	1%	2%	
Other specific measures to increase quality and ensure sustainability of universities	8%	8%		
TOTAL	100%	100%	100%	

The standard cost per student is calculated taking into account four different components linked to research and teaching (standard number of professors and researchers), administrative facilities and staff, cost of infrastructures, and other more specific aspects (tutors, experts, etc.).

Source: Italian Ministry for Education, University and Research

Catering to the needs of different institutional profiles

A mechanism that relies heavily on one or a very small number of indicators/objectives has a stronger steering effect, but bears the danger of convergence of institutional profiles and thus contributes to the reduction of institutional diversity if most of the recurrent funding is allocated this way. This in turn can favour uniformisation of the system which is not considered adequate to respond to the increasingly diverse needs of modern knowledge economies and expectations from society towards universities. A performance-based funding mechanism with more indicators or objectives addressing different university activities might be more adequate to properly fund the broad mission of comprehensive universities (see also Dohmen 2014, p 26).

Accounting for differences among disciplines

Similarly, performance-based funding mechanisms should account for different disciplines. To counterbalance the deficiencies of bibliometric criteria, discipline-specific criteria could be included in a formula. In France, for instance, the formula contains an indicator composed of the number of publishing researchers weighted according to the research area. In 2012 Flanders established its own bibliometrics database for humanities (in addition to the commonly used Web of Science database) the purpose of which is to help balance the disadvantage. Similar systems exist in Denmark and Norway.

Strengthening quality assurance

To prevent a decrease in quality both in teaching and research, effective quality assurance mechanisms are needed as well as a culture based on a strong academic ethos.¹⁵ Teaching staff should not be put under pressure to lower the requirements so that students pass exams in order to achieve the desired completion rate. Therefore no direct link should be established between completion rates (e.g. for a specific course) and the career development of individual university teachers. Likewise the career development of a researcher should not exclusively depend on the number of publications.

¹⁵ For further information, please also see EUA's work on [quality assurance](#).

