

COMPETITION AND PERFORMANCE IN EUROPEAN HIGHER EDUCATION: THE ROLE OF FUNDING INSTRUMENTS

Competición y desempeño en los sistemas europeos de Educación Superior: el papel de los instrumentos de financiación

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Abstract. Higher education institutions face today a demanding and complex context in which they are asked to fulfill multiple roles. Many of these challenges have to be faced in a complex financial context in which traditional modes of funding have been transformed and public sources are not as generous as they often were in the past. Like in many other public services, in recent years it became a rather common statement that higher education institutions should be more efficient in the use of taxpayers' resources, which had a clear impact in visible changes in the funding of public higher education in Europe. In this paper we will analyse the major trends in higher education funding in Europe and underline to what extent the current debates about higher education and its funding have been significantly influenced by economic considerations. We will identify some of the main issues that dominate the current debate around higher education's funding, drawing some comparative insights from developments across Europe.¹

Keywords: funding, Europe, competition, efficiency, Higher Education

Resumen. Las instituciones de Enseñanza Superior están involucradas en un contexto complejo y exigente en el que tienen que hacer frente a múltiples demandas. Muchas de estas demandas emergen en un entorno financiero difícil, las fuentes tradicionales de financiamiento se han transformado y los fondos públicos no fluyen con la generosidad de antes. Como en muchas áreas del sector público, las instituciones de enseñanza superior están presionadas para tener un uso más eficiente de las subvenciones públicas. Ello se observa como preocupación en los modos de financiamiento de

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muchos sistemas públicos de Enseñanza Superior en Europa. En este artículo se analizan algunas de las principales tendencias en el financiamiento de Educación Superior pública en Europa subrayando la influencia creciente de los razonamientos económicos en estos sistemas. En el análisis, y a partir de la comparación de algunos casos, se identificarán algunos de los temas clave en el debate actual sobre el financiamiento de la Educación Superior en ese continente.

Palabras clave: financiación, Europa, competición, eficiencia, Educación Superior

Introduction

Higher education institutions (HEIs) face today a demanding and complex context in which they are asked to fulfill multiple roles. Many of these challenges have to be faced in a complex financial context in which traditional modes of funding have been transformed and public sources are not as generous as they often were in the past, besides having become more demanding and competitive (Herbst; Johnstone and Marcucci). After several decades of expansion, governments are currently less willing to put additional resources in public higher education system, which becomes even more problematic due to the increasing trends on the cost side (Barr; Docampo). As a result, this financial context has led to greater concerns with the level of external and internal efficiency of the system (Teixeira et al.).

Like in many other public services, in recent years it became a rather common statement that HEIs should be more efficient in the use of taxpayers' resources (Pollitt and Bouckaert). These rising concerns with efficiency have had a clear impact in the relationship between HEIs and their main financial provider, which has been visible through changes in the funding of public higher education in Europe (Chevaillier and Eicher; Liefner). Underpinning these changes has been the expectation that it would promote greater institutional efficiency, namely by enhancing competitive stimuli within the system. Moreover, European HEIs have been under pressure to diversify their revenues. The trend towards revenue diversification also supports the introduction of cost-sharing in many higher education systems (Johnstone and Marcucci). Although most institutions are aware that they face a more competitive and diverse financial scenario, not all of them will respond in the same way to those challenges. Some institutions are likely to be more

successful, due to aspects such as their reputation, their size, their disciplinary profile, their location or their mission orientation.

In this paper we analyse the major trends in higher education funding in Europe and underline to what extent the current debates about higher education and its funding have been significantly influenced by economic considerations. We analyse the main changes in European higher education inasmuch as they have affected the financial framework. Then we present the main tendencies that have been observed in European funding systems, trying to identify some of the main issues that dominate the current debate around higher education's funding. In our analysis we highlight some comparative insights to be drawn from the developments in these issues across Europe.

