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**Performance measurement systems in higher education:
How levers of control reveal the ambiguities of reforms**

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**Performance measurement systems in higher education:
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Abstract

This paper focuses on the introduction of new performance measurement system (PMS) for measuring teaching performance in Universities. The adoption of such PMS should prompt significant changes in existing control processes, but the goals of reform do not automatically translate into the desired organisational responses. Given the impact of PMS on management controls, the nature of such ambiguities may be better investigated using a framework that allows management control systems (MCS) to be taken in account. This paper investigates key actors' perceptions regarding the introduction of PMS through the lens of the levers of control (Simons 1995, 2000). A qualitative analysis is conducted on interviews held with Italian university teaching managers and heads of programmes to examine the ambiguities arising from the implementation of a PMS.

Several ambiguities emerge, both within and between the levers analysed, suggesting some reasons for the (partial) ineffectiveness of PMS reforms. In particular, the belief systems lever is crucial in making reforms acceptable, bureaucratic procedures are important in the diagnostic control systems lever, and performance indicators operate as a boundary system lever. Our findings show that administrative and academic actors perceive the interactive control capacity of PMS differently.

1. Introduction

Reforms in the public sector have been heavily influenced by the introduction of new management accounting practices and performance measurement systems (PMS). As explained in many studies (Arnaboldi and Palermo, 2011; Pipan and Czarniawska, 2010; Anessi Pessina Nasi and Steccolini, 2008; Panozzo, 2000), the notion that PMS can improve the quality of services while containing their costs has permeated the efforts of OECD member countries to reform their public services. Governments everywhere are trying to regulate the behaviour of public sector organisations by imposing the introduction of managerial technologies such as PMS.

This approach has sometimes met with resistance to unwanted accounting changes (Broadbent, Jacobs and Laughlin, 2001), however, and there have been marked discrepancies between the ambitions of the reforms and the results they achieve (Geiger and Aschenbrucker, 2014; Arnaboldi et al., 2011). Much the same approach has been taken to higher education (HE) systems in efforts to improve their efficiency and introduce new forms of managerial rationality (Capano, Regini and Turri, 2017; Teelken, 2015; Arnaboldi et al., 2011; Broadbent, 2011; de Araùjo, Branco and Francisco, 2009; Lapsley and Pallot, 2000). Such attempts to adopt management control systems (MCS) and introduce performance measures may often prove fruitless, however, because their provisions seem unable to capture the complex and composite nature of a university's activities. The extant literature shows how bureaucracies have attempted to resist change, accepting new requirements only on a superficial or formal level, without changing core processes and decision-making rules (Arnaboldi et al., 2011; Pipan et al., 2010; Panozzo, 2000). The reasons for such failures are often attributed to technical issues, a lack of necessary skills (Maran, Bracci and Inglis, 2018; Chiwamit, Modell and Scapens, 2017; Arnaboldi et al., 2011; Arnaboldi and Lapsley, 2003), the need for diverse users to interpret the reforms, or users' individual reactions to them (Vakkuri, 2010; Noordegraaf and Abma, 2003; Panozzo, 2000).

In particular, some studies highlight how individuals could influence the implementation process, when professionals take on managerial roles (Broadbent, 2011; Melo, Sarrico and Radnor, 2010; Kurunmäki, 2004), or when employees exhibit a particular attitude to management accounting (Maran et al., 2018; Tessier and Otley, 2012; Pipan et al., 2010; Espeland and Sauder, 2007). These studies all call for further research on the individual's role in management-oriented systems, and especially in the process of adopting reforms, because the existing literature on how such reforms are implemented is rather vague and varied. This paper takes the perspective that adopting PMS affects MCS as a whole, so a broad framework can be used to shed light on how PMS are translated within an organisation. In particular, the present contribution draws on the levers of control (LOC) proposed by Simons (1995) as they give us a picture of the overall MCS by paying particular

1 attention to how individuals use each control system. Thus they give us an opportunity to gauge
2 individuals' reactions to the introduction of reforms because we look at key agents' perceptions of
3 PMS. Their perceptions influence the way PMS are implemented within MCS (Tessier et al., 2012).
4 The LOC draws attention to the need to balance a wide array of formal and informal processes and
5 mechanisms at the organisational level. Previous studies only showed that, although PMS are
6 generally used as a diagnostic control systems lever (meaning that they are designed to ensure that
7 predictable goals are achieved by adopting a traditional feedback function), managers may also use
8 them to identify new strategic goals and to encourage the active involvement of organisational
9 actors in an interactive system (Kominis and Dudau, 2012; Batac and Carassus, 2009). Individual
10 attitudes (especially those of key actors) consequently have a fundamental role in implementing
11 PMS, and in influencing the way reforms are adopted within an organisation.
12 This study focuses on graduate and undergraduate programmes at two different Italian universities
13 that have introduced PMS to manage their teaching activities to comply with the requirements of
14 national reforms. We interviewed the heads of programmes (HoP) and teaching managers (TM),
15 interpreting any uncertainties arising within the LOC framework.