Example 15: CBS - using ICT tools to ensure teaching quality

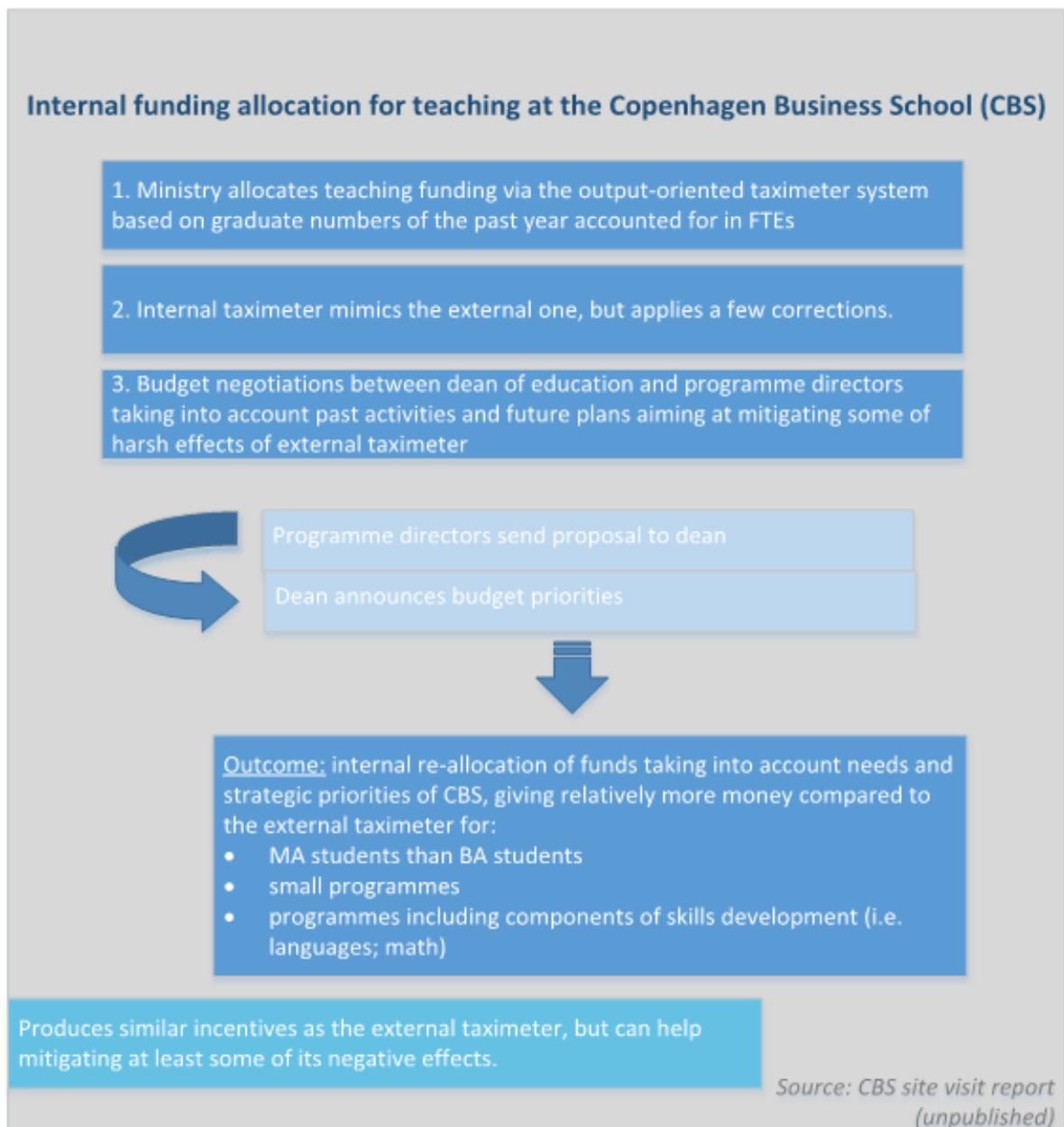
The Copenhagen Business School (CBS) is a teaching focused institution that receives the largest share of its funding from the Danish taximeter system based on study completion indicators. In Denmark universities have the autonomy to decide on student numbers and due to the incentives of the taximeter system institutions tend to maximize enrolment. In order to manage big lectures with a large audience and still keep contact with the students, some teaching staff at CBS use modern ICT tools, such as an electronic voting system whereby a lecturer can obtain immediate feedback from the students on the presentation and whether the content has been understood. This is one example of a concrete measure to ensure the quality of teaching under the constraints of the taximeter system.

Source: CBS DEFINE site visit report (unpublished)

Developing a strategic approach towards internal funding allocation

In general the external funding model strongly drives internal allocation at institutional level. In order to tackle the challenges linked to performance-based funding and mitigate some of the unintended effects at institutional level a strong financial and strategic management is needed. The development of an internal funding allocation model for the distribution of funds to the sub-entities such as faculties or programmes according to own institutional priorities, can help to counterbalance some of the negative effects of the external funding mechanism. The internal allocation model should be set up according to the institutional structure, priorities and profile and the way the process should be organised is specific to each institution.

Example 16: CBS - Internal funding allocation



Whilst in smaller institutions a centralised approach (e.g. at the Copenhagen Business School, see Example 16) can work, this might be different for larger universities with more independent faculties.

Example 17: Indicators used in external and internal funding allocation at member universities of the U4 University Network (Vanden Berghe 2014)

	Ghent (BE-FL)		Groningen (NL)		Uppsala (SE)		Göttingen (DE)	
	EAS	IAS	EAS	IAS	EAS	IAS	EAS	IAS
Students/ECTS	Blue	Yellow	Blue	Yellow	Blue	Yellow	Blue	Yellow
ECTS obtained	Blue	White	White	White	Blue	Yellow	White	White
BA/MA degrees	Blue	White	Blue	Yellow	White	White	Blue	White
Foreign students	White	Yellow	White	White	White	White	Blue	White
Outgoing students	White	Yellow	White	White	White	White	Blue	White
PhD degrees	Blue	Yellow	Blue	Yellow	White	White	Blue	White
Publications	Blue	Yellow	White	White	Blue	Yellow	White	Yellow

