Implementing performance-based funding for health research: when governance and procedural fairness matter

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Abstract

The article examines the implementation by the Italian Ministry of Health of performance-based funding to allocate resources for research to the so-called IRCCS hospitals, centres of excellence for the National Health Service. The analysis provides evidence that, ten years after its inception, the performance-based funding system has persisted, but the way in which it has been implemented is rather different from what had been imagined by its proponents and most of its initial meaning has, over the years, been lost.

By drawing on the theoretical frameworks of policy implementation, agency, and relational contracting, the study establishes that the overall set-up and design of the system have contributed to a limited extent to this final outcome. Rather, both the governance of the system’s implementation and the relationship between the IRCCS hospitals and the Ministry have played a critical role. The lack of procedural fairness applied by the ministerial bureaucracy, as well as of political leadership in linking the system to national research priorities, has undermined the basis for trust between hospitals and the Ministry of Health. The article discusses how the governance of the performance-based funding system, in particular its strong ownership by the ministerial bureaucracy, has contributed to its loss of meaning.
Introduction

Starting from the 1990s, public sector reforms inspired by the New Public Management (NPM) movement have led to a growing interest in a number of financing mechanisms in which incentives and economic resources are made dependent on the performance achieved by individuals and organizations (Hood 1991; Pollitt and Bouckaert 2000). Several countries have introduced, to various degrees, such systems with labels such as ‘performance-based budgeting and funding’ (Thompson 1994; Curristine 2005), ‘performance contracting’ (Salamon 2002; Brown et al. 2006) and ‘performance-related pay’ (Perry et al. 2009). All three mechanisms have been proposed as ways to transform the administrative process from an input- to a result-oriented activity and are derived from the concept that individuals and organizations operating in the public interest should be made accountable for what they attain (Hood 1991; Pollitt 1990). The NPM movement, for example, advocated that resource allocation based on historical spending or inputs should be avoided and that ‘budgets’ should ‘spell out the level of performance legislators expect for the price they are willing to pay’ (Osborne and Plastrik 1997, p 348). Besides implementing performance-based mechanisms in an attempt to achieve accountability, these mechanisms were also introduced with the belief that extrinsic incentives (economic rewards and sanctions) are effective in steering behaviour and in motivating individuals and organizations to improve their results (Ingraham 1993).

Despite their common underlying rationale, these public management tools act at different levels. Performance-related pay aims at distributing incentives to civil servants according to their high-quality results; performance contracting regulates the relationship between public entities and organizations contracted to provide services, and makes contract conditions such as length, renewal, and payment dependent on the outputs of the service provider. Finally, performance-based budgeting and funding implies that the allocation by government of public resources to ministries, central agencies, and other public organizations takes into account their performance. The allocation system
might acknowledge the recipients’ past performance (i.e. the results or outputs already obtained) or future performance by, for instance, setting targets to be achieved.

The distinction between performance-based budgeting and funding is often unclear in the literature and the terms are used interchangeably (Joyce and Sieg Tompkins 2002; Curristine 2005). While the expression ‘performance-based budgeting’ generally refers to macro-level allocations, for instance by parliament to ministries or from state/regional governments to their departments, performance-based funding indicates applications to more specific sectors and programmes, and to the allocation of ‘funding between multiple public producers of specific types of services’ (Robinson and Brumby 2005, p 6). For instance, performance-based funding is mainly applied in the healthcare and higher education sectors (Curristine 2005). In several countries, hospitals are funded by health ministries based on the volume of activities and case-mix. In the UK, Australia, Poland, Denmark – just to mention a few – ministries allocate all or part of the resources for teaching and research to universities on the basis of a performance evaluation, normally a mix of input and output indicators (Burke 2002; Geuna and Martin 2003; Leifner 2003; Herbst 2007). In some cases, resources are related to results in an indirect manner and performance information plays a very important role in the decision-making process, but does not necessarily determine the final amount of resources allocated (Burke 2002; Curristine 2005). Alternatively, a set of performance indicators, each with its own weight, is directly linked to allocations and used as input to a formula for appropriations (Geuna and Martin 2003; Strehl et al. 2007).

Within the set of public management systems linking incentives and economic resources to results, performance-based funding – the topic of the present study – is for government and policy-makers one of the most complex and challenging to implement (Robinson and Brumby 2005). On the one hand, performance-based funding has the features of a ‘contract’ between government and the organizations to which it allocates funds (Robinson 2000). The contract governs the terms (e.g.
outputs/results and the ‘price’ of those outputs) upon which appropriations are made and defines the procedures for performance monitoring. The issues that government encounters in designing and managing such contracts are manifold, not least the inherent imperfection of output measurement in the public sector (Robinson 2000). On the other hand, the features of performance-based funding means that its implementation is more complex than the application of a contract. Firstly, it represents a new way of conceiving the allocation of public resources and introduces new administrative procedures for measuring performance. Thus, its proponents might encounter strong resistance from inside government and bureaucracy. Secondly, the target sector for the application of performance-based funding, the choice of performance measures and their relative weight, and the extent to which performance information is used in the decision-making process all reveal the intentions and priorities of government, including the sector policies that it promotes. If, for instance, universities’ research outputs are valued more by performance-based funding than the outputs of teaching, this likely indicates that government would like to have and is willing to fund research-oriented universities. Thirdly, the application of performance-based funding has the potential to affect the management of organizations providing important services of public interest. Given that through this system public organizations might be ‘rewarded’ or ‘sanctioned’ on the basis of their performance, its application is bound to be political, highly visible, and contested. The dynamics of the adoption and implementation of performance-based funding assume, therefore, particular relevance in any attempt to understand the final meaning and effectiveness of this mechanism as a tool of government (Peters 2002).

Despite its relevance and potential interest for both public policy and management scholars, performance-based funding has been the subject of relatively little attention in the literature. Whereas an abundance of studies has critically discussed the dynamics and effectiveness of other performance-based mechanisms, such as payment-related pay (for a review, Perry et al. 2009) and performance contracting (e.g. Shetterly 2000; Romzek and Johnston 2002, 2005; Martin 2004; Heinrich and
little is known about the implementation of performance-based funding and the reasons for its success or failure. If one takes the field of higher education, for instance, analyses of performance-based funding tend to be descriptive and often compare the degree of diffusion across countries (e.g. Geuna and Martin 2003). Other studies concentrate on the pitfalls of performance-based funding and on the difficulties in measuring performance in fields as complex as education (Layzell 1999; Taylor and Taylor 2003). Finally, many articles and reports discuss whether performance-based funding has succeeded in improving the productivity of universities, and they also analyse the dysfunctional responses that this allocation mechanism has generated (Schmidtlein and Taylor 1996; van Thiel and Leeuw 2002; Butler 2003a; Butler 2003b; Strehl et al. 2007; Andersen and Pallesen 2008). In this field it is rare to find thorough empirical studies on the implementation of performance-based funding and studies that are informed by theory.

The purpose of this study is twofold. First, it adds to the literature on the application of performance-based funding in the public sector. It does so by analysing, in depth and over a ten-year period of time, the adoption and application of performance-based funding in a sector and in a context that has not been explored before. The study focuses on the performance-based funding system that, starting from the late 1990s, has been applied by the Italian Ministry of Health to allocate resources to hospitals, the so-called IRCCS (Istituti di Ricovero e Cura a Carattere Scientifico) hospitals that serve the National Health Service. The system has been purposely designed to distribute funds annually for health research to these hospitals, on the basis of their results. As elsewhere, performance-based funding was introduced amidst a wave of reform of the public sector inspired by the NPM principles (Mattei 2006; Gualmini 2008; Ongaro 2009; Mele 2010). Health research was a rather fertile ground for the application of performance-based funding. The focus on results and performance measurement, promoted in the public sector by the NPM movement, matched well the culture of evaluation of scientific productivity ingrained in the research field. In addition, growing demand for public agencies
and ministries to justify their expenditure on research mirrored calls by NPM advocates for accountability in spending (Smith 2001; van Weel 2002).

