



Empirical observations on New Public Management to increase efficiency in public research—Boon or bane?

Torben Schubert^{*,1}

Fraunhofer Institute Systems and Innovation Research, Department of Innovation Systems and Policy Breslauer Straße 48, 76139 Karlsruhe, Deutschland, Germany

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ABSTRACT

New Public Management (NPM) was the catch phrase of the reforms in the public research and higher education sector for the last decades. The postulated effect of the NPM reforms is increased efficiency in governmental resource spending on the public higher education and research institutions. Though backed by theoretical considerations, this hypothesis has hardly been tested empirically. Using a unique dataset of German research units, this paper deals with the influence that NPM mechanisms have on research performance. Controlling for different university mission, it can be shown that both greater internal hierarchy (especially “strong presidents”) as well as greater operative flexibility for the researchers themselves increase research performance. Some of the variables, including the presence of research councils, have a positive effect on research efficiency under some definitions of research output. On the other hand, the introduction of resource accounting systems has a negative impact. All in all, we conclude that the public science sector reforms implemented in most of the Western economies were heading into the right direction by providing greater performance incentives and increasing allocative efficiency in resource spending. Also we provide some ideas of how NPM may be combined in order to construct a sensible governance system. We conclude that the mechanisms should be selected based on the mission of the university.

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1. Introduction

In many western countries, profound changes have taken place in the organisation of the public science systems (e.g. de Boer et al., 2007; Meyer, 2007; Frolich, 2005; Smith, 2004). Although the countries started from very different positions, the governance schemes converge towards a pattern that is often described as New Public Management (NPM) (Leisyte and Kizniene, 2006). In contrast to the organisational systems which were common in many continental European countries such as Germany, France, and Austria, the spirit of NPM consists of two pillars (Braun and Merrien, 1999; Schimank, 2007a,b). First, the decision-making competencies of the state authorities are reduced, especially at the purely operative level, leaving much greater steering autonomy to the researchers. Second, the internal hierarchy is strengthened, that is to say, the management authorities (the deans and the university presidents) gain much greater power over the researchers. Many different mechanisms were developed to deploy the new governance structures in practice. Among these are resource controlling,

global budgeting, goal agreements, performance-oriented budgeting by indicators, or performance-oriented payment schemes. In any case, though NPM is *en vogue* among European policy-makers, to our knowledge, there is little empirical proof that the new governance system indeed results in efficiency gains. Indeed, its benefits are sometimes implicitly doubted, because it is argued that research is not a routine task and the most empowering setting is that of academic freedom. Anyhow, the latter claim has not been proven either. A lot of researchers also claim that the concept of efficiency does not even apply to the science sector, where, however, rarely it is made explicit, what efficiency means. To place it right here, economic efficiency analysis has developed a clearly defined concept of efficiency, which is also explained in Section 3.2. One implication of this concept is that a unit which is more efficient than another is able to gain higher outputs from a given level of input. Particularly this implication makes the concept of efficiency so appealing for politics, because it allows increasing societal gains from the science sector by increasing efficiency, without having to increase inputs. NPM certainly is the most discussed – though disputed – concept to increase efficiency.

Using a unique dataset of a large sample of German research units gathered during a project on “international competitiveness and innovation capacity of universities and research institutions—new forms of governance” funded by the German Research Association (Deutsche Forschungsgemeinschaft, DFG), we

* Correspondence address at: Fraunhofer Institute for Systems and Innovation Research, Germany. Tel.: +49 721 6809 357; fax: +49 721 6809 260.

E-mail address: torben.schubert@isi.fraunhofer.de.

¹ Also: Berlin University of Technology, Chair of Innovation Economics.

will present concise results which point to positive effects of the typical NPM mechanisms on research performance.

2. New Public Management—it is not just hot air

As already mentioned, NPM is a fashionable concept, especially in politics. Therefore, although it has a large number of academic proponents, it has been criticised as one more slogan voiced by governmental authorities to organise a silent phasing out of state funding of public research. On the contrary, the proponents argue that the most successful science nations – the UK and USA – have adopted such a system and therefore regard it as beneficial. Despite this heated atmosphere, it is not only legitimate but also necessary to ask what the essence of NPM actually is, and where the postulated efficiency gains should accrue from.

In fact NPM is more than just a slogan. Its theoretical roots date back to two distinct branches of economic theory. The first is that of property rights (see e.g. Demsetz, 1967; Buchanan, 1984), where although this theory is a lot broader, one of its implications is that the separation of ownership (in this context the societal resources devoted to research) and control (in this context the resources controlled by the researcher) leads to efficiency losses. The contribution of the property rights theory is therefore that a property right has many dimensions (Kim and Mahoney, 2005); in this case, the right of ownership, which allows collecting the returns, and the right of control. The second pillar is principal agent theory (see e.g. Jensen and Meckling, 1976; Holmstrom, 1979; Bolton and Dewatripont, 2005 as a recent overview), which states that if the principal (in this context the society or the state authorities) cannot observe the agent's effort level (in this context the researchers), then the agent tends to work too little, where he would argue that possible failure has to be accrued to bad luck and not to laziness. This is known as moral hazard.