16 This paper makes two main contributions. First, it adds to the literature on the ambiguities of
17 managerial reforms by revealing the degrees of ambiguity encountered in the new PMS. Introducing
18 a PMS generates deep contradictions within and between the four levers of MCS, namely boundary
19 systems, belief systems, diagnostic control systems and interactive control systems. It also prompts
20 different reactions in different individuals (and key actors in particular): broadly speaking, TMs
21 react more positively, while HoPs are usually more critical. By investigating the introduction of a
22 PMS at university level, this paper offers useful insight to enhance regulators' understanding of the
23 effects of management control reforms in HE.

24 The paper is organised as follows: Section 2 presents the theoretical framework, with a first
25 subsection on ambiguities in the implementation of managerial reform, and a second on Simons's
26 LOC framework; Section 3 describes the reform of the Italian HE system; and Section 4 explains
27 our study design; Section 5 pools the evidence gathered from the interviews; and the final sections
28 contain the discussion and conclusions.

2. Theoretical framework

29 Over the decades, there have been successive managerial reforms in the public sector. Rather
30 oddly, every new reform is presented as an innovation that will be more effective than its
31 predecessor, but these reforms often seem to fail in achieving their main aims of ensuring efficient,
32 managerial and results-oriented public organisations. It is therefore hardly surprising that the
33 existing literature should identify ambiguities in the implementation of reforms as an essential

challenge to address. When reforms deal with the introduction of PMS, it seems extremely helpful to take a broad point of view, encompassing the whole MCS, because of the impact of introducing PMS on the way MCS operate. Taking this line of reasoning, adopting the LOC framework (Simons, 2000, 1995) reveals details of ambiguities also by shedding light on the specific perceptions of individuals involved in the implementation process. People respond to the introduction of PMS in different ways, and the perceptions of those who are key actors in their organisations, and the use they make of control systems, shape the functioning of MCS as a whole.

2.1 Reforms and ambiguities

Extensive research conducted on reforms involving the public sector in recent years describes their content, supports their implementation and also acknowledges their failings and shortcomings (Martin-Sardesai, Irvine, Tooley and Guthrie, 2017; Diefenbach, 2009; Arnaboldi et al., 2003). Worldwide, HE systems have been profoundly affected by such reform processes (Kallio, Kallio, Tienari and Hyvönen, 2016; Bryson, 2004). There is more interest in introducing control mechanisms for assessing organisational performance because of the growing demand for HE providers to become more competitive, efficient, effective and accountable (Parker, 2012; Melo et al., 2010; Guthrie and Neumann, 2007; Cave, Hanney, Kogan and Trevitt, 1988).

The adoption of PMS has spread to all public sector organisations, becoming the epitome of managerial reform, and promising to foster the desired organisational changes (Martin-Sardesai et al. 2017; Speklé and Verbeeten, 2014). PMS usually affect many aspects of managerial activities, particularly supplying the information needed for MCS. Previous research on this topic has mainly analysed implementation issues ranging from legal acts to organisations' functioning, and contradictions between the goals of reforms and their broad results (Geiger and Aschenbrucker, 2014; Arnaboldi et al., 2011; Broadbent, Jacobs and Laughlin, 2001). Several studies have empirically shown some of the reasons why such reforms may fail (Arnaboldi et al., 2011; Pipan et al., 2010) or have different outcomes. For example, resistance to external regulatory systems sometimes leads to the development of internal MCS that may differ from the one initially imposed by regulators (Agyemang et al., 2015). In Australian universities, Moll and Hoque (2011) found that managers and staff undermined the budget system because they saw it as inconsistent with their values and expectations for the university.

Another widely-criticised aspect of PMS is that they are not always entirely rational in supporting decision-making processes due to inherent weaknesses, uncertainties and paradoxes (Vakkuri and Meklin, 2006). Reasons for such issues include, among others, the nature of the services provided and the peculiarities of university environments (Martin-Sardesai et al. 2017; Vakkuri and Meklin, 2003; Abernethy and Brownell, 1999), the difficulty of setting targets and the lack of individual

expertise (Chiwamit et al., 2017; Arnaboldi et al., 2011; Cavalluzzo and Ittner; 2004; Arnaboldi et al., 2003).

