

Does competitive research funding encourage diversity in higher education?

Hugo Horta, Jeroen Huisman and Manuel Heitor

Based on the evolution of higher education systems in the last 50 years, this paper discusses the use of research funding mechanisms as privileged instruments to maintain and foster diversity in higher education systems. We suggest that competitive research funding supported by non-standardised evaluative processes may enable differentiation among institutions according to their resources and capabilities to develop research, while also recognising the limit to the use of such policy instruments.

Many publications have addressed the impacts of funding regimes in higher education on institutional, departmental and individual behaviour, addressing both expected and uninvited impacts (Phillimore, 1989; Layzell, 1998; Alexander, 2000). The issue of institutional diversity has also been extensively addressed in the higher education literature (Meek *et al.*, 1996). Surprisingly, the possible links between funding higher education and research (and development) and institutional diversity have hardly been investigated. This article tries to fill this gap by arguing that funding regimes may contribute to preserving or increasing levels of institutional diversity within national higher education systems. However, some of the downsides to such an approach will also be discussed. The overall argument is that, despite some negative side-effects, competitive research funding is one of the few sustainable policy options to preserve or increase diversity.

We elaborate on this argument as follows. In the first three sections, we provide a brief historical background to the development of higher education systems in Europe since the second half of the 20th century. The perceived benefits of diversity and the models used to foster diversity as well as some of its main challenges are described. We then suggest that public funding allocated to research and development activities can be a privileged public instrument to foster institutional diversity, as long as it is provided within a competitive framework assigned to non-standardised evaluation procedures. Possible caveats to this policy instrument are considered, and conclusions are then drawn.

Historical background

The external environment of universities has become increasingly complex since the end of the Second World War, forcing them to become more flexible and adaptable to the demands of the knowledge society. Keller (1998) has indicated four main changes in this environment: 1) the increasing relevance and impact of information technologies which have enabled long-distance learning and virtual teaching; 2) the increased technological and scientific advancement that makes life-long education and renewal of skills and learning even more necessary; 3) public budget constraints and constantly reduced public funding for the universities; and 4) the transformation of European higher education from elite educational systems to mass educational systems. These

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environmental developments implied a process of diversification that ranged from programmatic and disciplinary diversification to institutional diversification. New disciplines and fields of study were added to the existing ones, new functions were allocated to universities and new types of higher education institutions were established.

National governments have acknowledged diversification as a positive and necessary feature of mass higher education systems (Trow, 1979), based on the general assumption that a diversified system would be better able to cater for the varying needs of the many constituencies and users of higher education (Conceição and Heitor, 1999). The state's need to comply with the population's demand for tertiary education was complemented by pressing economic and knowledge requirements to raise the qualification levels of the population (Lucas, 1988) and to invest in research and development activities (Nelson and Romer, 1996). In this context, Conceição and Heitor (2005) argued that a differentiated higher education system is necessary to prepare a country's socio-economic structure to perform well in competitive knowledge-dependent global markets. Simultaneously, it is understood that a broad (diversified) science structure is the best policy to deal with unforeseen demands of an uncertain knowledge development (BIE, 1996).

Whereas the latter references particularly apply to the research and development (R&D) function, similar arguments can be found for the educational function of higher education systems and institutions (e.g. Birnbaum, 1983; Stadtman, 1980). The latter posits that: diversity provides an increased availability of educational choice for learners, thus promoting a wider access to higher education to everyone; enables institutions to match educational needs, learning styles, curricula, goals, learning ability and speed of learners; permits institutions to decide upon their focused institutional missions and activities (underlying here the linkage with the institution's location, resources and type of desired or available students); and guarantees the legitimacy of institutions by making them more responsive to a fast changing technologically based society which is becoming ever more complex and diverse.

The need to comply with societal demands and the realisation of the benefits from diversifying higher education led to a very dynamic evolution of higher education systems (Neave, 1996). This evolution simultaneously affects and redefines the goals, governance, policy decisions, and structure but they can be isolated into periods of on-going rationalisation of higher education systems (Scott, 1995). Based on previous analyses, Vaira (2006) has identified four key stages to the changes:

- 1945–1965: A period of expansion spurred by social demand for higher education. Expansion of the university system took place through an increase in the number of university institutions, academic staff, curricula and study courses.
- 1965–1985: University expansion met its financial and structural limits. Thus the system was unable to respond efficiently and effectively while the running costs were increasing at a rapid pace. The solution was to foster structural diversification of higher education systems, either by creating dual system institutions or through a binary model (that most European countries adopted). European countries were experiencing a period of economic prosperity and rapid technological innovation, which demanded a more skilled labour force and new professional profiles which required people with higher levels of education. In this context, it is not surprising that most attempts

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in that period to create, maintain or increase diversity in higher education were steered by national governments (Teichler, 1988), particularly by upgrading (and merging) educational institutions which had previously focused on vocational training. In this way, new sectors could be established at relatively low costs and a time-lag between setting up institutions and students actually entering the labour market could be avoided (Goedegebuure, 1992).