CHALLENGING TIMES FOR HIGHER EDUCATION AND ITS FUNDING

The increasing attention to the economic role of Higher Education (HE) has originated from its economic, social and political importance. In the last decades of the last century many countries initiated a massification process of secondary and tertiary education. Therefore, the expenditures in this sector absorbed a very significant part of public and private resources. In many countries the educational sector has become one of the main sectors in terms of employment (Pollitt and Bouckaert; Barr). The growth of higher education expenditures was supported by the expectation that those would be a privileged factor to an enlarged and better distributed wealth. This role of higher education in the political agenda has not been restricted to the western economies, undertaking an increased visibility in the developing economies as well.

One of the dominant characteristics of higher education evolution in recent decades has been its expansion to world scale. Still more significant is the fact that such expansion has occurred even in regions or countries in which the access to higher education was restricted to a small minority of their citizens. The higher education expansion has resulted in an increasing qualification of the adult population. Many countries have already attained a situation in which more than half of the youth has completed tertiary education, suggesting a deep change in the qualifications structure of the active population (OECD). This pattern has also had a clear influence in the developing countries expansion, pressed by the effects of competitiveness.

Such expansion of higher education results from complex forces in which individual motivations and social and political tendencies are combined. At the political level, the priority given to the expansion of higher education seems to be strongly influenced by

some of the aspects commented earlier about the economic relevance of education and qualifications. In general, the governments have considered the high qualifications of their human resources as an essential factor for national economic competitiveness. In times of liberalization and economic and financial globalization, the promotion of human resources qualifications has become one of the few available instruments that governments can use to efficiently influence the behaviour of market economies.

This way, government policies have been significantly worried with the expansion of higher education systems. Such expansion corresponds to another concern of social nature, namely that the educational system is seen as one of the main instruments for the reduction of opportunity inequalities and promotion of social mobility. Moreover, higher education has been considered an instrument for correcting the historical socio-economical inequalities regarding aspects such as gender, ethnic, or geographic origins.

The expansion of higher education systems has also been strongly stimulated by individual motivations. A university diploma constitutes an attractive investment in terms of long-term return in the majority of the countries (Psacharopoulos and Patrinos). This phenomenon is confirmed by the persistent high return rates for higher education qualification observed in many countries and diverse social-economic contexts. The robust evidence regarding a strong correlation between education and long-term returns has nurtured positive expectations in the public opinion regarding the future of graduates, either in terms of salaries or in terms of employability, especially when compared with those workers with lower qualification levels (Mincer; Card). Thus many individuals and families have assigned great importance to the higher education diploma as a mechanism of social and economic promotion.

This higher education expansion that led to its massification has not had a quantitative dimension only. It is hoped that the higher education expansion brings in to the system not simply a quite numerous population but also an increasingly diversified population at the socioeconomic, cultural and geographic levels. This way, it is required to attend to the most diversified needs by means of a system that is also diversified in the kind of programs and institutions it provides (Teichler; Taylor et al.).

The emergence of massified higher education has promoted the development of more heterogeneous and complex systems, hence their management and regulation have become even more difficult (Van Vught). Even that in many countries there is a traditionally strong and detailed higher education system state regulation, this tendency has become progressively unviable in systems of such dimensions and complexity as the higher education systems. Hence the redefinition of regulation models and of the

relationships between the political authority and the institutions that make up the system that have been observed in the last few decades. So that the increasing number of universities were able to attend adequately to the challenges and needs of the environment, it was necessary to grant them greater administrative and organizational flexibility.

Therefore we can observe a clear tendency to a greater autonomy of the higher education institutions over the last few decades, since governments seem to have diverted their attention from a detailed and regular control of the activities of the institutions to an evaluation centred on the performance and the outputs of each institution and of the system as a whole. This movement tends to be characterized as an evolution from the controlling and planning model of the state to a supervision model (Neave and Van Vught).

