

Performance-based research funding and its role in the research governance policy mix

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A growing number of countries are using performance-based research funding systems (PRFS) as part of their research policy mix. The European Commission as well as other international entities such as the OECD and the UNESCO often promote PRFS as a solution for research governance issues. Their comparative novelty as policy instruments, however, means that often, the complexity in their design is underestimated, their value as policy instruments misunderstood, or the risks and negative (undesired) effects that they may have on the research system not sufficiently accounted for.

This article brings together evidence and experience about when and how PRFS can fruitfully be used to support policy development based on a number of studies conducted under DG RTD's Policy Support Facility (PSF), in particular the [Mutual Learning Exercise \(MLE\) on performance-based research funding systems in universities](#), but also in the [MLE on Open Science](#) and in the Specific Support actions for [Latvia](#), [Slovenia](#), [Georgia](#) and [Bulgaria](#).

What are PRFS?

Universities and public research organisations (PROs) typically get research money from two sources: as part of the 'institutional funding' they get directly from the government; and money from external funders such as research councils, government departments and international funders like the EU Framework Programme. External funding is normally tied to doing specific projects, whereas the universities and PROs themselves decide how to spend their institutional funding.

A PRFS uses past performance to guide the allocation of part of the institutional funding. It has two components: an **assessment process** that judges the 'goodness' of past research on a range of criteria and a **funding formula**, which converts the goodness ratings of each university into money. This places the research organisations in competition with each other, with the more successful gaining funding at the expense of the less successful.

PRFS in the policy toolkit

Performance-based research funding systems are intended to deliver **policy objectives**. These policy objectives should be reflected in both the assessment process and the funding formula in a transparent way so that the research community can react to them.

Performance-based research funding systems are not simply about distributing money. Four main categories of policy objectives can be observed.

1. Enhance the quality of research and the country's research competitiveness
2. Steer behaviour in order to tackle specific failures in the research system
3. Strengthen accountability
4. Provide strategic information for research strategy at institutional and/or national level

But there are many nuances. More detailed policy objectives can include: raising scientific quality throughout the research system or concentrating excellent research in a few institutions; encouraging links with teaching; promoting international research collaboration; increasing the societal use and impact of research and so on.

The international trend has been for PRFS objectives to become more complex over time. Historically, PRFS have focused on research quality but interest has grown in also understanding the effects of research on innovation and more recently on society more generally. For example, the need to create incentives for universities and PROs to pursue their 'third mission' of cooperation with business and society beyond teaching and generating new knowledge, underpinned some of the recommendations made by the PSF expert panel providing Specific Support to Slovenia for a reform

of the country's institutional funding system. It also was one of the major drivers for countries to participate in the MLE on PRFS.

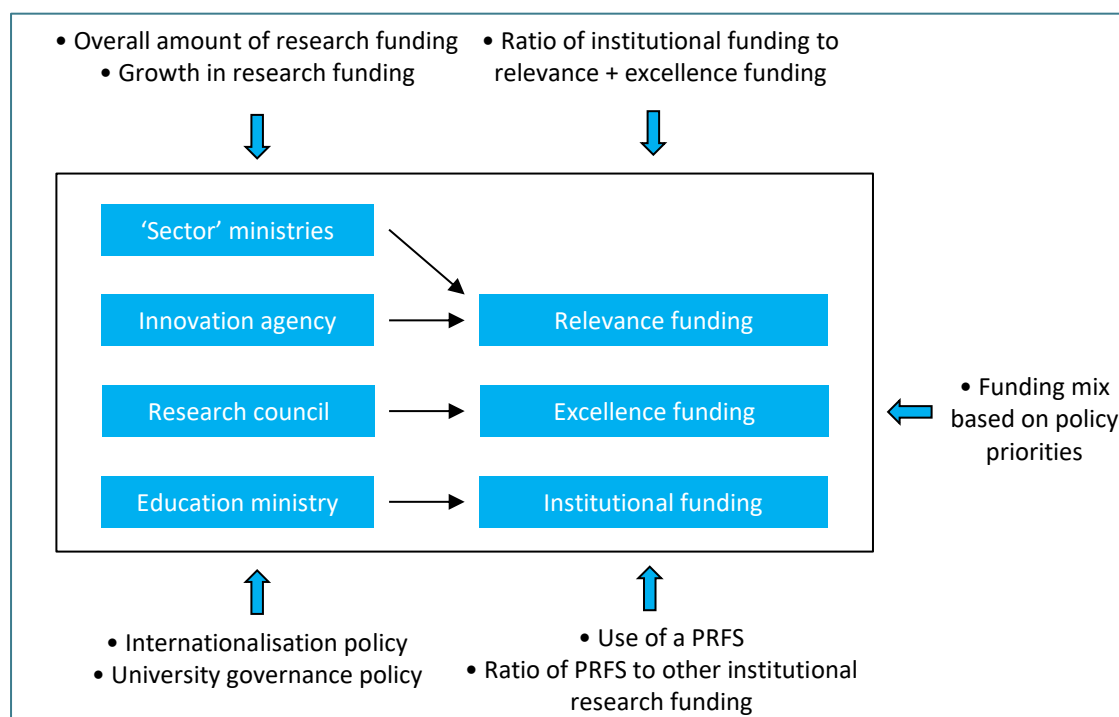
A small number of countries in Europe established a PRFS with no policy objectives in mind, simply in an attempt to find an 'objective' method for distributing institutional funding for research. This was the case, for example, in the Czech Republic in the end of the 2000s and is the case in the current draft PRFS in Bulgaria. These countries risk discovering that behaviour can change in ways that are not only unintended but also undesirable. It is better to think through the policy needs from the outset and to design the PRFS (or another policy lever) accordingly.