- 1985–2000: This was the period of institutionalisation and consolidation of most of the systems. This process occurred simultaneously with the crisis in the welfare system and the resurgence of neo-liberal and market-oriented policies. States reduced their controlling grip on higher education institutions as public funding for higher education decreased leading to greater institutional autonomy. Also, steering at a distance led to the implementation of evaluations that created further competition in the system and to which universities responded by diversifying their organisational arrangements and formative supply. During this period the concept of the entrepreneurial university became very fashionable as universities tried to become more research intensive as well as close to industry.
- 2000 onwards: The Bologna and Lisbon processes are creating new dynamics in the systems as new organizational and systemic requirements are demanded. There seems to be a blurring at organizational level between universities and non-universities. This may also be the effect of institutional and competitive forces that are pushing towards a unified system (see also Kyvik, 2004).

During these transformations, constituencies other than the state have also become important. These include higher education institutions themselves (having been granted more institutional autonomy in recent decades, see Neave and Van Vught (1991), supranational agencies such as the European Commission (EC, 2003), and buffer organisations at the national and supranational levels (European Association of Universities). However, the ‘market’ has also pervaded higher education systems (Teixeira *et al.*, 2004). The following section explores in more detail the theoretical and conceptual underpinnings of the state and the market as drivers of diversity.

Higher education diversity: the role of states and markets

Higher education institutions, like any other organisations are not self-sufficient as they require resources as well as social and political acceptance from their environment in order to survive (Pfeffer and Salancik, 1978; Meyer and Rowan, 1977). Their choices are constrained by external pressures (DiMaggio and Powell, 1983). At the same time

they are driven by self-interest (Oliver, 1991; Pfeffer and Salancik, 1978). Competition for tangible (funding) and intangible (status, social recognition) resources form the background to the constant interactions between themselves and their environments. In these environments, universities are confronted with various, often incompatible demands from external actors (Pfeffer, 1982) such as, states, R&D funding agencies, certification agencies, firms etc.

From this perspective, the strategies of higher education institutions are constrained by various external pressures since their survival is dependent upon their responsiveness to external demands and expectations. A trend towards a greater or lesser diversity of higher education systems thus seems to be the result of the differentiated sets of relationships that higher education institutions have with their environments. These relationships refer to higher education institutions’ attempts to influence the environments (ministries, the scientific community) that establish sets of formal (e.g. education laws) and informal (e.g. academic norms and values) rules that frame their actions. These attempts to influence the environment to ensure survival ultimately led to conformity to the institutional environment through adherence (or the use of rituals simulating adherence) to external rules and norms (DiMaggio and Powell, 1983; Meyer and Rowan, 1977) or to the more technical demands (resource dependency) of the environment (Pfeffer and Salancik, 1978).

Although the actions of the higher education institutions themselves are important, understanding the environment (science and technology regulations, educational laws, incentives framework and funding allocation by governments) becomes essential to come to terms with the levels of diversity. Diversity needs to be understood within the unique structure of higher education systems (Meek *et al.*, 2000) including the regulatory set-up that frames the institutions and systems. Two main regulatory models have dominated higher education systems during the second half of the 20th century: the state control model and the market-based model (e.g. Neave and Van Vught, 1991). In the state control model the government regulates through direct control, using a scrupulous and detailed strategic planning which confers a residual autonomy on higher education institutions (Clark, 1983). The state model is prevalent in continental Europe, birthplace of the university as a social institution (Rüegg, 1992). Its origins draw extensively from the French revolution and the Napoleonic organisation of tertiary education where universities were considered repositories of national identity and culture. Since they mainly supplied graduates to the state, governments intervened in teaching programmes and defined what knowledge was useful and what was not (Neave, 1997). In this model, governments dominate, through regulation, the process of diversification or homogenisation in higher education systems (Neave, 1996).

On the other hand, in market-based systems, greater levels of autonomy are enjoyed by higher education institutions and the lack of a federal-level ministry or department active in higher education enables these institutions to compete for students and funding (Clark, 1983; Geiger and Bubolz, 2000). In the market model the exchange of goods and services is based on price and not on other considerations such as academic tradition or political choice (Dill, 1997). The market model gained weight worldwide with mounting requirements for greater effectiveness and accountability in a context of constrained public budgets as well as with the successful rise of the research university as a crucial performer of research in the USA science and technology system (Graham and Diamond, 1997).

Both state and market regulations have had their failures and both can be ineffective (Wolf, 1993). The failures related to state regulation are linked to the fact that governments are not entirely able to define and implement public policies due to the inherent inefficiencies of representative democracy and public agencies in the production and distribution of goods and services (Leslie and Johnson, 1974). This model was often too inert to respond to the stakeholders' needs in the wake of mass education. Moreover, a strict state-guided legal framework can exert coercive forces over higher education institutions (DiMaggio and Powell, 1983) leading to structural and institutional isomorphism.