Second, the study aims at identifying ‘critical nodes’ in the implementation process that, when flawed, negatively affect the ultimate effectiveness of performance-based funding. Instead of inductively deriving them from the empirical analysis, the present study concentrates on three aspects proposed by the literature, which we have named ‘performance-based funding design’, ‘relationship between government and fund recipients’ and ‘performance-based funding governance’. Through the empirical evidence collected for the case, the study addresses their respective bearing and interplay in performance-based funding implementation. This approach has the advantage that the aspects considered are less likely to be dependent on the peculiarities of the case under examination and, in addition, allows us to manage better the complexity and richness of the analysis.

The study draws from two sets of literature: first, agency theory and relational contracting, which have been mostly applied to explain the implementation of contracts and can be of support when interpreting performance-based funding as a ‘contractual’ arrangement, and second, theories of policy implementation, which can better capture the broader political meaning of performance-based funding. Below, we will briefly discuss these frameworks and the aspects that emerge from them, thus identifying critical nodes in the implementation process. Finally, for each framework we will also derive a definition of ‘successful’ implementation against which to examine the present case.

AGENCY THEORY AND RELATIONAL CONTRACTING

For many scholars, agency is the theory of choice to explain the functioning, and malfunctioning, of incentives and performance-monitoring systems in the public and private sectors. It has been applied to intra-organizational issues, mainly the design of employment contracts and performance-related pay mechanisms (e.g. Jensen and Murphy 1990; Stroh et al. 1996; Bloom and
Milkovich 1998; Dixit, 2002; Miller and Whitford 2007), as well as to inter-organizational contractual relationships, for instance, in relation to performance contracting of service providers (e.g. Breaux et al. 2002; Coats 2002; Van Slyke 2007; Lambright 2009). Agency is also considered the theoretical pillar of the NPM movement (Hood 1991), a movement that has been an important driver in the adoption of performance-based financing systems in the public sector. As Dunleavy and Hood state, the NPM views ‘organizations as a chain of low-trust principal-agent relationships (rather than fiduciary or trustee-beneficiaries ones), a network of contracts linking incentives to performance’ (Dunleavy and Hood 1994, p 9).

Agency theory construes performance-based incentives and monitoring systems as necessary parts of the contract between individual and/or organizations (between agent and principal, to use the jargon of the field) that have differing goals (Eisenhardt 1989). Agents tend to behave opportunistically and pursue their own ends because they are effort-averse (i.e. they aspire to the most compensation or resources from the principal for the least effort), and because they can exploit an informational advantage over the principal (Eisenhardt 1989). To obviate this problem, the principal (e.g. government or a public entity) designs contracts linking the performance of the agent (e.g. civil servants or a service provider organization) to incentives or economic resources and, in this way, actively steers the selfinterested agent away from opportunistic behaviour and towards the fulfilment of the principal’s objectives. Performance-based contracts (also called ‘outcome-oriented’) are not the only option for the principal. In certain conditions, the principal might be better off just investing in good monitoring systems in order to acquire information about what the agent is actually doing (e.g. monitoring inputs) and resolve the information asymmetry that characterizes the principal-agent relationship (so-called ‘behaviour-oriented contracts’; Eisenhardt 1989; Stroh et al. 1996; Bloom and Milkovich 1998). Low levels of task programmability and high outcome measurability are just two of the conditions in which
performance-based contracts are to be preferred to behaviour-oriented contracts because the former is more effective in steering the agent’s behaviour (Stroh et al. 1996).

Most of the literature on performance-based mechanisms that adopts agency as the theoretical framework is focused on understanding which form of contract is the optimal and most efficient for the principal (Nilakant and Rao 1994). From this perspective, the design of the performance-based contract (i.e. the features of the incentive structure as well as the system for monitoring performance) plays a strong role in determining its final implementation and effectiveness (Eisenhardt, 1989; Shetterly 2000). If incentives are not able to motivate the agent to work more and better for the principal’s benefit, if the monitoring system is flawed or not applied, or if performance measures are imprecise, then the system is bound to fail. The successful implementation of the performance-based contract lies in its capacity to induce the agent to achieve certain results expected by the principal and to guarantee that the principal will be able to tell that these results have been achieved.

While agency theory focuses on the features of the contract, relational contracting is concerned with the ‘relation in which the exchange occurs’ (MacNeil 1985, p 84) and proposes that the nature and dynamics of the relationship between the parties to a contract affect its management and outcome (Romzek and Johnston 2002).

Relational contracting draws attention to the fact that, while the design of the contract might matter, it does so only to a limited extent, especially when the level of uncertainty linked to the contract conditions is high (Van Slyke 2009; Brown et al. 2010). The specificity of contracts and the direct causal link between the effort/actions of the agent and the outcome, which agency theory proposes, might in fact be unrealistic (Nilakant and Rao 1994). Contracts cannot detail in advance all that the agent should do; measuring the agent’s performance and making explicit through the contract the outputs and results that should be achieved is often difficult. In other words, contracts are inherently ‘incomplete’ (Tirole 1999; Brown et al. 2006; Van Slyke 2009). With uncertainty comes the need to
monitor the agent more and to work out the details of the contract better, but this might have little
effect or be very costly for the principal (Battigalli and Maggi 2002).

The incompleteness of contracts is particularly relevant in the public sector where complex
products (e.g. social services, healthcare, education) are normally subject to contracting, where
government would often like to achieve through contracting several outcomes that are not always
consistent or clear, and where measurement of performance is bound to be very imprecise (Brown et al.
2010; Bertelli and Smith 2010). The relational contracting framework has, in fact, been instrumental in
explaining performance contracting between government and providers of social and education
services (Van Slyke 2007; Lambright 2008; Bertelli and Smith 2010).

As a consequence of uncertainty, contracts are more flexible and open-ended, but also more
vulnerable to being breached. By exploiting the contract’s vagueness, the agent might more easily
pursue different goals. Equally, the principal might behave differently from what has been agreed. For
example, the agent could fear that when presented with a situation that is not covered explicitly by the
contract, the principal will resolve the matter in a manner that does not respect the spirit of the contract
or will withdraw commitment from the agent, instead providing incentives and resources for other
activities and to other parties (Van Slyke 2007).

The quality of the relationship between the principal and the agent and the level of reciprocal
trust become, therefore, fundamental to the success of the contract (Beinecke and DeFillippi 1999;
Brown et al. 2007; Bertelli and Smith 2010). According to the economic perspective on relational
contracting, trust and the establishment of a long-term collaborative relationship between the parties is
the most efficient way for both to decrease transaction costs in a situation of uncertainty (Williamson
1985). Every breach of contract from the side of the agent or the principal will imply a loss of trust and
represent a setback in the relationship between the parties. When the agent reneges on the contract, for
instance, the principal might resort to making the contract more complete (Brown et al. 2007). When the principal reneges, the agent might exit the relationship.

The stress on the relational nature of contracting and on the role played by trust can also be found in the literature dealing with employment contracts and performance-related pay. For example, studies that focus on the introduction of performance-related pay in the public sector point out that the level of organizational trust, more specifically the perception by employees that they will be treated fairly with respect to both the evaluation of their performance and the provision of incentives, is a critical factor for the success of these systems (Condrey and Brudney 1992; Brudney and Condrey). The transparency of performance-related pay systems for employees and the credibility of the employer in the eyes of the employees are equally important factors (Gabris and Ihrke 2000; Perry et al. 2009). Dahlström and Lapeunte argue that ‘the reason for the successful introduction of incentives in the public sector does not lie in “good” or “bad” design of the incentives but in the credibility of those who impose them….What is difficult is to convince others that you are trustworthy and that you will not manipulate ex post the management of incentives to your personal advantage’ (Dahlström and Lapeunte 2009, p. 579).

Trust between the parties regarding the contract, therefore, can be built in several ways: by co-operation, repeated interactions, and exchange of information, but also by consistency, predictability, transparency, and fairness in procedures (VanSlyke 2009). From the perspective of relational contracting, a performance-based contract is successfully implemented when it favours the establishment of a long-term collaborative and trust-based relationship between whomever evaluates performance and the party that receives payment on the basis of this evaluation.
THEORIES OF POLICY IMPLEMENTATION

There are different theoretical approaches to explain policy implementation, the process of translating policy intentions and decisions into action (John 1998). For a long time, the field has been divided between top-down approaches – that underline the critical role of policy and of the machinery set out by policy-makers – and bottom-up approaches that stress the role of street-level bureaucrats and managers in getting policy implemented (for a review, O'Toole 2000). The ‘third generation’ of implementation research has attempted to find some synthesis by building on the interactional nature of implementation (Goggin et al. 1990; Matland 1995). From this third research perspective, the implementation process is seen as the result of the interaction of multiple actors – from policy-makers to local implementers – and of their arrangements in networks and coalitions (Hjern and Porter 1981; Sabatier 1986; Sabatier and Pelkey 1987). However, it is not just a matter of collaboration; strategic behaviour and power struggles are also the currency of the implementation ‘game’ (Bardach 1977).