EAS = external allocation system
IAS = internal allocation system

The data collected concerning the indicators of the formula also makes it possible to see in which areas the university scores higher, i.e. which activities bring in most funding. This can cause inter-institutional tensions, notably in cases where the internal allocation does not reflect the external scheme, but redistributes money, e.g. from teaching to research or from one discipline to another thus leading to cross-subsidising. Therefore strategic management and leadership are crucial with regard to the internal allocation as it has to balance institutional priorities with the need to secure a maximum amount of public funds, also taking into account the costs of different institutional activities.

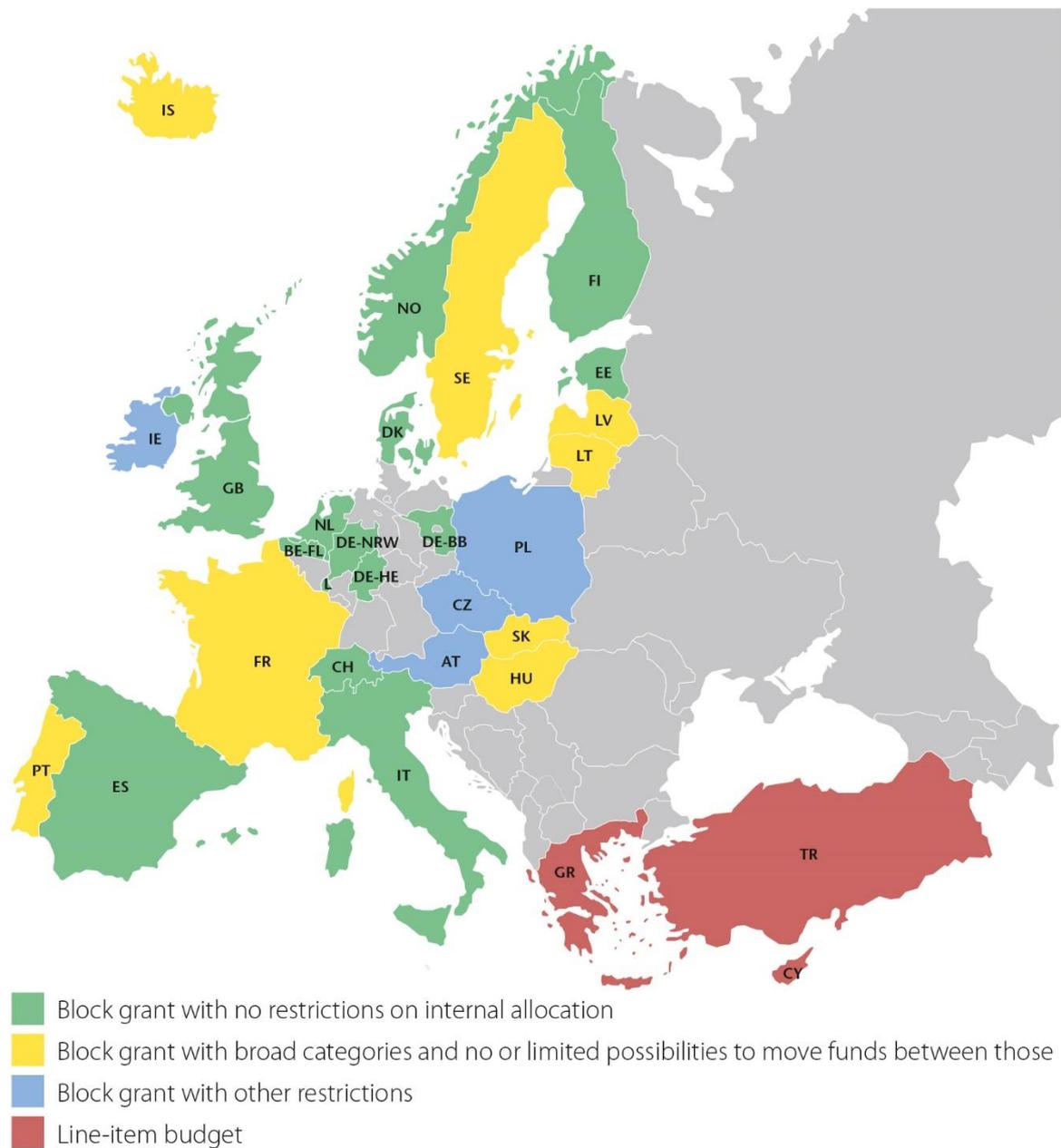
Ensuring institutional autonomy as a pre-requisite