PRFS as a component of the research governance system

It is important to design and implement a PRFS as **part of a wider strategy** for improving research performance. A key conclusion of the PSF MLE on PRFS was that such systems should be perceived only as one of several policy instruments that governments can use to support improved performance. Others include: adjusting the ratio between institutional funding and external competitive project funding; fostering international collaboration; governance reforms in the research-performing institutions; and varying the overall level of expenditure on research (Figure 1). The potential interaction of the PRFS and these other policy levers needs to be considered in designing both the method of assessment and the way assessment is connected to funding.

First, the PRFS need to be **consistent** with the wider set of incentives and to avoid – either on their own or in combination with other policy instruments – creating perverse incentives. UK experience is, for example, that a strong PRFS in the absence of significant incentives for teaching quality or performing the third mission has distorted the university system, making teaching a second-class activity and discouraging interaction with society or anything else that does not generate credit in the PRFS. As a result, in the last few years a teaching excellence framework (TEF) has been introduced. The PRFS itself has been adjusted to reward not only research quality but also its impact, as well as the quality of the environment in which research is conducted. A knowledge exchange framework (KEF) is being designed, to ensure that the third mission is also prioritised.

Figure 1 Stylised public research funding system and policy 'levers'



Second, it should be considered whether it would be better to use a **different policy lever** than a PRFS to deliver specific policy objectives. Some countries such as Georgia, Latvia and Bulgaria, for example, suffer from institutional fragmentation among their research performers, so that many research groups are under-critical in size. In these cases, the urgency of public intervention determines the type of policy intervention needed. Most PRFS make marginal adjustments to funding allocations and therefore can only address fragmentation over very long time periods. A PRFS can promote de-fragmentation in the short term but only if it is extremely Draconian. In the case of

Bulgaria, the PSF expert panel considered that while a PRFS could contribute to a system restructuring in the country, it was unlikely that it could alone correct the various inefficiencies, overlaps and systemic failures in Bulgaria's research system sufficiently to reverse the current path of decline in the Bulgarian research system within a short space of time. The panel recommended that the Bulgarian government address the fragmentation directly, using rationalisation policies, and considered the implementation of such a system restructuring as a *pre-condition* for an effective implementation of a PRFS. The Latvian government took a similar position, responding to the first research assessment's finding that the system was overly fragmented by encouraging institutional consolidation ahead of running a second exercise.

Third, the policy levers and the components of research funding, ie institutional funding and project-based funding, together form a **system**. The elements are **interdependent**, so use of any policy lever needs to take account of its effects on the wider system.

Internationally, the trend has been for the ratio of external funding to institutional funding to rise – be it industry funding or competitive project-based funding. This suggests increased competitive pressure for research resources and increased shaping of the research agenda and the research-performing institutions themselves by external forces. A systemic issue arising is the need to ensure the research-performing institutions have **sufficient institutional funding** to be able to pay the non-funded costs associated with winning external funding, since this almost never covers its entire cost. This is a particularly acute problem in systems where non-competitive institutional funding for research is minimal such as in Latvia and Bulgaria where austerity considerations have led to a substitution of national public research funding with competitive funding through the EU Structural Funds.

The use of different components in the institutional funding mix makes it possible to combine elements of continuity and stability with incentives for desirable changes in behaviour. The PSF expert panel providing specific support to Latvia, for example, argued that the low proportion of institutional funding in Latvian universities' total research income makes it particularly difficult for those universities that obtain a lot of external research funding to cover their costs. The panel recommended that block funding should cover a larger part of the institutional cost of research, while taking into account the existing size of the activity that needs to be supported and factors such as scientific discipline which drive cost. The PRFS component of institutional funding for research should be sufficiently large to trigger behavioural and organisational changes but at the same time not be so large as to cause dangerous instability in funding levels. The PSF panel proposed two approaches, both of which would generate enough certainty to allow institutions to plan while at the same time exerting competitive pressure.