Traditionally, policy and action have been considered separate steps under the responsibility of policy-makers (i.e. elected politicians, their nominees, such as ministers and members of Cabinet, and high-level committees) and bureaucrats, respectively. Implementation was just an administrative follow-on from an authoritative policy decision and bureaucracy was portrayed as the main actor responsible for the problems and failure of implementation (Bardach 1977; Barrett and Hill 1984). Skilled and committed bureaucrats were one of the essential elements that policy-makers had to have if they wanted to succeed (Mazmanian and Sabatier 1989).

This perspective has been criticized as too simplistic and far from reality. Implementation is actually in a continuum with policy and has an inherent political nature (Barrett and Hill 1984). Policy-makers, in fact, play an important role in the initial delicate phases of implementation, when conflict over policy often still arises (Mele and Compagni 2010). Equally, the implementation stage might become the time during which bureaucrats actually ‘make policy by giving it concrete meaning through
their actions’ (Brodkin 1990 p 110). The political role of bureaucrats is of special importance when policy-makers are not able to or, purposely, do not provide clear guidance through policies. High levels of conflict in relation to policy and ambiguity in goals or means might leave bureaucrats in a situation of uncertainty as to what direction to take, and during implementation this might force them to make policy choices instead of politicians (Brodkin 1990; Matland 1995). Some scholars suggest that, left to their devices, bureaucrats will resort to ‘directionless consensus’ and follow the course of action that is least resisted by stakeholders and those directly involved or targeted by a certain policy (Aberbach et al. 1981 p 93).

Even when objectives have been clearly set out by policy-makers, bureaucrats have also been shown to act strategically during the implementation process in attempts to influence and make policy choices themselves. Bureaucrats can, for instance, have goals that are different from those of policy-makers or may have elaborated their own policy-specific ‘ideology’ of what a certain programme should achieve and how it should be implemented (Peters 2010). Considering that bureaucrats often have better knowledge and expertise concerning a specific sector or programme than policy-makers, by exploiting this advantage, bureaucracy can easily become a political actor and, during implementation, intentionally pursue an agenda that diverges from that embedded into policy (Waterman and Meier 1998).

The policy implementation process starts, therefore, at the interface between policy-makers and bureaucrats. The governance of the implementation process and, in the first instance, the dynamics between policy-makers and bureaucrats, their ‘negotiating and bargaining’, and respective contributions to the process have the potential to influence strongly the final outcome of policy implementation (Barrett 2004). Although it is difficult to provide a single definition, implementation, from this perspective, can be considered successful when the actions of the implementing bureaucrats, independently from their degree of discretion, are consistent with the goals embedded into the policy
by policy-makers (Matland 1995). The governance of the implementation process is bound to be equally important whether a fully-fledged new policy is being put into practice or whether a new tool is introduced, as in the case of performance-based funding in the present study. Tool choices are not only technical but also political decisions and the tool ‘defines the set of actors who will be part of the cast during the all-important implementation process […] and determines the roles that these actors will play’ (Salamon 2002 p 10).

Other aspects, besides what is been implemented, can influence the dynamics between policy-makers and bureaucrats. The institutional context and administrative reforms mould this critical governance arrangement, modifying the degree of interdependence between policy-makers and bureaucrats, and their respective contribution to implementation (Peters and Pierre 2001).

In summary, we have explored three theoretical perspectives that might be applicable to performance-based funding according to whether its implementation is interpreted as the realization of a contractual relationship or of a policy/programme. From these perspectives, three critical nodes (design, relationship between government and fund recipients and governance) have emerged. Based on this conceptual framework, the study aims to answer the following research questions: Has performance-based funding been successfully implemented in the Italian context? Are the critical nodes drawn from the literature informative for the understanding of the implementation of performance-based funding? To what degree are these nodes interrelated?

**Methodology and data sources**

The case study is based on the collection and analysis of data and information from multiple sources, taking account of the criteria of relevance, triangulation, and saturation (Yin 1994; Marshall
and Rossman 1995; Creswell 2003). The study is purposely based on a mixed-methods research design in which quantitative and qualitative data were collected in two different time phases (quantitative first) in a sequential explanatory strategy (Creswell 2003). The two methods were then integrated in the interpretation phase of the study.

Quantitative data were collected to describe health research funding trends, the performance of IRCCS hospitals according to the performance-based funding system and the results of its application by the Ministry of Health. The analyses were based on two datasets. The first includes all allocations from the Ministry to each IRCCS hospital over a period of 7 years (2001-2007). The second dataset includes data on research activity and outputs of all IRCCS hospitals and the indicators requested by the Ministry to conform to the performance-based funding system for the years 2005-2007. These datasets were obtained from the Ministry of Health. The analysis of the data unexpectedly hinted to some corrective actions by the Ministry in the application phase. These data, on the other hand, did not suffice either to explain why performance-based funding was implemented in this fashion or to understand the implications for IRCCS hospitals of such behaviour.

Qualitative data did not only complement but also add explanatory richness to the study. They allowed to reconstruct how the performance-based funding system had developed over time, and the governance and dynamics of its current application, including the reasons for the corrective actions put in place by the Ministry of Health. These data were derived from institutional documentary analysis coupled with in-depth interviews with a former minister of health, public officials and other players involved in the funding process (the interviews were conducted by the authors in 2008-2010). The following persons were interviewed: (1) the former Minister of Health who, in 1992, started the reform of health research in Italy; (2) the Head of the Ministry’s Health Research Unit which comprises 4-5 civil servants and is responsible for the allocation of research funding; (2) a senior public official in the same unit; (3) a public official who was part of the same unit between 1982-1996, before performance-
based funding was introduced; (4) the Vice-President of the National Commission on Health Research; (5) a member of the same commission, nominated by the State-Region Joint Panel and representative of the Campania Region; and (6-7) the two scientific directors representing the IRCSS hospitals in the working group that is involved in the allocation of resources. The interviews were recorded and transcribed. The texts were then analysed. The interviews were supplemented with a documentary analysis of laws, directives, policy documents, and published commentaries since 1980. Appendix A lists the most relevant legislative steps related to the development of the performance-based funding system.

The mixed-methods approach was also applied in investigating the perspectives of all 42 scientific directors and director generals of IRCSS hospitals on performance-based funding and its application, the implications for their relationships with the Ministry of Health, and the effects on the internal organization of the IRCCS research activities. At the time the survey was conducted, there were 42 IRCCS hospitals. In late 2008, another hospital was granted IRCCS status, but was excluded from the present analysis due to a lack of data on its performance. The survey questionnaire, with both closed and open questions, was first piloted on two IRCCS managers and revised on the basis of the results. Then, the revised version was sent by email to the rest of the IRCCS managers. Out of the 42 IRCCS hospitals, 39 returned a questionnaire completed by at least one manager. For three IRCCS hospitals, both the scientific director and the director general returned the questionnaire, bringing the total number of respondents to 42. Semi-structured interviews were conducted with all managers who returned the questionnaire either face-to-face or by telephone to collect further information and comments. Interviews were transcribed and the texts analysed.
Analysis

The analysis is organized as follows. First, the background to the relationship between the Italian Ministry of Health and the IRCCS hospitals is described. This allows to appreciate their interdependence and the relevance of the relationship upon which performance-based funding impinges. Second, the events that have led to both the present design and governance of the performance-based system are narrated. The historical account of how the system has developed provides important elements to understand its current implementation and the dynamics of the relationship between the Ministry and the hospitals as well as between ministerial bureaucrats and policy-makers. How the performance-based system is currently applied and the perspectives of both ministerial officers and the IRCCS hospitals on its application complete the analysis.