Governments have conceded more autonomy to the institutions and it is expected that such autonomy should be used to attend more efficiently to the economic and social needs, either through education or through research results. Thus, evaluation mechanisms and quality systems gained increasing importance in many higher education systems. The urge for mass education strengthened the concern over evaluation and quality, due to the fear that the strong growth could diminish the quality of the services provided by the HEIs. The concern over quality demonstrates how much the expansion trends have modified the situation of higher education. The systems' growth is actually presenting important challenges, notably with regard to the financial sustainability of the system.

These recent developments in higher education occurred in a particularly adverse financial context, both in the developed and in the developing countries. In the case of the more developed countries, the crisis of the welfare state raised serious doubts regarding the sustainability of the funding model, particularly because in a great majority of these countries the higher education systems were based in the public provision and very strong public subsidies of the higher education activities. Regarding the developing countries, financial restrictions associated to lower revenues have constituted a significant obstacle to the ambitions of expanding the supply of higher education.

The so-called crisis of the provider state (Barr) has placed in discussion the traditional dependence of public funds that many higher education systems have. In all western countries we can observe efforts to hold back public expenditures, although the success of such efforts is difficult to attain due to the expanding tendencies of public expenses, especially in sectors such as health and social security (and particularly because of the growth of the aging population). Such pressure in other areas of public expenditure has compelled many governments to rethink their financial obligations and,

thus, created increasing difficulties for higher education to keep itself in the priority list for public funds. This way, the expansion possibilities of public funding is highly limited and many HEIs have faced an increasingly adverse context regarding public funding.

Budget constraints are even more significant due to the growing pressure of costs (Archibald and Feldman). There is the consideration that the tendency for increase in costs results from the lack of efficiency in HEIs. Even if it is not hard to find examples of the difficulty some institutions have in following efficiency policies, it is somewhat a paradox that this aspect would increase when pressures for more efficiency are even greater. Other possible explanations, perhaps more consistent ones, are related to the use of more expensive resources and to the pressures for better quality of the services provided. A persistent emphasis on university research has placed pressure on many institutions to qualify their teaching staff and demand from them more dedication to research activities. Such priority has a significant cost because the search for more qualified faculty inevitably results in an increase in personnel expenses, which frequently represent quite a big portion of the operational budget of the universities.

The pressure for better-qualified faculty frequently appears associated with a context of greater requirements in view of the quality of the services provided by the HEIs. To improve the quality of their services these institutions must face requirements that are not only imposed by the regulatory agencies but also by intensely competitive environments. The pressure to attract and maintain students requires that they feel highly satisfied, in a way that institutions feel they need considerable investments in buildings, computing equipment and the library in order to meet the students' expectations. The pressure for increasing expenses can also be verified in the services not directly associated to the academic area but highly regarded by the students, such as housing conditions, as well as cultural and sporting activities provided by the HEI.

One of the explanations for costs growth has to do with the nature of higher education, understood as an activity of intense labour, a phenomenon economists call *cost-disease* (Getz and Siegfried). The expression intends to describe the tendency to a faster growth of unitary costs on intense working factor activities, which have more difficulty in improving their productivity levels by replacing the working factor by technology. HEIs, as well as other labour-intensive services, benefit in a smaller scale from the productivity growth verified in other sectors that could replace part of the working costs by equipment, or even displace part of the productive process to regions where the working cost by product unit is smaller (Johnstone and Marcucci). Despite the slower growth in productivity, institutions such as HEIs have difficulty in refraining the increase of

salaries because of the staff expectations that their salaries keep up with the cost of living which, in turn, is pushed by those sectors achieving better performances at the productivity level.

For that reason many HEIs face a double pressure. On one hand, they have an expansionist tendency on the demand side with the governments requiring that the institutions grant admission to an increasing number of students. On the other hand, budget restrictions block a significant increase in the public funding levels. Financial problems in many HEIs are due to the fact that the level of public funding does not keep up with systems expansion and associated growing costs.