A pre-requisite to efficiently manage performance-based funding at institutional level and develop adequate strategies is sufficient institutional autonomy, not only as regards the use of funds, but also in other dimensions (academic, organisational and staffing). As shown in EUA's autonomy scorecard in the majority of systems in Europe, universities are free to use the block grant according to their own discretion.¹⁶ However, there are still eight countries (France, Hungary, Iceland, Latvia, Lithuania, Portugal, Slovakia, Sweden) where the block grant is split

¹⁶ Brandenburg, Denmark, Estonia, Finland, Flanders, Hesse, Italy, Luxembourg, the Netherlands, North Rhine-Westphalia, Norway, Spain, Switzerland, United Kingdom.

into broad categories and universities have no or limited possibilities to move funds between them.

Figure 7: Types of recurrent public funding (Estermann, Nokkala & Steinel 2011)



Universities that have the freedom to manage their funds can make the most efficient use of public money and redistribute it to their priority areas and institutional profile and thus adequately fulfil their mission.

6. CONCLUSIONS

The mapping shows that performance-based funding in one way or another exists in the majority of higher education systems in Europe, albeit to very different extents. Often even with so-called performance-based mechanisms, funding is not entirely based on performance, which makes it difficult to identify the exact share of performance-based funding in a system and to make inter-system comparisons.

The impact analysis illustrating opportunities and risks associated with performance-based funding emphasises that it must be used with caution. It can be one way to increase the transparency of funding allocation and thus the accountability of public spending. It might also support profiling and strategic positioning of higher education institutions, notably in the form of an individual performance contract. A pre-requisite for this is that universities are equal partners with the ministries in the process of designing the mechanism or concluding the contract and that a real dialogue takes place. The goals and indicators as well as the procedures have to be clear and not too complex, so that it can work as a fair and efficient distribution mechanism.

However, its effects are hard to control and are highly dependent on other factors such as the regulatory framework of a specific higher education system, the funding system and the share of funding allocated on the basis of performance as well as the institutional profile, income structure and internal management and governance. The concrete design and processes, as well as the implementation of the performance-based funding tools, also play a strong role in positive or negative effects. It is unsure and difficult to assess to what extent it helps raising the performance of universities with regard to teaching and research, due to the risks and unintended effects it can have. Therefore detailed steering through performance-based funding seems inadequate and would also undermine institutional autonomy. Furthermore the attainment of broader higher education and research policy goals does not only depend on institutional performance, but on multiple other factors as well. Therefore performance-based funding can never be the only way to achieve a certain policy goal and it needs to be considered in the wider context together with other incentives and support mechanisms.

Its share in the overall amount of public funding provided to universities should be limited so as not to endanger the institutions' financial sustainability. It should not be used to slice parts of the core funding, but rather to provide additional money. A sustainable university funding system needs to:

- take account of the costs of universities' activities that are to a high degree fixed (input);
- reward performance; and
- allow institutions to invest in their future.

Sufficient and stable public funding is indispensable for universities across Europe to fulfil their mission and public responsibility.

7. RECOMMENDATIONS

Based on the analysis the following recommendations have been developed. They try to give an answer to the third central question of the report listing elements that policy makers and institutional leaders should bear in mind when integrating performance elements in their university funding system.