THE INTERDEPENDENCE BETWEEN THE MINISTRY OF HEALTH AND IRCCS HOSPITALS IN HEALTH RESEARCH

Since 1980 Italy, has regulated by law the process of granting IRCCS status to some research hospitals. The law formalized the practice, already begun in the 1940s, of attributing the label of ‘hospital with scientific purpose’ to those healthcare organizations that had developed a tradition of high-quality biomedical research. The legal recognition of IRCCS status is nowadays the responsibility of the Ministry of Health and the National Commission on Health Research. Candidates to be assessed for IRCCS status are proposed by Regional Governments, the devolved administrative level that is responsible for the organization and administration of publicly financed healthcare in Italy.

Following the establishment of the first 17 IRCCS hospitals in the 1980s, the number of IRCCS hospitals has grown rapidly. At the time of writing, there are 43 hospitals with IRCCS status, comprising 19 public and 24 private accredited providers. Nearly half of them host the teaching
activities of the local university medical school, and each is specialized in one or a few research areas (e.g. oncology, neurology, and molecular medicine). Their sizes are diverse, ranging from 20 to 1,000 beds and from 100 to 50,000 admissions per year.

From the very beginning becoming an IRCCS hospital has conferred prestige and special status as a centre of excellence within the national context. The IRCCS denomination indicates both a hospital that provides an outstanding level of care and a centre that, by conducting research that has a high likelihood of being used to provide better care and benefits for the patients, contributes directly to the research priorities of the National Health Service.

Most importantly, this special status is accompanied by an ad hoc funding scheme by the Ministry of Health to support the research activities of these organizations, through two types of funding: project-based and institutional. Project-based funding relies on an annual competitive call directed towards relevant research themes. The IRCCS hospitals, a few national research agencies, and the Regional Governments can compete for these resources. In contrast, institutional funding and research aims at developing fundamental knowledge in the areas of biomedicine and public health on the basis of a three-year plan and according to the priorities set by the National Plan for Health Research, elaborated by the Ministry of Health in collaboration with the National Commission on Health Research. Thus, institutional research, carried out by IRCCS hospitals and a few national agencies, is a central part of the National Health Service’s research agenda.

The budget for health research at the disposal of the Ministry of Health is set each year by the Government. Over the last 7 years, the resources committed to health research have averaged €245 million per annum, and the institutional component constituted almost 80% of the overall funding (Table 1). Almost all institutional research funds are allocated to IRCCS hospitals. Only 10% are distributed to other national agencies. Conversely, project-based research funds are spread over more
beneficiaries but, still, between 2001 and 2007, a good proportion of these funds (48%) has been attributed to IRCCS hospitals.

IRCCS hospitals depend heavily on the funding derived from the Ministry of Health. Funds obtained from other public entities and from private institutions constitute around one third of their overall research funds. Some IRCCS hospitals are unable to attract any additional resources. Institutional funding is particularly relevant, as shown by the fact that 23 out of the 42 IRCCS hospitals rely on it for at least 50% of their total research budget (Figure 1).

Hence, the Ministry of Health and IRCCS hospitals are strongly interdependent. On the one hand, the Ministry invests most of its funds for research in financing IRCCS hospitals, which indicates that these hospitals are the primary actors carrying out the national health research agenda. On the other, IRCCS hospitals depend largely upon funds from the Ministry of Health, mainly from the institutional research stream, to maintain their research workforce and activities.

TOWARDS A PERFORMANCE-BASED SYSTEM TO ALLOCATE INSTITUTIONAL RESEARCH FUNDING TO IRCCS HOSPITALS

The development of the performance-based funding system has been the result of a rather long process promoted mainly by the bureaucrats within the Ministry of Health. In the 1980s, institutional funding was allocated to IRCCS hospitals by the Biomedicine Commission, which consisted of eight directors of the most relevant national research agencies, nominated and chaired by the Health Minister, with the technical support of a small ministerial unit (Health Research Unit). The Commission allocated resources by following historical spending guidelines, a financial plan proposed
by *IRCCS* hospitals, and some concrete input factors (i.e. the number of researchers and beds). It also monitored research projects with the added possibility of retracting funds in the case of poor research output.

The Health Research Unit largely supported the Biomedicine Commission by supplying some information about the performance of the hospitals, but the final decision about institutional fund allocation was in the hands of the Minister and the committee:

‘Given the fact that the Biomedicine Commission was nominated and chaired by the Minister himself, our criteria were of secondary importance to a political evaluation’ [...] ‘The separation between political and administrative phases was weak and it was easy for bias, reinforced by the politician in charge at that point, to be introduced such that one or another of the *IRCCS* hospitals was favoured independently from their research performance.’ [Interview by the authors with former and present members of Health Research Unit, Ministry of Health, 2009]

Later, the Ministry of Health Research Unit spontaneously enlarged its ‘census’ of *IRCCS* hospitals’ activities and required that they grouped their research projects into themes and provide annual financial reports and results of their projects to the Ministry of Health.

In 1998, first with a ministerial proposal, and then in 2001 with a formal decree, the Ministry of Health established that institutional funding was to be allocated on an annual basis and according to a system of indicators to measure the performance of *IRCCS* hospitals. At the time, there were 32 hospitals with *IRCCS* status (Solcia 1998). When the formal decree listed the set of performance indicators and the performance-based funding system became official, it ‘did nothing but crystallize the work already done by the Health Research Unit’ (interview by the authors with member of Health
Research Unit, 2009). The decree included the clause that the same parameters ought to be used to evaluate each IRCCS hospital’s performance every three years and to decide, on this basis, whether the IRCCS status should be revoked or maintained.

This change regarding the allocation of funding followed other relevant transformations in the governance of health research in Italy and occurred amidst a broader public sector reform inspired by the principles of the NPM movement aimed at the ‘rationalization and modernization of the public sector’. In 1994, a new Planning Department was created within the Ministry of Health, charged with the task of guiding and monitoring the implementation of national health policies and priorities, including those in health research, and the related allocation of resources. The distribution of public resources and its transparency were particularly relevant topics at the time, and changes or innovative tools in public management were introduced with the idea that ‘whoever spent public money was to be made accountable for it’. The choice of performance-based funding for allocating resources to health research was, therefore, consistent with ‘the spirit of the time’ (interview with former Health Minister, 2010).

Most importantly, in 1997, the Biomedicine Commission was replaced by the National Commission on Health Research, composed of 30 experts, mainly academics, half of whom were nominated by the Ministry of Health and half by the State-Regions Joint Panel in order to represent the perspective of Regional Governments.

The relevance of this change is further emphasised by the introduction into the National Health Plan 1998-2000 of a chapter on ‘relaunching research’. The plan specified the tasks of the new National Commission: to develop, in collaboration with the Minister of Health, a National Plan for Health Research that was able to ‘respond to the knowledge and operational needs of the National Health Service’. It specified that funds, including institutional research to IRCCS hospitals, ought to be allocated on the basis of these priorities and, as such, IRCCS hospitals were asked to present a three-
year plan of research activities that were directed towards meeting those objectives (Montanaro 1999). All these actions were aimed at signalling that publicly-funded health research was a matter of strong interest to the central government and that, in particular, the IRCCS hospitals were a ‘few privileged organizations acting in the name of the national government to fulfil its research needs’. A performance-based funding system with an annual timeframe and a strong focus on performance monitoring was supposed to drive IRCCS hospitals to improve their results, keep them aligned with government’s priorities, and ‘on their toes’ (interview with former Health Minister, 2010).

The Ministry’s civil servants within the Health Research Unit interpreted these relevant changes in the overall governance of health research (in particular, the creation of the National Commission on Health Research and the increasing reliance on the Ministry’s technocratic apparatus through the establishment of the Planning Department) as an attempt to ‘separate politics from administration’, especially with respect to the allocation of funds. In this new scenario, the performance-based funding system constituted a concrete example of the technical competence of the public administrators:

‘When the Planning Department was created and it was charged with allocating the national fund for health, including institutional research, the old mandate by the Minister to the Biomedicine Commission was invalidated automatically. The moment the National Commission on Health Research was created and it was announced that it was formed by experts, it was clear that it was no longer a political body able to interfere with the administrative apparatus but a real consultative body able to compensate for the lack of professional medical and scientific competence within the public administration. The Minister could chair the commission but could not directly influence its deliberation, unlike the previous situation with the Biomedicine Committee [...] At that point, we were able to introduce some
innovative criteria for the evaluation of IRCCS hospitals.’ [Interview by the authors with member of Health Research Unit, Ministry of Health, 2009]

In 2001, the formal decree specified that the performance of IRCCS hospitals and the allocation of institutional funding should depend on three criteria: the quality of scientific output, the quality of healthcare services provided, and the transferability of research findings to clinical practice. In addition, in the beginning, 20% of funding was allocated according to the correspondence of IRCCS hospitals’ research activities with the priorities of the National Health Service and of the National Plan on Health Research. This dimension of evaluation was later removed. It should be noted that despite the great variation in the size of IRCCS hospitals, and potentially in their research capabilities, the performance-based funding system never took into account input measures (e.g. number of researchers).