A decisive question is of course, whether any of the two theories actually applies to research as such. This seems to be especially important, because both theories have not been developed to describe the university system but were tailored to more “economic” situations.

Concerning the property rights theory, the key result is that the distribution of property rights has effects on efficiency. In the particular case of universities, property rights theory argues for a principal–agent situation, where the principal has the ownership rights and the agent controls the resources. That this is a characterising feature of public research is obvious. Letting the principal be the society and the agent be the researcher, society gives resources (incurred by taxation) to the researchers (basic funds and research grants). Although the knowledge produced by researchers may be published exclusively by them, usually they are not owners of the economic benefits resulting from the knowledge: a mathematician may not patent a formula. A patent resulting from a researcher's invention usually is owned by the university (in this sense the state) and not by the researcher. Thus the society is still the owner of the economic returns of research. Using for example arguments such as moral hazard, then it follows directly, that institutions characterised by a separation of control and ownership rights are less efficient. Thus, we need an argument on why moral hazard is important also in science.

The key result of moral hazard is that unobservability of the agent's effort level induces incentives to work too little, which is rational because effort is linked to disutility, i.e. additional effort induces additional costs to the agent. In some cases this is a natural assumption, but it need not be true for researchers. It is commonly argued that researchers are intrinsically motivated, and thus the central assumption of efforts inducing disutility may be violated. Thus, if effort induced utility rather than costs (because the researcher likes his work), moral hazard would no longer be a

problem. However, is it likely that researchers are always and everywhere intrinsically motivated, invalidating the problem of moral hazard? This certainly depends on the specific task. While it seems reasonable to assume, that researchers are highly motivated to conduct original research, this might not be true many other activities linked to research, such as educating doctoral students, engaging in knowledge transfer, or editing journals and reviewing articles. It might well be true, that these activities are subject to moral hazard, although doing genuine research might not. Therefore, we suspect that moral hazard is a problem – at least partly – also in the science sector.

Bearing both lines of argumentation in mind, it is easy to understand the spirit of NPM. In any case, it is helpful to contrast the pre-NPM system in Germany and New Public Management, because in a certain sense, both are inverted mirror images. This can be seen most easily, by using the ‘equalizer’-model of Schimank (2007b). He argues that, in essence, there are 5 governance dimensions, whose specific importance can describe each university system. Therefore, each constellation of the 5 so-called ‘sliding controllers’ describes a different university system. Any of these constellations can be thought of as a specific setting on an equaliser, giving a particular tune. The first of the ‘sliding controllers’ is the level of *state regulation*. This mechanism determines the strength of the governmental influence. The second concerns *external control* through governmental or societal stakeholders, often in the form of research councils (not to be confused with funding councils in the UK), which are similar to a directorate in a company (Mayntz, 2002). The third is *academic self-management* which measures the degree to which the chair holders can decide autonomously. The fourth is *internal hierarchical self-control* mapping decision competencies of the deans and chancellors inside the university. The fifth is *market control* often induced by the increasing need to acquire external funds.

The old German public science system is characterised by large competencies of the state authorities in regulation of operative management decisions as well as high competencies of the individual chair holders in setting their research and teaching agenda. Cynically, one could remark that this setting may be described as a mixture of command economy and provincial principalities not unlike the state organisation in USSR before 1991. All other governance mechanisms did not play a major role.

NPM is exactly the opposite: high degree of control by external stakeholders, of internal hierarchical control, and of market control in conjunction with a low degree of state and chair holder competencies.

By introducing NPM in German universities, which is still an ongoing process, the foremost aim of the state authorities was to increase efficiency in research and teaching.

Four potential sources of efficiency gains from NPM may be identified, which will also guide our empirical design. The first, and most obvious, is to increase operative flexibility of the universities. In theory, this should make resource allocation more efficient, because the decision process is made faster and more problem-oriented (subsidiarity). However, increasing operative flexibility *ceteris paribus* reduces accountability, therefore resources may be used in a manner not in accordance with societal goals. Thus, NPM aims at increasing accountability by strengthening internal hierarchical elements, most prominently, the influence of the deans, the chancellors, and the presidents. This second source of efficiency gains might result from a decreased danger of moral hazard (see above). The third is to give the decision-making units feedback and information on their actions. Often this can be achieved by the introduction of internal accounting models. The fourth is to enhance competencies concerning strategic decisions. This once again can be achieved by greater internal hierarchy but also by the newly installed research councils which shall guide, advise, and also

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