Such adverse financial context has stimulated an increasing concern regarding efficiency matters. As well as in many other public services, nowadays there is a significant pressure on many universities to become more efficient in the use of public funds they receive (Cave et al.). In a way, such pressure derives from a generalized perception of society and public agencies that HEIs do not value significantly the pursuit of efficiency in their internal objectives. Some recent changes in higher education, namely the growing importance of rendering of accounts, have been stimulated by the concern that the universities must pay more attention to the way they use their funds. These changes had important results in the operation, organization and management of many universities.

The concern with efficiency has not been restricted to internal but also to external efficiency, that is, to the way HEIs articulate with the external environment. Therefore, many western European governments have demanded that these institutions pay more attention to social and economic needs. However, as the institutions hold a greater degree of autonomy nowadays, this concern cannot be imposed, but rather stimulated by means of policies to promote a supply of higher education more adequate to those needs.

CHANGING VIEWS ABOUT HIGHER EDUCATION'S FUNDING

Higher education institutions have increasingly been a target of economic analysis due to the fact that they require a significant (and increasing) amount of resources and for this reason there is the question of opportunity cost. By spending resources in higher education, societies and governments are reducing the available resources for other activities. This way, higher education systems are not strangers to the kind of questions that constitute the core of economic analysis, that is, the need to make choices regarding how limited and scarce resources should be allocated in view of multiple possible uses:

- What amount of resources should be spent on higher education?
- To which activities should it be distributed?
- How should the resources be distributed?
- Who should contribute to these resources? In which way?

These are some of the essential questions that the higher education funding mechanisms must answer. The way by which economic analysis answers these questions is based in some fundamental principles (Barr). First, the funding system must promote the efficiency level. This efficiency has two meanings: on one hand, a funding system must stimulate the agents to use the resources they have the best way possible, which is usually considered to correspond to the internal efficiency of the system; on the other hand, funding mechanisms should favour the external efficiency of the higher education system, thus ensuring that the system provides what is more desirable and necessary from social and individual viewpoints. This way, the funding system must possess mechanisms to stimulate the institutions to produce the kind of graduates that promote social and individual wellbeing, which corresponds to the needs of the labour market.

The funding system has to guide itself by equality principles, either in the relationship between state and institutions, or in the relationship between the state and the families. In a sense, the funding system must have as an objective to promote equal opportunities for all, so it is necessary to correct distortions and inequalities in the access and attendance to higher education. The funding system should be designed to ensure that specific groups are not hindered from attending higher education due to financial reasons, if they so desire and if they have the necessary qualifications for that. Finally, the funding system should promote the efficacy of the higher education systems.

Thus the funding system should be congruent with the objectives and priorities of the system, something that is usually easier to be said than to be done. In order for that to happen, it is necessary to align the funding system with other policies defined for the system, such as the political regulation model, the quality management instruments, the evaluation and accountability inside the system, and the models of government and administration of HEIs.

Any of these principles do not exist as simply symbolic values. Their relevance requires that they permeate the daily reality of the higher education system, either in the relationship between the regulatory authorities and the institutions, or in the institutions activities and their internal funding instruments. On the other hand, these principles are

instruments for a better system performance, therefore we should analyse their concretization in each specific context of the higher education system. That is why it is important to identify the main challenges faced by the higher education systems nowadays, in order to specify how the economic principles of efficiency, equity and efficacy can help them facing these challenges properly.

In spite of the controversy aroused, the increasing economic relevance of higher education has had consequences in the kind of policies adopted for this sector. Although it is clear that it regards an asset with some important specificities, the pressure in favour of the adoption of mechanisms that contribute to a greater economic rationality has influenced decisively the regulatory mechanisms of the sector. This influence has been particularly visible at the funding mechanisms level.

The increasing needs in terms of funds and the pressures for greater efficiency in the use of available resources have provoked important debates about higher education funding. The combination of greater financial needs and limited resources has resulted in the development of various alternative hypotheses for funding the higher education system. The changes in the funding mechanisms accompany the recent trends in higher education, namely the attempt to import market mechanisms to this sector. Coherently with the reinforcement of institutional autonomy, governments started to transfer the amounts to the institutions as block-grants, endowing the institutions with some liberty in the internal use of these resources. While they increased the financial autonomy of the institutions, the governments strengthened the account rendering mechanisms, being less worried with a detailed administrative control and more interested in the efficient use of the resources administered independently.