Market failures derive from the characteristics of the market, buyers and sellers. The market model organises the exchange of goods based on price, while externalities (social benefits) tend to be ignored provoking distributions of goods and services that, though globally more efficient, are not always socially and ethically acceptable (Correia *et al.*, 2000). The lack of information on the part of the users concerning the quality of the product (Dill, 1997), and other market failures permit the development of monopolies which produce inefficient results and pave the way for state control (Van Vught, 1997). This process becomes obvious when the universities, competing in an environment dominated by markets, tend to emulate the research university model rather than implementing differentiation and functional diversity at the institutional level in order to look for an educational or research niche (Meek, 2000).

This leads to the conclusion that there is no clear-cut recipe to foster diversity using either an overemphasis on the market or on government controls. Nowadays, governments ever more aware of the limitations of these two regulatory frameworks, are increasingly adopting a strategy of state supervision which tries to combine the positive features of both types. This hybrid regulation is characterised by a greater degree of institutional autonomy of higher education institutions and 'soft' governmental steering (see Amaral and Magalhães, 2001). The state, however, continues to hold the system under its grip

by continuing to be a (if not the) major source of funding for higher education institutions. It defines to a large extent the guidance of higher education systems, while the market is used to promote competitiveness and to implement more effective and cheaper policies (Correia *et al.*, 2000).

Higher education systems: evolution and current challenges to diversity

It should be noted that neither a state control model, market oriented model, nor a state supervision model, have managed to block mechanisms favouring isomorphic trends in higher education. Not even the implementation of new tertiary education sectors – in different European countries at different paces and in different forms (Neave, 2000) – as a response to mass higher education have prevented the practices of academic and vocational drift from becoming prevalent.

Academic drift (Riesman, 1956; Meek *et al.*, 1996) has long been recognised as a main challenge to the consolidation of diversity in higher education. Academic drift is a consequence of increased shared values or attempts by non-university sector institutions to increase their structural and programmatic similarities to universities. Within this discussion the value of positional goods is central. These goods representing 'social commodities' consist of symbolic perceptions of prestige or reputation by the participants in the higher education systems. The character of these goods transforms academic quality, mainly in teaching, into a profoundly subjective feature (Marginson, 1998). Positional goods are scarce in an absolute sense. Therefore newer institutions do not have sufficient positional goods to contest the position of elite institutions that tend to monopolise these goods. Therefore, increasing competition based on a subjective premise (positional goods) reinforces the contested institutions' position and prompts the contesting institutions to imitate universities (Marginson, 1998). The recent emphasis on rankings further stresses the importance of positional goods. Studies show, however, not unambiguously, that students' university choices tend to be highly influenced by these rankings (Griffith and Rask, 2007). It has been argued elsewhere that the

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effect of these rankings has been increasingly changing the strategic behaviours of the universities (Geuna and Martin, 2003; Hazelkorn, 2007).

Despite their uneven position, the contestants still attempt to emulate in order to try to obtain some positional goods for themselves. Some of these attempts are allowed or at least tolerated by the state in the form of ambiguous or generalist sets of rules (Huisman, 2005). So far, in Europe, the British case is the most remarkable situation where the experiment of a binary structure was deemed to not be successful and so it reverted to a unified structure system (Fulton, 1996). This event, seen as an example of the powerful effect of academic drift processes was considered to be a major blow to the 'binary idea' leading to an array of predictions pointing to a generalised crumbling of this system internationally (Meek *et al.*, 1996).

Not only does academic drift abound. Many universities and university sectors have taken on broad fields of study that are more vocationally/professionally oriented than purely academic. Although these can be considered to be of lower positional value, vocationalism should be interpreted as both an expansive (conquering new grounds) and a defensive strategy (broadening the institution's portfolio through internal differentiation). Kyvik (2004) has argued that this convergence has been brought about by forces on both sides of the university/non-university divide. Vocational institutions are increasingly offering courses whose content is academic and theoretical at its core, while they (at the same time) lobby to engage in research activities and confer doctoral degrees. In order to attract further students, universities start to provide ever more professional and vocational courses, bringing mature, part-time, and working students to their campuses (see also Codling and Meek, 2006). The coexistence of the two types of drift blurs the formal boundaries between the universities and non-university institutions and erodes the foundations of the binary system.

As a consequence, differences between the types of higher education institutions have gradually declined, although the patterns differ considerably from system to system. One may add to this that the Bologna process has – in certain countries (like the Netherlands, Germany and Flanders) – accelerated these drift processes by diminishing the differences in type, nomenclature and length of degrees (but see Witte (2006) for a sophisticated analysis). Drift processes are also visible in the research context, although one has to be careful in determining this solely as a case of drift. It could be argued that the gradually disappearing traditional differences between basic and applied research and the fact that non-university institutions across Europe contribute to the refinement and dispersion of knowledge in their own particular way should be largely interpreted as a semi-autonomous process (Gibbons *et al.*, 1994). Whatever its drivers, it seems clear that the decrease in diversity is looming large.

Public funding mechanisms: a key to diversification?