A key policy decision that needs to be taken when designing a PRFS is the **proportion of institutional research funding** that will be governed by the PRFS. There seem to be no universal relationships or ratios that can be shown to be optimal, based on robust evidence. Policymaking in practice depends strongly on contextual knowledge, judgement and in practice a fair amount of lobbying rather than much hard evidence. Nevertheless, in many institutional funding systems a considerable proportion remains unconditional. PRFS are generally seen as useful ways to add an element of competitive pressure to institutional funding – but only at the margin, so most PRFS govern only a small component of the overall funding for research and higher education. In Europe, only Finland, Denmark and the UK allocate more than 20% of total institutional funding for education and research through a PRFS. There is nonetheless evidence that the systems that only drive a small part of the institutional funding such as Sweden and Norway are nonetheless effective at changing behaviour and performance.

Finally, national research assessment is not always linked to funding distribution. Countries that aim predominantly to allocate resources based on past performance use a PRFS. Others (such as Australia – which no longer uses a PRFS, and Austria) focus on informing research policies and institutional strategies but base the allocation of institutional funding on **performance agreements** between the universities and the responsible agency or ministry. In The Netherlands, the universities have evolved the so-called Standard Evaluation Protocol (SEP) based on an informal agreement between the government and the universities that a PRFS would not be introduced, provided that the universities themselves organised robust assessments. Performance agreements create the possibility of developing and reinforcing future elements of institutional strategy. The PSF expert panel providing support to Slovenia recommended adopting this approach, given the lack of real autonomy for the universities, especially from a financial and strategic perspective. The panel recommended the introduction of a system of Key Performance Indicators (KPIs) linked to part of the annual (or multi-annual) block funding, creating an incentive structure for the research-performing institutions to formulate institutional strategies in line with the overall aims of the national R&I strategy.

Designing a PRFS taking account of its effects

At the same time the designer must recognise that the academic community will regard a PRFS as an intellectual challenge – it will work out how best to exploit it and – where advantageous – also to ‘game’ it. Designers must think hard about potential unintended as well as intended consequences. Some of the **unexpected and undesired consequences** discussed in the literature (and in the MLE on PRFS) are: discouraging interdisciplinary research; discouraging ‘blue skies and ‘transformative’ research; promoting orthodox rather than heterodox theory and methods; undervaluing applied research; reducing researcher autonomy; undermining non-research functions of a university; under-valuing research not published in English; discouraging performance of the third mission and the popularisation of science. PRFS do not **necessarily** foster all these effects – whether they do so depends upon the specificities of the design and the interaction between the PRFS and other incentive systems. Hence, these potential undesired consequences need to be considered in PRFS design.

Main PRFS design parameters to consider are which ‘model’ to use (peer review, metrics, or some mixture of the two); the scope of the PRFS (scholarly quality or also other dimensions such as innovation, societal impact, research strategy or the facilities available to researchers); the indicators and assessment criteria; the granularity (whether results are reported and funding allocated at the level of research groups, departments, faculties or whole institutions); and the periodicity, ie how often the PRFS exercise should be done.

The **weights attributed to the indicators and assessment criteria** used in the assessment component of the PRFS ultimately define the funding allocations. The variations in the weights allocated to the different indicators illustrate the influence of the policy objectives for the PRFS. The PRFS in the UK, New Zealand and the Czech Republic stand out for the high weight allocated to the results of the research quality assessment, while the systems in Finland, Norway and Belgium (Flanders) give greater importance to the effects of the activities on the research system. Italy stands out for its focus on innovation-related outputs and activities. Denmark and Sweden give considerable weight to the ability of the universities to attract external funding for research.

While PRFS often contain other components, it is generally the part of the PRFS focusing on research quality that gets most attention, and especially the part that involves judgements about the quality of individual outputs. This is probably because it bears directly on **academic prestige** and influences the way universities recruit and manage academic staff. PRFS not only affect university income but also the career prospects of individual researchers. The PSF experts panel in the MLE on Open Science found that currently the academic reward system rests mainly on the ‘publish or perish’ rationale, prioritising quantity, speed and patentability over quality, sustainability and reusability. The emphasis is on the (over-)production of one type of output – the article in international top journals, – rather than allowing diversity, not only in publication outlets, but also in types of outputs. The panel noted that the current ways of making assessments are increasingly disconnecting scientific knowledge production from societal concerns and engagement. Open scholarship is barely acknowledged or rewarded in traditional academic evaluation regimes. Researchers’ decisions to follow alternative, open routes in research may therefore cause them disadvantage in career progression.

A key topic in this context, covered in both the MLE on PRFS and the MLE on Open Science, are the metrics that are currently available for the **assessment of societal relevance and impacts**. In contrast to the indicators of scholarly research quality, the assessment of impact by means of metrics remains problematic. Both PSF experts panels considered that while ‘altmetrics’ (short for ‘alternative metrics’, which measure usage or mentions of research outputs in communication channels such as the social media, databases, and policy documents) provide the potential for tracking dissemination both within and beyond academia, their use raises several substantive concerns in terms of transparency and robustness. A policy implication emphasised by the PSF experts panel in the MLE on PRFS is that understanding and assessing societal impacts or the provision of developmental feedback and advice to research-performing institutions still requires a qualitative approach and therefore the use of peers or expert groups.