The adoption of these funding models has also been associated to the creation of the so-called funding formulas. In such cases, the governments decide which amount to transfer for each of the institutions based on a group of criteria usually defined for the whole system. Some of the main criteria utilized are the number of enrolled students, the kind of programs offered and the respective subject areas. While defining the criteria for fund allocation, the government has the possibility of deciding on the system's priorities. In such a case, if the priority is the system expansion, the formula will tend to favour the number of registered students. If the government intends to privilege a certain kind of courses or specific areas, this can be reflected into more favourable criteria for those courses or areas.

At the level of the defined criteria in the funding formulas it is possible to observe a recent tendency of governments to privilege output criteria in opposition to input criteria

(Jongbloed and Vossensteyn). Although in many cases there still is a situation in which funding is highly determined by student enrolments and by the kind of programs they are attending, it is recognizable the intent to adopt criteria that would reflect results and quality of the results, such as number of graduates and their success in entering the job market. This trend has also been reflected in the development of another funding model essentially based on outputs, the so-called “performance-based funding”. In this case, the governments negotiate with the institutions specific performance objectives and the funds are distributed on the basis of the efficacy of the institutions in attaining those objectives.

This way, we can verify that as far as funding is concerned, the attempts to stimulate a more efficient management and the better use of resources in higher education institutions are visible (Herbst). This behaviour originates from a context of competitiveness in which an institution can be rewarded or not, depending on its performance in relation to specific objectives. These mechanisms can be utilized sometimes as a way of concealing the introduction of reductions in the global funding (Orr et al.) which are distributed in a differentiated mode thus making more difficult for the HEIs to put up a collective reaction. This situation will tend to penalize the weaker institutions in the system. In such case, in opposition to the market, the penalty is not a forced exit from the system but a deterioration of its financial situation as well as of the quality of the institution. What these trends also reveal is a subtle change in the form of the relationship between governments and institutions.

By privileging individual contracts on the basis of performance criteria, the governments implicitly position themselves as an entity apart from the HEIs with which they contract higher education services. Once again it becomes notorious the way the relationship between the two parts is increasingly permeated by a mercantile logic, even if this is a market simulated by the governmental policies and not the result of a free competitiveness between autonomous enterprises.

This kind of policies has frequently been justified not only by the objective of promoting a more efficient and effective use of the resources, but also as a means of rendering the institutions more dedicated to improving the degree of satisfaction of their students. The most explicit way of expressing this kind of market relationship between the state and HEIs is contained in the vouchers model, being one of the most controversial issues in the education funding policies.² The idea of funding through the use of vouchers was intended to strengthen the students’ influence in the funding mode of the institutions

² A voucher system is a system in which public funds would be given directly to the students in the form of coupons. The students would choose the institutions where they wanted to register under the condition that it was properly accredited to perform educational activities.

while beneficiaries of the services provided. In the last few years there has been some debate over the possible introduction of these mechanisms of higher education funding in some European countries, as well as in Australia, New Zealand, and the USA (Kaiser et al.).

However, the introduction of this kind of system has provoked significant doubts. One of the main questions raised regards the complexity of the choices associated to the asset higher education and to some market flaws discussed above (Jongbloed 2006). It is considered that a high degree of regulation will be necessary in order to protect the interests of the system users, especially in what regards the amount of available information. Another important implication of such a system would be a significant reinforcement of the quality assessment of the institutions in the market. The complexity, the uncertainties regarding the associated risks, and the resistance of some important sectors have prevented this kind of systems to go beyond the academic discussion. However, recent trends in favour of the market suggest that the intensity of the debate will increase in the next years.