The behaviours (towards academic drift and vocationalism) of higher education institutions described in the previous section reflect a changing relationship between these organisations and one of the main social actors in their environment: the state. In the last decades most governments have been concerned to balance public expenditure. The result has been the growth of funding mechanisms associated with market mechanisms (Layzell, 1998). Higher education institutions have been encouraged to increase revenues obtained by the delivery of services to society, based on R&D and teaching, and, in some countries, tuition fees. The governments' main objective has been to increase the efficiency and effectiveness of these institutions, within a regulated context which is clearly related to the state supervision model, where the state fosters competition between the institutions in a higher education market (Amaral and Magalhães, 2001).

In this process, higher education institutions have been guaranteed a growing autonomy as they are gradually being made more accountable for the quality and impact of their activities, and are diversifying their sources of income. The state increasingly plays the role of an exterior entity that acts as user or buyer of research and teaching services, particularly when public funding is provided to universities on a competitive basis (Braun, 2003). Effectively, the common factor associated with the diversification of income sources has been its underlying competitive principle. In other words, the key to diversification is a mix of triggers which challenge higher education institutions to develop and fulfil their specific missions.

Such triggers need to be strong, in the sense that 'soft' mechanisms can easily be neglected or avoided (Oliver, 1991) and will therefore not be effective. Hence, a search for a solution hints at the potential of the power of the purse as a policy instrument to achieve the aims. The mix should be cleverly sought in using both the state (deciding on the funding and allocation mechanisms) and the market (competition for funds). However, a key aspect that needs to be accounted for when discussing public funding towards higher education institutions is its aims and characterisation. Figure 1 represents, in a broad-spectrum format, two streams of public funding for higher education institutions: funding directed to education and funding directed to R&D.

As Figure 1 indicates, public funding for higher education institutions is mostly oriented to supporting organisational expenses (see also Lepori 2006 for an overview of the evolution of public research funding instruments). Although varying among countries, the major share of this funding is usually attributed directly to higher education institutions and calculated through a formula based on the number of students and/or on a historical basis (Jongbloed and Vossensteyn, 2001). This funding is

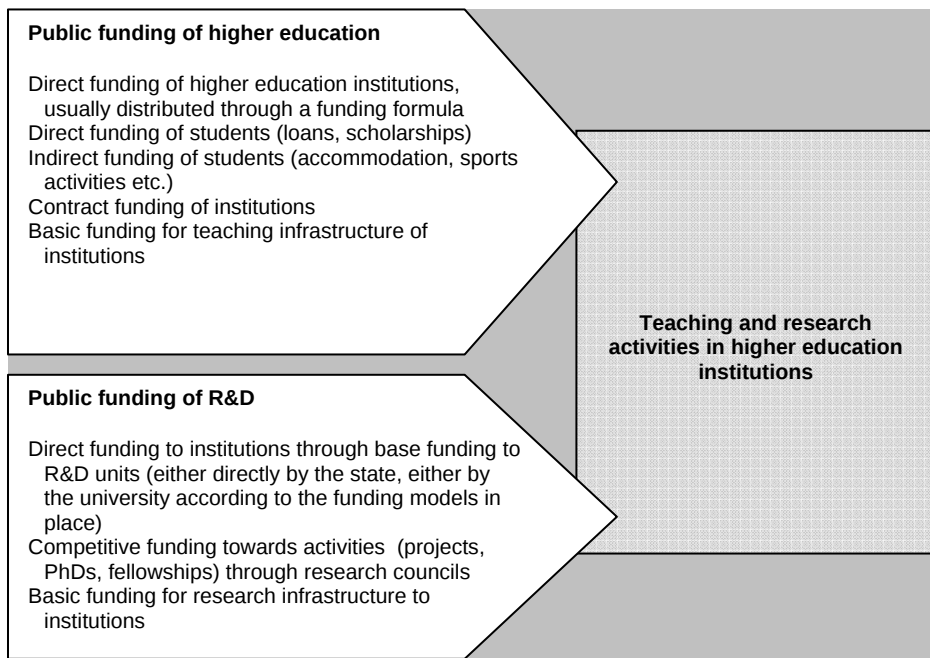


Figure 1. Public funding of higher education and R&D (undertaken in higher education institutions)

critical for supporting the salaries for faculty and administrative staff as well as the support services such as libraries, student administration, human resource departments etc. This core funding tends to represent the larger share of overall funding to higher education institutions as Table 1 demonstrates for selected OECD countries. Nevertheless, funds are allocated mainly on a non-competitive basis, despite the fact that to some extent the higher education institutions compete for students, since the public funding supports existing structures instead of valorising developing research and teaching activities (Conceição *et al.*, 1998). Competition for students is a reality, but much less severe than is often portrayed, as students continue to be ‘immature consumers’ (Dill, 1997) as they lack sufficient information to make effective choices of courses and

institutions (Romer, 2000). It should be noted that in some countries there is a degree of competition between universities based on the levels of tuition fees, but this is still a rare phenomenon and it is not always an effective means of competition. For example, in Portugal, although universities compete for students the gap between the maximum and minimum limits for tuition fees established by state legislation is too narrow to foster competition based on the quality of the educational services provided. We argue therefore that competition for R&D funding will be more effective in terms of its impacts on diversity. The fact that 75% of the Portuguese science and technology system, with a higher education system close to the state control model, has a competitive base was recognised as one of the few elements promoting diversity in that system (QCA, 2005).