The Health Research Unit defined the main categories and weights of the indicators. The total impact factor of publications was chosen as the measure of scientific productivity. After numerous complaints from the IRCCS hospitals, the impact factor was normalized according to specific medical subdisciplines. To assess performance in the delivery of healthcare services, the Health Research Unit chose indicators that were already available, avoiding more complex measurement criteria:

‘We would have had to commission the *ad hoc* collection of data with a huge increase in costs and the risk that the data were not even there; we settled for second best and used what had already been collected by the Planning Department through hospital discharge records.’ [Interview by the authors with member of Health Research Unit, Ministry of Health, 2009]
The role of the Health Research Unit became relevant not only in designing the performance-based funding system. According to policy documents and regulations, the process of allocating institutional research funds is supposed to be managed by the National Commission on Health Research, with the support of a working group composed of two Ministry officers, two IRCCS scientific directors, and four representatives of the Commission itself. However, the interviews show that the Health Research Unit team and, to a lesser extent, the working group played since the beginning a dominant role in the decision making process. The National Commission as a whole has little power to intervene in the allocation decisions:

‘When the Ministry determines the allocations, the National Commission on Health Research only offers an opinion about it and approves [...] Saying that the Commission has an active role in this process would be an overstatement, even if this is what law says the Commission should do’ [interview by the authors with the Commission’s Vice President, 2008].

The National Commission also appears to play a weak role in the policy-making phase, when research priorities should be identified. If anything, the Commission has so far been involved in proposing themes for the project-based funding stream of health research, themes that are decided on a contingent annual basis and not inserted in the long-term planning typical of a national research agenda. The Commission is almost absent in relation to institutional research and its priorities, specifically the three-year plan of IRCCS research activities, which should be aligned with the National Plan for Health Research:

‘Just asks each IRCCS hospital to list what it already does! Instead, we should say that an IRCCS hospital has a certain area of research specialization and, as such, for the next three years it will use ministerial
funding to research the priorities established by the Ministry of Health and the National Commission on Health Research.’ [Interview by the authors with the Commission’s Vice-President, 2008].

Within the National Commission there is a large degree of divergence over the kind of research that IRCCS hospitals should be carrying out. Some members favour rather basic health research, others would like to see more research applied to clinical practice and to the improvement of healthcare services. How much the research conducted by IRCCS hospitals should be different from that of universities is a matter of debate and disagreement within the Commission.

THE CURRENT APPLICATION OF PERFORMANCE-BASED FUNDING BY THE MINISTRY OF HEALTH

Since 2003, the set of indicators used in performance-based funding system has been organized into five categories, each with its own weight (Table 2). Scientific productivity and, more specifically, the impact factor of the publications of each IRCCS hospital, normalized with regard to subdiscipline, is the most relevant category. Other indicators relate to the extent to which research results have affected clinical practice, protocols, and guidelines, or have been developed into potential therapies that can be patented and hence commercialized. The capacity to attract research funding from sources other than the Ministry of Health and to educate new researchers are additional dimensions of performance that are evaluated. Since the quality of research and healthcare services are supposed to be closely related in an IRCCS hospital, performance related to healthcare services, level of clinical specialization and case complexity are included in the set of indicators to be considered.

These indicators, which are collected every year by all IRCCS hospitals and given to the Ministry of Health, determine the allocation of 90% of the budget for institutional funding, while 10% is used by the Ministry to top up the funding of hospitals that performed worse than the previous year.
and to further reward those that showed improvement. In part, this method of allocation avoids excessive variation in funding from year to year and guarantees a reasonable level of continuing financial security to IRCCS hospitals.

By analysing the data on performance of the IRCCS hospitals in 2006 and institutional funds allocated in 2007, the results of applying the performance-based funding system can be reconstructed. First of all, the analysis highlights some issues with the performance of IRCCS hospitals over several indicators. The variation in scientific output among IRCCS hospitals is, for instance, very high (Table 3). The median number of publications per IRCCS is 139, but varies from 21 to 678. Similarly, the total impact factor, normalized by medical subdiscipline, is 467 for the median IRCCS hospital and ranges from a minimum of 86 to a maximum of 3,400. Other indicators show even higher variation. The number of clinical guidelines, protocols, and procedures derived from research projects, the number of care and service innovations, the number of patients served by care and service innovations, and the number of participants in Masters and PhD programmes that are co-sponsored by the hospital are just some examples of this variation (Table 3). In addition, for a number of indicators and for several IRCCS hospitals, the corresponding measure is zero.
The ratio between scientific productivity (in terms of the total impact factor of publications, which is the most relevant proxy for IRCCS research performance) and related funding is a good indicator of how much a single impact factor point produced by each IRCCS hospital is valued by the performance-based funding system. In contrast to expectations, the data show that the worst performers with respect to scientific productivity have, on average, a higher funding per impact factor point than the best performers (Figure 2).

The impact factor of publications should, in principle, account for 50% of the funding allocated to each IRCCS hospital. A simulation of the resources that each IRCCS should have obtained in 2007 - assuming that 50% of institutional funding was allocated according to the impact factor of the previous year- shows that this is not the case (Figure 3). The difference between the simulated funds and the actual allocation (50%) is quite relevant for some IRCCS hospitals and increases, in absolute terms, for the best performers (Figure 3).

The examination of IRCCS hospitals according to the indicators set by the Ministry of Health thus reveals their great heterogeneity in a variety of dimensions. The analysis suggests, in addition, that performance-based funding, despite maintaining the positive correlation between funding and the total impact factor, is applied with some adjustments that tend to shift the best and worst performers to the middle ground.

Those officials of the Ministry of Health Research Unit who manage the allocation process admit that it involves some corrective actions from their side. These actions are seen as justified, although ministerial officials could not provide any evidence in support of their statements. Two main
issues were underlined by the interviewees. First, the results for several indicators are not easy to verify by the Ministry, because monitoring would require a site visit. This slippage in the system is corrected by an ‘educated choice’ of indicators to be used for the actual calculations and by the automatic exclusion of those that are considered to be unreliable and likely to be manipulated by IRCCS hospitals. This choice, which is at the complete discretion of the Health Research Unit, further reduces the dimensions of performance applied in evaluating IRCCS hospitals and increases the relevance of scientific productivity as expressed by the impact factor of publications.

Second, according to the ministerial officials, some indicators systematically disadvantage a number of IRCCS hospitals, in particular, public hospitals and those with narrow areas of research specialization. As an example of the foregoing, scientific productivity is perceived as penalizing public IRCCS hospitals that have strong intrinsic constraints, such as a large research workforce with permanent contracts that cannot be laid off and less flexibility in attracting private funding. Likewise, IRCCS hospitals that specialize in broad areas of research (i.e. molecular medicine, oncology) are believed to have an extensive list of high impact-factor journals from which to choose when submitting their findings for publication, a list that is much shorter for other areas of research.