Whatever the external normative pressure, the implementation of PMS is influenced by the reactions of the individuals involved (Martin-Sardesai et al. 2017; Agyemang et al., 2015).

Employees may resist their implementation because of the robust nature of public sector professions, for example, in which case efforts to increase the use of management accounting will encounter stiff opposition (Lapsley, 2008). Some individuals may react very badly to reforms because of the side effects of performance management practices (Ozdil et al., 2017; Arnaboldi et al., 2015; Diefenbach, 2009; Newton, 2003). One of the main unforeseen pitfalls can be a decline in the motivation and morale of human resources. For instance, significant problems may arise when managers focusing on operational targets lose sight of overall organisational performance (Arnaboldi et al., 2015) or when university staff and managers perceive changes in teaching strategies as being designed to meet external demands (Newton, 2003).

Another point of interest lies in that different actors within the same organisation can respond very differently to external regulatory requirements (Maran et al. 2018; Moll and Hoque 2011; Melo et al. 2010). When gauging these people's reactions, it is important to bear in mind that professionals and administrators may have different, and sometimes even contrasting views. Both have a core role in the organisation, but they may not see the opportunity to develop PMS in the same way. Given their distinctive perceptions about the goal and content of new managerial systems, individuals may react swiftly in accepting or refusing such changes. For instance, administrators usually respond to managerial reforms more positively than other actors, such as professionals or politicians (Melo et al., 2010).

Responses to management accounting reforms are influenced by individuals' expectations regarding the potential effects of the new system (Maran et al., 2018; Abernethy and Bouwens, 2005). Highly-professional employees may embrace managerial reforms in very different ways (Ozdil et al., 2017; Arnaboldi et al., 2011; Lapsley, 2009; Abernethy et al., 2005; Pierce and O'Dea, 2003; Abernethy and Chua, 1996). The success of a PMS in changing an organisation's behaviour and improving performance cannot be taken for granted because there is often a discrepancy between legal requirements and corporate responses (Maran et al., 2018). At present, one of the significant challenges is to understand why apparently hugely powerful reforms do not work when they are put into practice in organisations. Like their predecessors, new reforms introduced in largely ineffective public organisations may be criticised without a clear understanding of their crucial features.

2.2 The LOC framework

The literature on managerial control amply acknowledges the individual's role and opinions regarding the use of PMS. Organisations may use many processes and mechanisms to achieve their

1 goals, and there are many issues to consider in the way individuals perceive and adopt management
2 accounting practices (Malmi and Brown, 2008; Chenhall, 2003; Abernethy et al., 1996; Simons,
3 1995; Dent, 1990; Otley, 1980; Ouchi, 1977). In particular, PMS may widely affect the overall
4 MCS because performance measures may be used in many control areas. Managerial control is built
5 on multiple control systems that work together to support decision-making and the achievement of
6 strategic goals (Otley, 1980; Simons, 1990). This multiplicity can be brought down to a dualism
7 between the enabling and controlling aspects of MCS to achieve a positive tension in all the systems
8 (Mundy, 2010; Wouters and Wilderom, 2008; Adler and Borys, 1996). This means that, to succeed
9 in their management control activities, organisations should enhance their actors' empowerment
10 while ensuring compliance with rules and paying attention to coupling them with routines. For
11 instance, because the formal and informal dimensions are identified as fundamental pillars
12 (Langfield-Smith, 1997), organisations may shape and develop various devices to avoid the risk of
13 misalignment between employee behaviour and organisational goals, and thereby minimise
14 organisational threats and identify strategic opportunities (Simons, 2000).

15 This paper adopts the LOC framework (Simons, 2000, 1995, 1990) to underscore how individual
16 choice matters in the various processes and practices comprising MCS, which can be seen as the
17 outcome of organisational processes with four distinct LOC (diagnostic control systems, boundary
18 systems, belief systems and interactive control systems). These levers enable top managers not only
19 to foster the achievement of organisational goals, but also to identify new strategic patterns. Central
20 to Simons's argument is the concept of integration, which refers to the degree of consistency
21 between the various levers (Widener, 2007). The LOC framework also seems a good analytical tool
22 for investigating how MCS are used within organisations, as the levers move further away from
23 their technological and structural features (Mundy, 2010).