Table 1. Expenditure on tertiary education institutions as a percentage of GDP, 2002

OECD countries	Educational core services	Ancillary services (transport, meals, housing provided by institutions)	R&D	Total
Australia	1.05	0.09	0.47	1.61
Belgium	0.91	0.04	0.42	1.37
Czech Republic	0.65	0.10	0.19	0.94
Finland	1.09	(a)	0.66	1.76
France	0.79	0.07	0.23	1.10
Germany	0.65	(a)	0.43	1.08
Netherlands	0.77	(a)	0.50	1.27
Portugal	0.69	(b)	0.33	1.02
UK	0.87	(b)	0.28	1.15
USA	2.33	(c)	0.29	2.62

Note: (a) Magnitude is either negligible or zero; (b) Data not available; (c) Data included in the educational core services

Source: OECD, (2005), Education at a Glance – 2005, Paris, OECD

Public funding for R&D is more competitive. The importance of R&D to innovation and technological development led to the improvement of public funding mechanisms for science and technology (OECD, 1991) along with its increasing relevance as a prime qualifier of human resources and promoter of social well-being and economic growth (Conceição *et al.*, 2004). In this context, the OECD (2003) recommended that funding mechanisms should be divided into two distinct, but complementary categories:

- Institutional (or core) funding: This refers to funds directly distributed by the state or distributed by a university to its R&D groups and units
- Competitive funding: This refers to fellowships, projects, prizes and other awards that are given on a competitive basis to individual researchers and R&D groups or units

These mechanisms are intended to create the necessary conditions for sustainable scientific effort by higher education institutions even in the face of changes that are exterior to the development of science itself (Smith, 2005). The premises underlying competitive public funding for R&D activities are scientific merit and the capability of a determined R&D group to undertake a research project. In this context, the funding of R&D to higher education institutions can be considered as one of the mechanisms used to enforce greater levels of competition and can function as a major promoter of diversity in the sense that diversity is a product of competitiveness (Geiger, 1986).

The role of competitiveness in research funding is a well known and basic characteristic of countries with well developed science and technology systems (Garcia and San-Menendez, 2005). Figure 2 shows

the distribution of competitive R&D funds for a sample of institutions from the USA and the UK. It indicates a high concentration of funds in a limited number of universities thus revealing a highly stratified distribution of R&D funds. This stratification, based on a competitive framework, suggests that some higher education institutions are clearly more competitive than others. In this sense, it is important to analyse the public and private funding sources separately.

Figure 3 shows the allocation of funding provided by both federal and industry sources to a sample of higher education institutions in the USA. Both funding sources concentrate R&D funds in a few institutions. Since the analysis of public R&D funding of the USA higher education system has been done elsewhere (Conceição *et al.*, 2007) we will focus on the industry funding of higher education institutions. The findings of Figure 3 match Baldwin's (1996) conclusions for the UK where leading research-intensive universities are the major recipients of industrial support.

Although it is widely known that the collaborative relation between industry and universities differs significantly by industry sector (Cohen *et al.*, 2002), it is also known that multinational enterprises are responsible for funding the largest share of industry-related higher education performed research (DTI, 2004). Moreover, it is well known that when multinationals outsource their research, they place it in world-class universities (OECD, 2002). They do this because they are looking for the best laboratories, scientists and students thus making use of several organisational forms (Rosenberg and Nelson, 1994) to structure industry–university R&D by combining elements such as the creation of spin-offs or licensing of patents with other elements such as

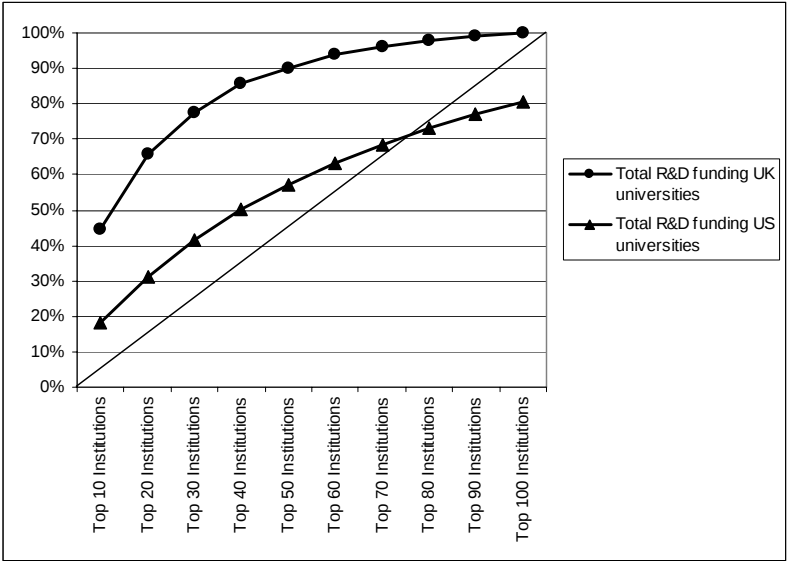


Figure 2. Distribution of competitive R&D funds for the 100 universities with the highest R&D income in 2001 (USA and UK)
Source: NSF, academic research and development expenditures, Webcaspar database; HESA, Resources of higher education institutions