THE PROMOTION OF COMPETITION: PERFORMANCE-BASED FUNDING ACROSS EUROPEAN HIGHER EDUCATION

As we have seen, there is a growing public and political pressure upon governments to assure that public funding is well spent and to guarantee that HEIs are efficient and provide what is required of them. In this context, performance-based funding (PBF) emerges as an important funding option. Performance-based funding is a type of funding allocation that varies with the performance of the funded body. More precisely, performance-based funding should reward *actual* instead of *promised performance*, by using indicators that reflect the performance needs of the funding source and not the ones from the funded institution (Salmi and Hauptman). The main objective of a PBF scheme is to give incentives to the funded body to improve its performance, since its funding will depend on it. Following the words of Marcel Herbst, the main purpose of PBF systems “is that funds should flow to institutions where performance is manifest: “performing” institutions should receive more income than lesser performing institutions, which would provide performers with a competitive edge and would stimulate less performing institutions to perform” (90).

The use of PBF in higher education is mainly justified with the concept that public funds should be efficiently and effectively spent — efficiently in the sense that the HEIs are

expected to maximize their outputs given the amount of money allocated to them; and effectively in the sense that HEIs should be doing what is expected of them in terms of their objectives and position in a nation: to grant quality degrees and to perform basic and applied research. Moreover, PBF fits the market-type approaches that HEIs have been forced to follow, and ensures HEIs' quality and accountability in terms of the performance that these institutions are expected to have, taking into consideration the national objectives for its Higher Education System, either at teaching or research levels. BendedettoLepori et al. consider that the way governments choose to channel their funds is one of their most significant potential steering mechanisms.

Types of Performance Indicators

PBF is usually implemented in three different ways: i) through funding formulas, in which the funding sent by the government to the HEIs depends on a variety of (usually yearly output-based) indicators; ii) performance agreements, in which governments and HEIs sign specific contracts determining that a certain amount of funding will be given to the HEI if it manages to achieve a certain performance level or objective (Eurydice), and finally iii) assessment exercises, in which HEIs are evaluated and sometimes ranked by external teachers/researchers, with the funding to be received becoming conditioned by the score or relative rank obtained after this external evaluation.

For the funding to be attached to performance in any of these three cases, there is the need to have some sort of performance measure, in order that the funds are allotted according to the criteria established. There are many performance indicators, and those are very diverse, each one having their own pros and cons. The success and the effects of a PBF scheme depend crucially on the indicators used and their weight in the budget of universities. This complicates the analyses of PBF, as many schemes may be very different from each other, not only due to the characteristics of the national higher education systems, but also due to the mix of indicators being considered. We provide a brief characterization of the groups of indicators used in our subsequent analysis.

Input Indicators

a) Enrolments (1st, 2nd, and 3rd cycles)/PhD Candidates

This group of indicators refers to the number of enrolled students in a given year and HEIs. The funding attached to each of these enrolled students may vary according to the cycle

and the field of study the students are enrolled in. The number of PhD candidates may be also used similarly. This indicator is mainly associated with teaching, although the enrolled students in the third cycle and the number of PhD candidates can be also associated with research. It is considered an input indicator, since the students are seen as inputs for the production of graduates.

b) Research Projects/External (third-party) funding

This indicator refers to the number of research projects or the amount of external funding that the institution is able to gather in a given year. The indicator can also be considered when put in relation with the number of full-time equivalent research staff employed by each HEI. Some sources of external funding may not be considered in this indicator, in order from the governments to place a greater emphasis on the most priority sources. This indicator is usually associated with research and it is considered an input indicator since it is regarded as a production factor for research.