24 In particular, *belief systems* refer to an organisation's explicit values and purposes, which are
25 formally communicated by senior managers and systematically reinforced (Kruis, Speklé and
26 Widener, 2016; Simons, 1995). Belief systems work within the 'informal' area of control, and they
27 underscore the importance of value-based controls and the cultural dimension of an organisation. In
28 many public organisations, the shared roots and understanding described as their 'administrative
29 culture' can strongly influence the development of new managerial systems (Maran et al., 2018) and
30 how individuals perceive (and accept, use or reject) PMS.

31 *Boundary systems* refer to the limitations and constraints communicated to employees that prevent
32 them from pursuing unacceptable projects. In some ways, limitations describe what employees are
33 not allowed to do while seeking innovations and new development patterns. In empirical studies,
34 limitations are usually described as codes of conduct, ethical behaviours and policies that convey
35 values and cultural aspects permeating an organisation (Kruis et al., 2016).

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Diagnostic control systems represent the traditional feedback role of MCS. They are used to assess and reward the achievement of pre-set goals. They align employees' behaviour with the organisation's objectives based on traditional mechanisms of control because they refer to managerial tools with explicit strategic goals and methods for monitoring their achievement (Henri, 2006). Typical examples are a reliance on performance measures (such as key performance indicators) to track results, assess an organisation's performance (Kruis et al., 2016; Henri, 2006) or prepare a budget (Abernethy et al., 1999).

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Interactive control systems aim to improve managers' ability to learn from events, and to support inexperienced managers in new risky situations. Top managers decide which control system they want to use interactively by focusing attention and exchanges of opinion on shared issues. Budgets can be used interactively, and performance measures can support the discussion of new strategies or the enhancement of managers' involvement in new areas (Kruis et al., 2016; Henri, 2006). In public organisations too, a preference for informal and interpersonal relationships may influence the decision-making process (Maran et al., 2018).

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Although some authors have seen weaknesses in the LOC framework (Kruis et al., 2016; Tessier et al., 2012), others have found it valuable (Arjales and Mundy, 2013; Mundy, 2010; Henri, 2006). It was recently used to provide empirical support for the development of MCS in public organisations historically managed using a bureaucratic form of control (Kominis et al., 2012; Batac et al., 2009; Kober, Ng and Paul, 2007) with highly-formalised procedures and unavoidable compliance with legislation (Batac et al., 2009). Reforms have boosted novel opportunities for a more balanced approach to control within and between public organisations (Kominis et al., 2012; Kober et al., 2007; Abernethy et al., 1999). In this vein, Simons (1995) takes a precise view that sheds light on several dimensions of management control, such as constraint and creativity, compliance with the aims of reforms and employee empowerment.

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By embracing the LOC perspective, the present study disentangles some of the ambiguities arising from the PMS implementation process, both within and between the different LOC. It focuses explicitly on the perceptions of academics and administrators as key actors in university organisations, in an effort to answer the following research question:

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'Which ambiguities between one LOC and another, or within any particular one, do key actors perceive in the implementation of PMS in HE settings?'

53 54 55 56 **3. Reforming HE in Italy: the role of PMS**

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Like other public services in Italy, the country's HE system has gone through significant reforms since the early 1990s, gradually implementing managerial mechanisms (Maran et al., 2018; Arnaboldi et al., 2016; Ter Bogt and Scapens, 2012; Arnaboldi et al., 2011; Anessi Pessina et al.,

2008; Panozzo, 2000). Previous authors have described the regulatory action taken as having been inspired by new public management concepts, designed to increase the efficiency and effectiveness of Italian public organisations, and their accountability to senior government levels and external stakeholders (Capano et al., 2017). Their accounting has changed from a cash-based to an accrual-based system as a form of internal control, and PMS have been introduced (Turri, 2018).

In the Italian public sector, universities traditionally benefited from a strong degree of autonomy guaranteed by the Constitution (Article 33) and legislation (Law 169/1989 and subsequent legal provisions) (Capano et al., 2017). As of the early 1990s, however, university governance and funding systems gradually changed along the broad lines of the managerial reform process (Rebora and Turri, 2011). In particular, Law 240/2010 aimed to improve the quality and efficiency of the university system by thoroughly modifying the governance structure and overall functioning of public universities. Funding schemes and recruitment policies changed, and assessment procedures were strengthened. Most of the debate focused on assessing research (especially the role of the bibliometric approach) and the effects of harsh budget cuts imposed on universities (Bertocchi, Gambardella, Jappelli, Nappi and Peracchi, 2015; Rebora and Turri, 2013). An external assessment of the quality of research and teaching was gradually introduced, and the allocation of funds changed accordingly (Capano, 2011). Once underway, the assessment process gained momentum, and several agencies were established at university and national levels to monitor research and teaching activities based on detailed indicators and guidelines (Rebora et al., 2011).