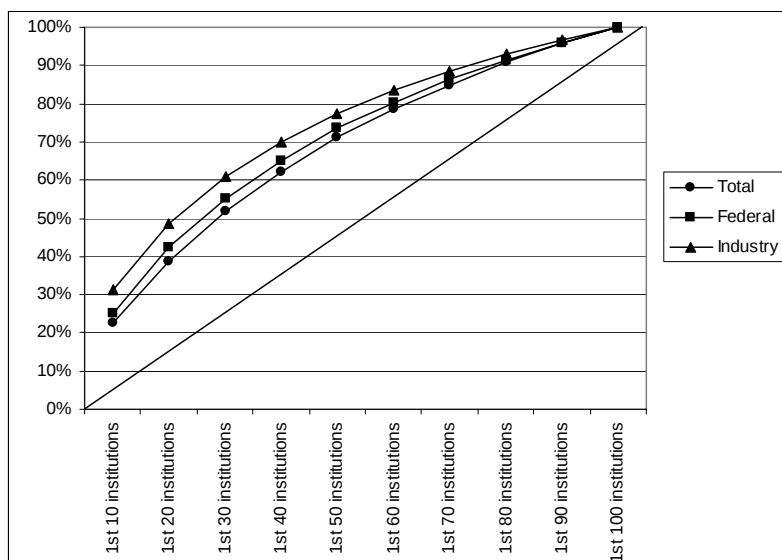


Figure 3. Total R&D contract and grant funding distributed to the first 100 USA universities receiving high-incomes in 2001, by source

Source: NSF, Academic Research and Development Expenditures

consultancy or industry funded research on a proprietary basis (see Mowery and Rosenberg, 1989). Factors such as reputation count in research as well as in teaching, but they seem to be less associated with social recognition and more related to scientific quality itself since universities obtain research funding on a recognized research capability and competitive basis.

This presumes that the use of research goes far beyond issues such as academic drift. While using higher education products, industry tends to maximise information and therefore tends to eliminate some problems associated with higher education market models, which prevail in the choice of courses made by students that are often made without sufficient information (Dill, 1997). However, one has to be careful when looking at this use of research from a science policy perspective. As Conceição *et al.* (2004) have argued, the best way to promote sustainable research results should be to promote a mix of incentives balancing ‘pull’ (e.g. grants) and ‘push’ (e.g. prizes) incentives. This argument reinforces Geuna’s (1999) findings that when universities are pushed into routine industry contract research, due to severe financial shortages, limitations of knowledge scope, decreasing publication and spill-over outputs, the establishment of the necessary bases for further scientific and technological innovation is impeded. Both Conceição *et al.* (2004) and Geuna (1999) stress the need to balance competitive funding with non-competitive long-term societal objectives.

Nonetheless, the research competitiveness (and performance) issue leads to the consideration that certain higher education institutions have resources that others lack. The fact that major research universities such as the Massachusetts Institute of Technology (MIT) or Stanford obtain a large amount of competitive R&D funding as a percentage of their

budget can be related to the structure and resources at those universities: more than 50% of the student population are postgraduates. These students represent essential resources for the development of R&D activities, especially if a significant proportion of them are Ph.D. students.

However, postgraduate students are just part of the many resources that these universities have which give them a competitive edge over other universities with fewer resources, and thus enable them to continue to obtain larger quantities of research funding. As Lombardi *et al.* (2001) have stated, research universities are quality engines in the sense that they search for excellence and therefore constantly reinforce their resources and expertise in order to avoid losing their competitive edge. The long and continuous commitment to research has enabled these universities to construct: a comprehensive infrastructure, a specifically research-oriented organisational culture (Long and McGinnis,

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1981), international scientific networks (Bozeman and Corley, 2004) and to develop sets of incentives that optimised the research function given them a considerable advantage over other universities when performing research and obtaining research funds. On average, the amount of R&D competitive funding that the faculty of MIT or Stanford obtain is several times larger than the average amount of competitive R&D funding that faculty at other universities have available (UTL, 2005). Therefore, the faculty and research groups of major universities have sufficient resources to potentially develop better and faster results than others.

The verified inequalities between newly obtained and existing research funds on a competitive basis among universities apparently act as an enabler of diversity in the USA higher system at least from the perspective of the research function. This situation is similar to that in other OECD countries. Figure 4 demonstrates that there has been a growing inequality in the competitive research funds obtained in the UK since 1994/1995 despite the fact that polytechnics were designated as universities in 1992. The academic culture, infrastructure, human and financial resources and expertise potential of the oldest group of universities makes the difference (see also Skoie's 2000 analysis).