Output Indicators

a) Number of degrees awarded/Credits completed (1st, 2nd, and 3rd cycles)

This indicator refers to the number of degrees awarded/credits completed in a given year by a given HEI. The funding attached to each of these enrolled students may vary according to the cycle and to the field of studies. This indicator is mainly associated with teaching, though the number of graduates in the third cycle can be also associated with research. Whereas the number of enrolled students shows the capacity of HEIs to attract students to their degrees, with the reputation attained mainly on past performance playing an important role, leading their students to completion reflects its current performance regarding teaching.

b) Number of Publications

This indicator refers to the number of publications that HEIs have produced in a given year. This indicator may have a large number of variations. Variations are usually based on: i) the type of publications that are considered (e.g., books, reports, journals, local newspapers, conferences); ii) the scientific field; iii) the number of authors of each publication, and iv) the number of affiliations that each author may have. Different weighting systems may be used regarding funding in order to accommodate each of the aforementioned variations, leading to a diversity of funding schemes.

c) Number of Citations

This indicator is based on the total number of citations received by the HEIs publications in a given year. This indicator presents a considerable variability, depending on which publications are considered and the way citations are counted, given the number of alternatives available for the construction of this indicator. Namely, it is still debatable which database should be used (e.g. Google Scholar, Web of Science, Scopus) to account for citations, on the top of the debate of whether or not include self-citations (at the author, department or even university levels).

d) Peer Review

Peer review is a slightly different indicator than the ones presented above. Instead of relying on a quantitative approach, this indicator is based in the evaluation made by members in the same field, who are trusted to know and apply the quality criteria in the field. This indicator is more popular in research, where other researchers/scientists collect evidence about the work and the working conditions of the HEI/research units to be assessed, and then give a score according to their judgment of the quality of the research produced.

How widespread is Performance-Based Funding in Europe?

In this section we describe the current state of PBF systems in 24 European countries, namely, Austria, Belgium (French Community), Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Turkey, and United Kingdom. The data were collected under the framework of the DEFINE Project (Designing Strategies for Efficient Funding in Higher Education in Europe). A questionnaire was sent to the National Rectors' Conferences of these systems, where it was asked a description of the way the government funding was distributed between HEIs in those countries.³

Table 1 summarizes the main PBF instruments used across Europe. PBF seems to be already widely used in European HE. Excepting Latvia, Spain, and Turkey, all the other countries under analysis use at least one instrument of funding based on HEIs' performance. Croatia, Greece, and Hungary are still developing the first discussions in that

³ Further details on the DEFINE project can be found at the official website of the project: <http://www.eua.be/define>.

regard. Overall, output-based approaches seem to be the most common PBF type used in Europe over the more recent years.

Despite PBF seems to be already widespread across Europe, some countries can be identified as pioneers in the introduction of PBF in higher education. France and UK were among the former countries introducing these instruments, in the late eighties, followed by Poland, Slovakia, Netherlands, and Finland in the first half of the nineties. Denmark, Germany, and Portugal also introduced this type of instruments during the nineties.

TABLE 1. TYPE OF PBF USED, BY COUNTRY

	Formula Funding with Output Components	Performance Agreements	Assessment Exercises	None
Countries implementing each type of PBF	Austria,Belgium (FR), Czech Republic, Denmark, Estonia, Finland, Germany, Iceland, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Slovakia , Sweden, UK	Austria,Estoni a, Finland, France, Latvia, Netherlands	France, Italy, Poland, Portugal, Slovakia, Sweden, UK	Croatia (in progress), Greece (in progress), Hungary (in progress), Latvia, Spain, Turkey

Source: DEFINE Project; Eurydice; MODERN Project.

In summary, PBF was already common in the beginning of the century, but it became increasingly accepted, since most countries are either interested in raising the part of funding that is dependent on the performance or in starting such a system. However, PBF schemes in Europe are far from being homogenous. Different countries use different groups of performance indicators (Table 2), which in turn may also differ regarding their unintended effects.

One of the main differences between each country's PBF schemes is the relevance that performance-based funding has for the overall government's block grant. This may also have direct and different consequences on the way each PBF instrument affects the higher education system. Even though it is hard for the National Rectors Conference of each country to identify the relative amount of funding that was distributed from governments through PBF mechanisms (and, consequently, to establish cross-country comparisons), those differences are evident. In Poland, the whole research funding is distributed through performance indicators, and in Estonia it is claimed that 95% of the baseline funding is distributed in a similar way. In contrast, there are HE systems where the share of PBF is much lower, such as in Finland (10%), Italy (7%) or the Netherlands (5%).