In other words, IRCCS hospitals are not thought to be competing on a plain field and this implies that particular attention is paid by the Health Research Unit to ensuring that those IRCCS hospitals that have the lowest performance are not penalized too much by performance-based funding. Vice-versa, the allocation of institutional funding for some of the best performers might not be calculated proportionally to scientific productivity, thereby reducing the correlation between performance and funding. Despite admitting the possibility for improvement, discretional corrective action is seen as inevitable and part of the process of evaluating results. As one of the officials acknowledges: ‘A good public administration will always make corrections, just as a good father would do with his many children’.
Corrective actions do not appear to be mandated by the Health Minister, rather they appear to be the result of independent initiatives taken by the Health Research Unit and are often based on an ideological or institutional stance. For instance, ministerial bureaucrats feel strongly about safeguarding public hospitals which are seen as being in the competition with private IRCCS hospitals. Corrective actions reveal, though, a much deeper ambiguity about the purpose of applying performance-based funding and a strong departure from the meaning that policy-makers initially wanted to give to the system. Instead of encouraging IRCCS hospitals to align their research agendas to the national priorities set by the Ministry and making them accountable for the public resources they have spent in research, the Health Research Unit appears to allocate funding to ‘support the maintenance’ of the IRCCS hospitals, whatever their research agenda actually is. One of the members of the National Commission on Health Research explains how this notion is strong within the Ministry:

‘There are some [within the Health Research Unit] who see IRCCS hospitals as centres of excellence to which the National Health Service is duty-bound to guarantee survival [through institutional funding] because they are certain to produce research of good quality’ [Interview by the authors with the Commission’s Vice President, 2008].

THE PERSPECTIVE OF IRCCS HOSPITALS ON PERFORMANCE-BASED FUNDING FOR HEALTH RESEARCH

The top managers of IRCCS hospitals seem to attribute great importance to the issue of institutional research and to the implementation of the performance-based funding system. Most managers claim that, over time, the system and its set of indicators has increasingly influenced the research activities of IRCCS hospitals. The strategic planning of the IRCCS research portfolio is, for example, made rather uncertain by the relatively low level of funding and, more importantly, by the annual timeframe of the funding mechanism. Such a short timeframe is deemed inconsistent with the
pace of health research projects. Half of those who responded also stated that the funding system affects the organization and management of research units, as it drives managers to allocate resources to more productive units (as measured by the impact factor of their publications). Several IRCCS hospitals have, in addition, offered incentives to individual researchers based on their scientific productivity (i.e. publications in high-impact-factor journals, membership in international research networks, and the capacity to attract research grants), thereby reproducing within their organization part of the rationale for the performance-based funding system.

IRCCS managers agree with the overall principles of performance-based funding as applied to health research. Sixty-two percent state that the criteria for allocating institutional research funds are in principle appropriate. Although it is recognized that the emphasis on the impact factor of publications may incentivize only research projects that have the potential to result in good publications, over half of the IRCCS managers believe that the weight given to the impact factor in the performance-based funding system is fair. Twenty-one percent think it should carry even greater weight (Table 4).

Concern is expressed about the fact that the system is ‘baroque’ given the number of indicators, and that several measures (e.g. number of biological banks and number of patients in clinical trials) are actually not verifiable nor verified by the Ministry, unlike what is done for the impact factor of publications. Nonetheless, IRCCS managers seem to believe that performance-based funding is legitimate in its main features, likely to continue, and can be improved by concentrating on few ‘relevant, solid and constant indicators’.

The central issue lies in the fact that, for most IRCCS managers, the funding mechanism lacks impartiality and is underwritten by a high degree of subjectivity exercised by the Health Research Unit: ‘The main problem is the free interpretation of the system due to the lack of equal and constant rules for everybody’ [...] ‘The allocation is based on a combination of applying an algorithm and the necessity of maintaining the status
for political and ideological reasons’ [...] ‘It is based on arbitrary adjustments outside of the official methodology’ [...] ‘Other needs probably come into play that prevent the exact application of the indicators, for instance the need to support old IRCCS hospitals with salaries to pay or newly designated IRCCS that need to develop’ [...] ‘The indicators can only be partially applied. We moved from the fourth to the first position if one looks at the IF of our publications and in six years our funding has barely changed. It barely changed also for those that did not improve at all! So how can I trust this allocation process?’ [Interviews conducted by the authors with IRCCS top managers, 2008-2009].

Only 40% of those who returned completed questionnaires believe that the Ministry of Health applies the funding criteria correctly, while 55% believe that they are only applied partially (Table 4).

In addition, the allocation process is perceived as lacking in transparency. Over half of IRCCS managers are not satisfied with their relationship with the Ministry of Health, given that no formal consultation and appeal mechanism is in place and little explanation or detailed information about the application of the funding mechanism is provided to IRCCS managers (Table 4). The only official gathering of Ministry officers and IRCCS scientific directors is the annual meeting, when the results of the allocation are shown. What the Health Research Unit sees as an act of transparency normally generates the opposite reaction:

‘In general, the atmosphere is very tense with discussions, quarrels […] otherwise they [the scientific directors] write letters to us and to the National Commission on Health Research to complain furiously about the allocation.’
Disagreement over performance-based funding extends beyond the allocation process. In the interviews, IRCCS managers state that the Ministry of Health is too focused on the funding mechanism per se, whereas they are of the opinion that it should be more engaged in commissioning and defining health research priorities, and in linking institutional funding to these priorities. The great majority agrees that this is what should happen (Table 4) and laments both the absence of a national research agenda and the ineffectiveness of the three-year plan of hospitals’ activities. The IRCCS scientific directors envisage a policy-making process for defining research priorities that sees them participating in a debate with all relevant national actors involved in research, but, first and foremost, with the Ministry and the National Commission on Health Research. The Commission, in particular, so far almost absent from the policy-making phase, is thought to be a very important and competent source of guidance in defining a research agenda.

Failing to connect at a political and planning level appears to render the application of performance-based funding a rather sterile exercise, with very little meaning for the hospitals. As one scientific director states: ‘In the end, there is no discussion about what we research and if this makes any sense for the Ministry, the National Commission or the National Health Service. The only thing that comes out of the Ministry for us is a number!’
Discussion and conclusions

The foregoing has narrated the implementation of performance-based funding as a tool to allocate public resources to health research in Italy. The analysis has followed the implementation process from the system’s creation and introduction in the late 1990s up to its current application after ten years of existence. The study provides evidence that the performance-based funding system has persisted over time, but the way in which it has been implemented is rather different from what had been imagined by its proponents, and most of its initial meaning has been lost over the years. While the overall set-up and design of the system have contributed to a limited extent to this final outcome, both the governance of the system’s implementation as well as the relationship between the IRCCS hospitals and the Ministry have played the role of ‘critical nodes’. The study argues, in addition, that these two critical nodes are closely interrelated.

The performance-based funding system has been set up in a ‘contractual’ form; hospitals that abide by the contract perform and are measured over a set of indicators. Resources are then allocated accordingly. The terms of the contract specify the relationship between performance and allocation in a typical formula-funding format, and the system is accompanied by a self-reporting mechanism for IRCCS hospitals through which they provide evidence of their results. The Ministry can in principle terminate the contract. The set of indicators denotes the categories in which the Ministry wants the IRCCS hospitals to achieve good results and prove their denomination of centres of excellence. Categories are diverse and attempt to reduce complex activities such as research, education, and service delivery to a list of a few indicators, which in some cases have been chosen just out of pragmatism and for their ready availability, not for their validity. Strong relevance is attributed to scientific performance, measured through an indicator, the impact factor, which, even if largely imperfect, is supposed to represent a proxy of the quality of the scientific publications of IRCCS hospitals. The
failure, then, in the implementation of performance based-funding that this study has uncovered could be interpreted either as a matter of the faulty design of the contract, as indicated by agency theory, or as a matter of ineffective management of the relationship between the Ministry and IRCCS hospitals on which the system relies, as suggested by relational contracting.

Despite the limitations of the performance measurement system and the annual timeframe of evaluation that poorly matches the pace of research, the features of performance-based funding, including the most relevant elements of its design and the indicators used (i.e. the impact factor), are largely agreed upon and considered legitimate by IRCCS hospitals. In reality, these indicators were already part of the evaluation culture that characterizes the health research domain and with which IRCCS hospitals are familiar. The agreement between the Ministry of Health and IRCCS hospitals on the principles of performance-based funding and on it being an appropriate tool to allocate resources for health research is further demonstrated by the fact that its rationale and content are internalized by many IRCCS hospitals. The same performance indicators are, in effect, used by IRCCS managers to inform decisions about the allocation of resources to research units and to provide incentives to individual researchers. The system and its design, therefore, are in principle able to motivate IRCCS hospitals to improve their results.