But the implementation of competitive funding of any sort is intrinsically linked to evaluation processes (HLG, 2004). In this sense, the evaluation assessment in itself can be viewed as a central policy instrument in the use of competitive R&D funding to foster diversity in higher education. It should be noted that despite the fact that evaluation assessments are a powerful tool for decision-making, they require sophisticated management and application (Kusek *et al.*, 2004). If the evaluation assessment is carried out by means of a standard approach, focused on a particular type of research only (i.e. favouring basic research undertaken at

universities) or using only simple sets of quantitative indicators (Phillimore, 1989) it can act as an isomorphic driver in higher education systems. It was the use of a standard evaluative framework for research that held back the development of alternative research models and institutions in the UK (Shattock, 1996), hampering (even) larger levels of diversity in the higher education system. A second possible downside to the use of evaluation as a driver of diversity in higher education is related to the institutionalisation of performance measures. As higher education institutions perceive standard evaluative norms and patterns they adapt themselves to what is demanded from them by the evaluating committees and thus become increasingly similar (Correia *et al.*, 2000).

The use of flexible rather than standardised science evaluation procedures in accordance with determined higher education institutional objectives may be more appropriate to reinforce each institution's mission and as a means of tackling academic drift patterns. In this sense, a trend towards a greater flexibility of organisational and funding structures has been already observed in many OECD countries (OECD, 2002).

Caveats

We have argued, based on an analysis of the factors that drive and inhibit diversity, that a key solution to the diversity issue may lie in a clever mix of state and market steering through competitive funding. We maintain that the theoretical underpinning is sound, but admit that the empirical basis of the argument is not yet fully fledged. Additionally, the suggested solution to maintain or increase diversity is not without its problems.

The focus on push and pull factors in research funding may lead to a neglect of the teaching

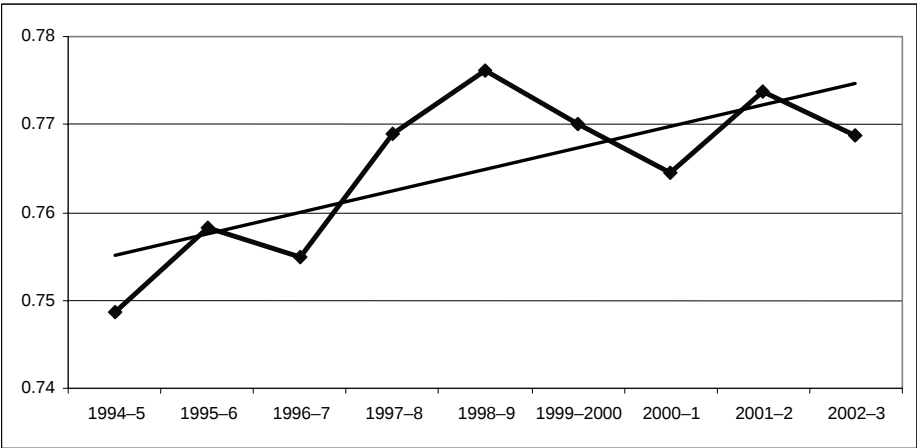


Figure 4. Evolution of research grants and contracts funding to English universities from 1994/5 to 2002/3

Note: Gini-coefficient is an inequality measure. It ranges between 0 and 1, where 0 corresponds to perfect equality and 1 corresponds to perfect inequality (for a more detailed definition and discussion, see Sen (1997))

Source: HESA, Resources of higher education institutions (1996–2004)

function. This argument can be partly countered by stressing that, if the competitive research funding mechanism works adequately, some higher education institutions will be 'forced' to stop their attempts to create a sufficiently sound research base and will therefore (have to) focus on teaching. While admitting that this may be an enforced (instead of a wished for) development from the short-term perspective of management and staff of a particular institution, in the longer run it will be more effective and efficient than maintaining a system with many higher education institutions in continuous limbo between trying to deliver high quality research and high quality teaching. What about the necessary link between teaching and research, one might argue? Here we would like to refer to Hughes' (2005) work that nicely debunks a number of myths around research-teaching relationships in higher education. In particular he found that there is no empirically established, mutually beneficial relationship between research and teaching. Neither a generalisable nor a static relationship between the two is worth mentioning. In addition, the competitive research funding model does not imply that institutions must be research-intensive or teaching-only across the board. If the management of higher education institutions think that research-intensive and teaching-only departments can co-exist peacefully, they must certainly not be discouraged. It would add to the existing diversity of higher education institutions. Finally, even if research funding becomes more important in countries like the UK, Europe still has considerable diversity in its educational institutions (Huisman, 1997; Huisman *et al.*, 2007).

Another criticism could be that the envisaged model too easily makes use of the availability of data on research performance. The assessment of knowledge production results should not be based solely on quantitative methodologies. However, quantitative evaluative methods may complement peer-review practices (Magalhães, 2000) overcoming the recognised criticisms and pointing out the faults of 'pure' peer-review assessments (Relman, 1990). Whereas research evaluation is a well-consolidated assessment, it is still difficult to measure and evaluate teaching performance (Dixit, 1998). Although certain authors defend the robustness of teaching evaluation processes such as student ratings (Marsh and Dunkin, 1997), faculty and higher education administrators have expressed doubts about their meaningfulness and suitability (Gilliot, 2001). The same problem arises when evaluating faculty work as a whole (Colbeck, 2002) or higher education institutions as a whole where institutional evaluation assessments are often revealed to be a paradox as they either rely too much on subjective features or on an excess of quantitative features (Schloegl *et al.*, 2003). In other words, the robustness of performance indicators for research, if complemented by more qualitative procedures, provides a sound basis for making judgements.