7.1 Recommendations to policy makers

When reforming the funding system and introducing performance elements, policy makers should take into account the following:

System and funding context

- Take a holistic view of the overall funding system for universities.
- Take into account the cost structure when deciding about the share of funding to be distributed based on performance.
- Due to the high share of personnel and fixed costs (input factors) the share of funding allocated based on performance (output) should be limited.
- Do not slice core public funding, but rather provide additional money based on performance.

Regulatory framework

- Strengthen institutional autonomy in all dimensions.
- Enable universities to develop their own strategies with regard to internal funding distribution at institutional level.

Aims and purpose

- Be clear about the aims and the purpose of the measure.
- Decide whether it is meant for redistribution of limited funds or steering institutional behaviour and incentivising performance.
- Based on this evaluate which measure is best to achieve the aim(s) (→input/output indicators; performance contract).

Choice of indicators

- Consult the university sector on the choice of indicators/objectives;
- Take account of the diversity of institutional profiles and missions in the system;
- Try to find the most adequate proxies based on the policy goals to be achieved;
- Do not use indicators that were originally not developed for funding purposes as this deteriorates the system (e.g. university rankings, ratings of laboratories);

- Minimize the administrative effort for the measurement, generation and collection of data;
- Watch out for conflicting goals and indicators;
- Avoid indicators on which universities have little influence (e.g. graduate employment rate).

Impact

- Evaluate possible unintended effects as far as possible, already before introducing the reform;
- Bear in mind that the impact on universities depends very much on their individual profile and structure.

Implementation

- Foresee a testing/transition phase when introducing a new measure;
- Plan for regular feedback loops (assessment after a certain amount of time) and possibilities for adaptation;
- Try to balance efforts and needs and design efficient procedures for managing and reporting.

7.2 Recommendations to universities

When the introduction of performance-based funding elements is planned, consider the following:

At planning stage

- Get involved in the design of the scheme at system level;
- Coordinate among universities, for instance through the national university association, to voice opinions and give constructive input;
- Enter into an active dialogue with public authorities and try to align the performance contract as much as possible with the institutional priorities;
- Involve the broader university community in the design of the performance contract.

At implementation stage

- Identify institutional priorities and develop a strategy on how to deal with the changes in the funding system and how to adapt the internal allocation system;
- Set up internal funding allocation schemes based on institutional priorities (may differ from the external one);
- Avoid direct links between remuneration and career development of staff and performance indicators used for funding allocation as these can have unintended effects (e.g. grade inflation, decrease in educational quality);
- Establish strong internal quality assurance mechanisms and foster quality culture.

ADDITIONAL SOURCES

EUA sources (Can all be retrieved from then publications' section of the EUA website):

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Estermann, T., Bennetot Pruvot, E. & Claeys-Kulik, A., 2013, *DEFINE Interim Report: Designing Strategies for Efficient Funding of Higher Education in Europe* (Brussels, EUA).

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Other external sources:

Council of the European Union, 2011, 'Council conclusions on the modernisation of higher education', of the 3128th Education, Youth, Culture and Sport Council meeting, 28-29 November 2011, Brussels. Retrieved on 17 June 2015 from http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/educ/126375.pdf

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Vanden Berghe, J. 2014, 'National Allocation Models and University Budgeting Practices - A peer review exercise of the U4 network', presentation at the *2nd EUA Funding Forum*, Bergamo, Italy, 9 October 2014.

Appendix

List of institutions that participated in the DEFINE Focus Group on performance-based funding at the Copenhagen Business School on 19 and 20 February 2014:

- Charles University (Czech Republic)
- Dutch Association of Universities (VSNU) (The Netherlands)
- Copenhagen Business School (Denmark)
- Ghent University (Belgium)
- HAN University of Applied Sciences (The Netherlands)
- Leiden University (The Netherlands)
- Ministry of Higher Education and Research (France)
- National Council for Higher Education Funding (CNFIS) (Romania)
- NUI Galway (Ireland)
- Swansea University (United Kingdom)
- Universidad Autonoma de Madrid (Spain)
- University of Coimbra (Portugal)
- University College Cork (Ireland)
- University of Graz (Austria)
- University of Warsaw (Poland)

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