On the other hand, the way the Ministry applies performance-based funding decreases the system’s actual capacity to motivate the IRCCS hospitals and contributes to its loss of meaning. The Health Research Unit has, in fact, introduced a number of adjustments and a large degree of discretion into the implementation of performance-based funding. By loosening the link between performance and allocations, the Ministry paradoxically discourages and frustrates the best performers that do not see adequate rewards for their efforts. Most importantly, the discretion with which the system is applied negates the objectivity and transparency in the distribution of resources and anonymous impartiality when following procedure that IRCCS hospitals expect from the Ministry.
The fact that allocations can be determined on the basis of parameters that are unknown to the IRCCS hospitals or different from those that were stated explicitly renders the Ministry’s final decision less predictable and increases the perception that the Ministry might manipulate the system every time in order to favour one or the other hospital for political or ideological reasons. The bureaucrats of the Health Research Units also neglect the matters of transparency in communication and of participation in the management of the institutional rapport with IRCCS hospitals. In so doing, they generate further suspicions on the part of the hospitals with respect to the Ministry’s general commitment to the relationship with them. The details of the performance-based system, such as the numerousness of the measures or the nature of some specific indicators that appear to cause most concern among IRCCS hospitals, are not in themselves considered inappropriate measures of the hospitals’ performance. Rather, the lack of their direct validation by the Ministry instils doubt in the hospitals about the credibility and the seriousness of the Ministry in implementing a sound system for evaluating performance.

In conclusion, we contend that when performance-based funding is reasonably well designed and its rationale accepted, as is the case with the Italian system, the fairness and transparency with which performance is measured and resources allocated assume a critical role in the system’s ultimate effectiveness. Not only does procedural fairness reduce the uncertainty linked to the contract, due to the inherent complexity and incompleteness of measuring performance for an activity as complex as research, but by reinforcing the trust that fund recipients have in their evaluator, it also improves, as relational contracting proposes, the quality of the relationship between the parties to the contract and favours the establishment of a more collaborative relationship. In this context, agents are more motivated and likely to respect the contract and, when the principal is credible, they might also be more willing to contribute to the principal’s broader objectives.
The analysis shows that, when introducing performance-based funding, policy-makers had additional objectives besides motivating IRCCS hospitals to perform better over a set of defined indicators. Performance-based funding was portrayed as a means to monitor the research activities of this selected group of hospitals and to make them accountable for the way they spend public money for research. The switch to performance-based funding was indicative of a time in which, given the prescriptions of the NPM movement, the need to increase the accountability and transparency of public administrations was strongly felt.

Even more significantly, the allocation system was part of a re-launch of health research in Italy and of an increased effort at central government level to elaborate a national research agenda. Performance-based funding, therefore, was supposed to align the IRCCS hospitals to the newly elaborated priorities of the National Health Service. In practice, the study reveals that the performance-based funding system is not linked to clear priorities. Moreover, the three-year plan of IRCCS research activities, which should represent the trait d’union between the funding system and the national research agenda, has proven to be a weak and inadequate tool, designed mainly for administrative reasons. The fact that performance-based funding is in reality only a set of indicators aimed at rewarding research outputs implies that even if the performance-based funding system were applied correctly, it might end up rewarding IRCCS hospitals with a high scientific productivity but still be unable to answer research questions relevant to the National Health Service.

Here, we argue that the disconnection between the performance-based funding system and the policy-making process is an important contributory factor to its loss of meaning and lack of effectiveness. In this respect, the results of the study suggest that the governance of performance-based funding might have been critical. By governance we mean, as suggested by the literature on policy implementation, the dynamics of the relationships between policy-makers, in first instance the Health
Minister but also the National Commission on Health Research, and the bureaucrats of the Health Research Unit.

Performance-based funding was introduced and has evolved under the leadership of bureaucrats in the Health Research Unit, who not only designed, but also manage almost exclusively, its application in the allocation of funding. The National Commission on Health Research plays, in reality, only a marginal and purely formal role, confirming what the Health Research Unit has decided.

The strong ownership of the performance-based funding system by the ministerial bureaucracy might be the result of several factors. First, bureaucrats were the proponents and had experience with an earlier set of indicators introduced by the Unit for the purposes of internal accounting and monitoring. In other words, they had the technical expertise to manage the system. Second, the findings indicate that the context of the NPM wave of reform at the time that the system was introduced might have facilitated the insulation of performance-based funding within the bureaucracy of the Ministry of Health. The NPM movement advocated that the administration should be free from direct political control and that the technocratic apparatus should gradually come to increase its influence on decision-making processes, especially those concerning the allocation of resources. ‘Let the managers manage’, even if softened up in the Italian context, was the motto of that time. In this context, that the management of the performance-based funding system was put in the hands of the Health Research Unit, without any political supervision, and that the bureaucrats ended up running it and thereby even increased their legitimacy, is not surprising in itself.

More relevant for the present study are the consequences of this bureaucratic monopoly, in particular, the risk that it has increased ‘administrative leadership at the expense of political leadership’ (Christiansen and Lægreid 1999). The introduction of the system was accompanied by a shift in the locus of decision-making power from the small Biomedicine Committee and the Health Minister to a large and expert-led National Commission on Health Research. The Commission, despite the level of
competence and expertise in health research that it embodies, has not been able to support the Minister in identifying research priorities for the IRCCS hospitals. Conflict within the Commission over the nature of the research that IRCCS hospitals should carry out has resulted in a large degree of policy ambiguity both in goals and means. The monopoly that bureaucrats have over the system’s application together with a lack of clear guidance over priorities has given bureaucrats the opportunity to make political choices instead of policy-makers. Bureaucrats, as demonstrated by the corrective actions that the Unit applies, make their choices not according to the priorities of a national research agenda, but on the basis of self-generated criteria, often without any evidence, and on the basis of their own ideological stances about what performance-based funding should do and achieve.

The governance of performance-based funding is not only relevant in explaining why policy and implementation have become disconnected, depriving the system of its original meaning. Governance is also interrelated with the perception that IRCCS hospitals have of the Ministry and with the quality of their relationship. The separation of performance-based funding from policy-making, the weakness of the Health Minister and the National Commission in identifying research needs and priorities, and their inability to interact with the hospitals to create a research agenda jointly are all factors that, in the eyes of the hospitals, have further deprived the Ministry of credibility and undermined the relationship between hospitals and Ministry. The analysis shows, therefore, that the credibility of the Ministry not only lies in procedural fairness and transparency, but also in the capacity to exercise the role of policy-maker, providing direction and goals as the basis for performance-based funding.

In conclusion, the study provides further insight into the complexities of implementing performance-based funding. Unlike most of the existing literature, it draws attention to critical aspects, beyond the design of the system, that better capture the political meaning of allocating resources on the
basis of a performance evaluation. It shows that governance and procedural fairness are key to the successful implementation of performance-based funding.
References


Martin, L.L. 2004 ‘Performance-based Contracting for Human Services: Does it Work?’, 


Acknowledgments

[to be completed]
## Appendix A

**Timeline and main decrees and policies in the development of performance-based funding for health research**

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Description</th>
<th>Decree/Article/Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>Regulation of the IRCCS status</td>
<td>Decree no. 617, 31st July 1980 <em>Ruling, control and financing of IRCCS hospitals</em> [Ordinamento, controllo e finanziamento degli Istituti di Ricovero e Cura a Carattere Scientifico]*</td>
</tr>
<tr>
<td>1992-1993</td>
<td>Regulation of institutional and project-based funding streams</td>
<td>Decree no. 502, 30th December 1992 article. 12-bis1. <em>New regulations for the National Health Service</em> [Riordino della disciplina in materia sanitaria]; Decree no. 269, 30th June 1993. <em>Reorganization of IRCCS Hospitals</em> [Riordinamento degli Istituti di ricovero e cura a carattere scientifico]*</td>
</tr>
<tr>
<td>2001</td>
<td>Official approval and introduction of the performance-based funding system</td>
<td>Decree no. 213, 13th February 2001 <em>Simplification of the procedure for the funding of institutional and project-based research carried out by both public and private IRCCS hospitals</em> [Regolamento di semplificazione del procedimento per il finanziamento della ricerca corrente e finalizzata svolta dagli istituti di ricovero e cura a carattere scientifico, con personalità giuridica di diritto pubblico e privato]*</td>
</tr>
</tbody>
</table>
**Figure legends**