Institutional evaluation assessments are often revealed to be a paradox as they either rely too much on subjective features or on an excess of quantitative features

A third objection may be that higher education will be governed by the Matthew principle: to those that have will be given (even more). And those that already have, particularly the 'old' universities, are reaping the benefits of history. It is barely possible for newcomers to fight their way into the existing pecking order. This is true to a considerable extent, although there are examples of institutions in the USA and the UK who have been able to climb the institutional ranks (or what are generally perceived as ranks) and stand the competition with historically advantaged institutions. The main counterargument is, however, that however unfair it may seem, in the longer run this is a healthier situation from the system's perspective. That is, a rather stable, effective and efficient system suffering from unequal opportunities for development may be preferred to a more 'democratic' system suffering from inefficiencies.

A fourth comment could be that the competitive funding model will have a number of unintended consequences. Meek and Wood (1998) have illustrated this for Australia, where the objective of diversifying the system was complicated by (at that moment in time) the unforeseen behaviour of the higher education institutions, leading to homogeneity in the system (Huisman *et al.*, 2007). This may be the case once governments implement the competitive funding model. However, to some extent all models will suffer from unintended consequences. It should be remembered that our consideration of the competitive funding model was influenced by the occurrence of unintended and unwanted consequences (academic and vocational drift). The essence of government strategy development and policy-making is to try to anticipate unintended consequences and, if they appear, to counter them by changing the strategy or policy.

Conclusions

Higher education systems have evolved dramatically in the 20th century becoming increasingly complex as they adapted to deal with mass education. In this context, higher education diversity became critical to respond to the various needs and several policies were enforced to consolidate it. Two different regulation rationales were implemented based on the

state control model and the market model. The benefits and problems inherent in each regulation have now been identified and the states are aligning their higher education policies towards a model of state supervision that combines elements of both regulatory frameworks. Based on the evolution of higher education systems in the last century, this paper has discussed the use of research funding related mechanisms as a major policy instrument to diversify higher education. Evidence provided in this paper reveals that these mechanisms are already used as instruments to diversify higher education systems because of two factors: 1) R&D funding in higher education is mostly granted on a competitive basis, and 2) research is supported by a powerful and well-known evaluative process that, unlike evaluative processes surrounding teaching, is well consolidated and supports funding R&D higher education performers under a competitive framework.

Our analysis leads us to propose that institutional diversity in higher education can be achieved by funding mechanisms for academic research. We argue that funding for education is mostly non-competitive because it mainly supports existing infrastructures and activities. Even when competition exists in the education market, promoting diversity is relatively ineffective. This occurs because of a lack of relevant information for students and also because of the powerful impact of positional goods which model students' choices. It is argued that public funding for academic research can be much more effective in increasing or maintaining institutional diversity in higher education. There are several benefits to the use of such competitive funding to promote institutional diversity in higher education rather than direct funding. One of them is the partly, but strong, competitive nature associated with a well-consolidated evaluation framework. But this competitive framework has to be very well-established in terms of the evaluation process, since it needs to take into account the missions of higher education institutions in order to allow differentiation (otherwise, it would simply backfire and create further homogenization). The other benefit is that the allocation of such funding it is not so strongly impacted by positional goods as it is with respect to education (particularly at undergraduate level).

The competitive character of funding seems to be able to differentiate between institutions according to their capabilities to develop research. These capabilities include: available human resources, infrastructure, incentive systems and institutional culture. This differentiation is supported by empirical data on the USA and UK higher education systems, where R&D funding is concentrated in relatively few universities. A comparative analysis between USA and European universities in terms of resources also provides similar findings. Only a few universities have the resources, organisational structure, incentive system, and research culture to attract large amounts of R&D funding. The analysis of industry

allocation of R&D funds seems to indicate the same trend supporting the argument that organizational capabilities are important attractors of R&D funding on a competitive basis. However, the analysis of Meek and Wood (1998) and Meek (2000) concerning the behaviour of Australian higher education institutions suggests that lower levels of resourcing and a lack of research-oriented organizational structures may not be enough to prevent universities from emulating research universities in a competitive environment.

Shattock's (1996) analysis of the UK evaluation assessments highlighted the importance of the nature of the research evaluation assessments. R&D evaluation assessments are more developed and more acceptable than teaching or institutional assessments and provide more guarantees for the users and for the sources of funding. R&D evaluation has been progressively refined, by the use of mixed methodologies (using peer-review and quantitative analysis). Additionally, it is an acknowledged and widely accepted practice to assess the research quality and potential of R&D groups and institutions. In all, we argue that the introduction of competitive research funding may not be the ultimate solution, but it is preferable to the current policies and practices that threaten institutional diversity.

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