TABLE 2. INDICATORS CURRENTLY USED IN HE'S FUNDING BY EUROPEAN COUNTRIES

Indicator	Countries
Number of 1 st and 2 nd cycle Graduates	Czech Republic, Estonia, Finland, Germany, Iceland, Portugal, UK
Number of PhD Graduates	Belgium (FR), Czech Republic, Denmark, Estonia, Finland, Germany, Iceland, Netherlands, Norway, Portugal, Slovakia, UK
Third-Party Funding	Estonia, Finland, Germany, Iceland, Lithuania, Netherlands, Norway, Poland, Slovakia, Sweden, UK
Number of Publications	Czech Republic, Denmark, Finland, Iceland, Lithuania, Norway, Poland, Slovakia
Quality of Publications (citations, types of publications)	Denmark, Estonia, Norway, Slovakia, Sweden
Peer-Review Assessment	Estonia, France, Italy, Poland, Portugal, Slovakia, Sweden, UK
Others	Austria (number of students who pass their exams), Italy (failure rate at the end of first year)

Sources: DEFINE Project; Auranen and Nieminen; Hicks; Rosa et al.; Eurydice.

Note: "Others" only include countries that do not use any of the indicators presented in the table, as it would not be feasible to include all other indicators used in all countries.

CONCLUDING REMARKS

The persistent strong demand for more higher education has created important financial challenges, especially due to the limitations that many governments face to expand (or even maintain) the public contribution to higher education. Hence, higher education systems in general experience a complex context from a financial point of view. Social and individual benefits associated with higher education have stimulated an unprecedented expansion of higher education that results in expanding the financial needs as well. Nevertheless, many countries experience a context of strong limitations in terms of public expenditures that may not change significantly in the next few years. Such limitations in public expenditures are particularly unfavourable to higher education due to the rising costs of other social expense areas (Barr).

Such divergent trajectory between needs and public resources has strengthened a great pressure on the higher education systems to utilize the available resources more efficiently. In this sense, the influence of economic principles on higher education has grown significantly and has shaped some of the most important changes that have occurred along the recent past. What is looked for is more efficiency in the way public funds are distributed and administered in the higher education systems. Greater efficiency regards the reduction of waste, but also the concern that HEIs should be alert to the economic and social needs, reflecting these worries in their strategic priorities. Therefore,

many governments have tried to stimulate more efficient performances of the institutions through changes in the funding mechanisms. These mechanisms tend to privilege appropriate management practices and demonstrations of good results in the use of the financial means.

Although under an economic viewpoint some important arguments still exist to justify these changes, the funding trends must be considered with caution. On one hand, the introduction of mechanisms that foster greater efficiency is desirable in order to attain more economic rationality of the system, and that can be done through the introduction of some market elements. On the other hand, it is important to stress that higher education is a sector with significant specificities. Particularly, it is necessary to minimize the risk of such changes creating tensions and instabilities among the HEIs and inside each one. It is equally relevant to avoid that the concerns with efficiency do not hinder the pursuit of academic values (Bok; Weisbrod et al.) and that the institutions favour short-term strategies as a way to overcome financial restrictions that may weaken their sustainable development.

It seems relatively evident that the future will be far more demanding, in particular on the politicians. The emphasis on market mechanisms does not mean depriving the state of its role of systems regulator but rather its re-definition. The increasing weight of market mechanisms creates new challenges in the level of information asymmetry, evaluation mechanisms and systems equity. These are some of the most important examples of the responsibility of the state in regulating the system in order to promote the desirable balance between public and private interests. The approaching future looks complex. However, the social and economic importance of higher education justifies an extensive public debate to search for the best solutions for the challenges of funding higher education.

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