Figure 1. Proportion of institutional funding over total research funding attracted by each IRCCS hospital

Figure 2. Total normalized impact factor of publications (in 2006) and institutional research funds allocated in 2007 per point of impact factor (€/Impact Factor) by IRCCS Hospital

Figure 3. Difference between simulated and actual institutional funds by IRCCS hospital
### Tables

Table 1. Total funding for health research by the Ministry of Health (MoH) and proportion of institutional funding

<table>
<thead>
<tr>
<th>Year</th>
<th>MoH total funds (€ million)</th>
<th>Institutional research on total MoH funds (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>243.1</td>
<td>75.4</td>
</tr>
<tr>
<td>2002</td>
<td>255.9</td>
<td>72.5</td>
</tr>
<tr>
<td>2003</td>
<td>262.1</td>
<td>77.1</td>
</tr>
<tr>
<td>2004</td>
<td>205.0</td>
<td>88.9</td>
</tr>
<tr>
<td>2005</td>
<td>194.0</td>
<td>85.8</td>
</tr>
<tr>
<td>2006</td>
<td>255.8</td>
<td>82.7</td>
</tr>
<tr>
<td>2007</td>
<td>301.3</td>
<td>74.3</td>
</tr>
<tr>
<td>Total (2001-2007)</td>
<td>1,717.2</td>
<td>78.9</td>
</tr>
<tr>
<td>Average (2001-2007)</td>
<td>245.3</td>
<td>79.4</td>
</tr>
</tbody>
</table>

Source: elaboration on data provided by the Italian Ministry of Health
Table 2. Categories and set of indicators in the performance-based funding system. Percentages indicate the weight attributed to each category or indicator in allocating funds

<table>
<thead>
<tr>
<th>Criteria (overall weight)</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scientific productivity (50%)</strong></td>
<td>- Scientific publications by normalized impact factor (40%)&lt;br&gt;- Scientific production with implications for clinical practice (certain or expected) (10%)</td>
</tr>
<tr>
<td><strong>Productivity, capacity to attract resources for research and convert research into clinical practice (15%)</strong></td>
<td>- Ratio between scientific production and ministerial funding from the previous year (cost for impact factor point)&lt;br&gt;- No. of contracts with researchers of high scientific productivity&lt;br&gt;- No. of clinical guidelines, protocols for clinical trials and procedures derived from research projects&lt;br&gt;- No. of patents and royalties obtained in the previous three years&lt;br&gt;- Total funding received from other research funders, both public and private (e.g. European Union, foundations)&lt;br&gt;- Total funding received from private research funders&lt;br&gt;- No. of biological banks (e.g. stem cells, bone, blood etc.)&lt;br&gt;- Biological material (e.g. cell lines) for research in the field of rare diseases (quantity and quality)</td>
</tr>
<tr>
<td><strong>Healthcare services (20%)</strong></td>
<td>- Diagnosis Related Groups (DRGs) relevant to the area of specialization&lt;br&gt;- Case Mix (degree of case complexity)&lt;br&gt;- Rate of hospital infections, use of drugs and devices&lt;br&gt;- % of patients treated according to guidelines and clinical pathways adopted by the IRCCS hospital</td>
</tr>
<tr>
<td><strong>Promotion of excellence in healthcare (10%)</strong></td>
<td>- No. of patients enrolled in clinical trials&lt;br&gt;- No. of registries for rare diseases with national relevance&lt;br&gt;- No. of official pathology registries (e.g. cancer registry) with regional relevance&lt;br&gt;- No. of service networks (e.g. cancer)&lt;br&gt;- Use of telemedicine&lt;br&gt;- No. of care and service innovations (technologies, procedures)</td>
</tr>
<tr>
<td><strong>Educational activity (5%)</strong></td>
<td>- No. and length of internships of IRCCS employees in relevant and prestigious centres&lt;br&gt;- No. and length of internships offered by the IRCCS hospital to other centres&lt;br&gt;- No. of continuous medical education (CME) credits accumulated by the IRCCS hospital&lt;br&gt;- No. of participants in Masters and PhD programmes co-sponsored by the IRCCS hospital&lt;br&gt;- Library service and other sources of evidence</td>
</tr>
</tbody>
</table>

Source: Italian Ministry of Health
Table 3. Examples of indicators for the allocation of institutional funding to the IRCCS hospitals and their degree of variation

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of publications</td>
<td>139.0</td>
<td>21-678</td>
</tr>
<tr>
<td>Normalized Impact Factor – total</td>
<td>462.6</td>
<td>81-3,398</td>
</tr>
<tr>
<td>No. of clinical guidelines, protocols for clinical trials and procedures</td>
<td>71.5</td>
<td>0-669</td>
</tr>
<tr>
<td>derived from research projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of care and service innovations</td>
<td>6.0</td>
<td>0-33</td>
</tr>
<tr>
<td>No. of patients served by care and service innovations</td>
<td>800.0</td>
<td>0-62,140</td>
</tr>
<tr>
<td>No. of participants in Masters and PhD programmes co-sponsored by the</td>
<td>10.0</td>
<td>0-112</td>
</tr>
<tr>
<td>IRCCS hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional research funds 2007 (€)</td>
<td>3,183,050</td>
<td>443,856-17,460,250</td>
</tr>
</tbody>
</table>

Source: elaboration on data provided by the Italian Ministry of Health
Table 4. The perception of IRCCS top managers of the performance-based funding system and of the relationship with the Ministry of Health (MoH): results from ten closed questions*

1. The Ministry of Health, together with IRCCS hospitals and other relevant actors involved in health research should identify research priorities in the areas of IRCCS specialization, and institutional funding should finance these priorities. Regarding this statement, you:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>38</td>
</tr>
<tr>
<td>Do not agree</td>
<td>4</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

2. In your opinion, is the system of indicators chosen by the MoH to allocate institutional funding appropriate to finance the research activities conducted by IRCCS hospitals?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
</tr>
<tr>
<td>No answer</td>
<td>1</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

3. In particular, the fact that the total Impact Factor of IRCCS hospitals’ publications determines 50% of the allocation is, according to you:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive</td>
<td>9</td>
</tr>
<tr>
<td>Adequate</td>
<td>24</td>
</tr>
<tr>
<td>It should weight even more</td>
<td>9</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

4. In your opinion, are the indicators chosen by the MoH correctly applied during the allocation process?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>17</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
</tr>
<tr>
<td>Only partially</td>
<td>23</td>
</tr>
<tr>
<td>No answer</td>
<td>1</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

6. The workload for IRCCS hospital to fulfil the request of the MoH for the dataset necessary for the allocation is:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>24</td>
</tr>
<tr>
<td>Average</td>
<td>18</td>
</tr>
<tr>
<td>Low</td>
<td>0</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

7. Is the level of participation by IRCCS hospitals in the decision-making process related to the allocation of institutional funds satisfying to you?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>13</td>
</tr>
<tr>
<td>No</td>
<td>28</td>
</tr>
<tr>
<td>No answer</td>
<td>1</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

8. When the allocation has been decided, are the criteria utilised by the MoH to reach that result explained to you?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>24</td>
</tr>
<tr>
<td>No answer</td>
<td>2</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

9. Do you receive feedback every year from the MoH about the performance of your IRCCS hospital according to the set of indicators for institutional funding allocation?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>13</td>
</tr>
<tr>
<td>No</td>
<td>29</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

10. Is there a formal procedure by which the IRCCS hospital can appeal against the decision taken by the MoH?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>34</td>
</tr>
<tr>
<td>No answer</td>
<td>5</td>
</tr>
<tr>
<td>Total respondents</td>
<td>42</td>
</tr>
</tbody>
</table>

*The table presents the answers of all 42 respondents to the questionnaires representing 39 IRCCS hospitals
Figure 1. Proportion of institutional funding over total research funding attracted by each IRCCS hospital
Figure 2. Total normalized impact factor of publications (in 2006) and institutional research funds allocated in 2007 per point of impact factor (€/Impact Factor), by IRCCS Hospital
Figure 3. Difference between the actual and the simulated institutional funding by IRCCS hospital. The simulated funds are computed assuming that 50% of institutional funding would be allocated according to the impact factor of the previous year. Each dot represents an IRCCS hospital.