In the academic year 2015 to 2016, there were 66 public universities and 28 private universities operating in Italy with a population of more than 1.5 million students. The university system is funded primarily by the State, which provides roughly €7 billion a year, corresponding to 1% of the country's GDP. This figure is 0.6% lower than the OECD average, and one of the lowest expenditures for universities in Europe (Anvur, 2016a: 291). In the last decade, a clear tendency to reduce the available funds (down 8.8% from 2008-2015) (Anvur, 2016a: 297) has been associated with a decline in the numbers of professors, administrative staff and students. The number of study programmes has also decreased, from 5,875 in 2008 to 4,585 in 2016 (Anvur, 2016a: 5). Resources are increasingly allocated on the basis of performance criteria: the proportion of the total resources involved has risen from 20% in 2015 to 30% today (Law 69/2013, Article 60). The requirements for allocating State funds include the number of students passing their university exams on time weighted by the standard cost per student, the outcome of national research assessments, and the research results of recently-recruited personnel.

In 2012, the Italian Legislative Decree 19 ('the Decree') imposed an assessment system based on the following three pillars: an initial and then periodic accreditation scheme for university programmes and venues; a quality, efficiency and effectiveness assurance and assessment system

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for teaching and research; and a reinforced system of university self-assessment to enhance the quality and effectiveness of research and teaching activities. The regulations and guidelines have changed several times since 2012. Currently, initial accreditation requires that a university's programmes (at all academic levels) meet several targets and indicators dealing with financial and teaching sustainability (Anvur, 2016b). For each programme, the Decree also requires suitable infrastructure, a quality assurance system, specific annual targets, internationalisation activities, procedures to collect students' opinions on programmes and work experience placement services, and it considers the teachers' qualifications (Anvur, 2016b: 23). In short, for each programme, there are several performance indicators for reporting on documents and decision-making, from the ex-ante design phase to the ex-post assessment. The regulations establish some indicators, while others can be decided in the context of a given teaching programme. Table 1 shows an example of the performance indicators chosen by the regulators and often quoted in interviews.

Insert Table 1 around here

A head of programme (HoP) runs each programme, working with a teaching manager (TM). The HoP is usually a full or associate professor whose primary function is to coordinate the programme with a board of professors (the composition of this board varies from one university to another). The Decree gave HoPs and TMs a new role, especially in PMS. The guidelines and procedures are consistent with a drive to focus on quality, which relies heavily on quantitative indicators, and the standardisation of procedures and assessments. Interestingly, there is no mention of how the requisite 'quality' in teaching is defined. The regulations refer, however, to the Standards and Guidelines for Quality Assurance in the European Higher Education Area (established by the ENQA, European Association for Quality Assurance in Higher Education, in 2015). They also clarify that the ultimate purpose of the regulatory effort is to bring Italian universities and teaching activities closer to European standards (Capano et al., 2017). Under the umbrella term of quality, universities are asked to improve their transparency and enhance their accountability to external stakeholders. The regulations also try to standardise the teaching process so that students and other stakeholders can have clear information about the services provided. Quality audits (on teaching activities too) are expected to become a cornerstone of the whole system. Within this setting, the way HoPs and TMs view and adopt a PMS is crucial because its successful implementation depends on their attitudes when interacting with other actors, such as lecturers and administrative staff.

4. Research design

1 The present investigation relies on interviews as the primary source of empirical evidence. The
2 interviewees were chosen to obtain expert opinions from major actors dealing with the reforms and
3 their application to very different programmes at two different universities (Ritchie and Lewis,
4 2003). The unit of analysis was set at the programme level, and the two universities (named A and
5 B) are those where the two authors work. These choices facilitated the conduction of the interviews
6 in at least three ways. First, the empirical evidence could be collected within a short time frame,
7 avoiding any changes in the regulatory framework. Second, and most importantly, the interviewees
8 felt more comfortable about answering questions from interviewers belonging to the same
9 university than they would have been with a colleague from a different university. Finally, it
10 enabled the interviewees to make connections to specific episodes that had occurred without having
11 to describe the whole context in order to make themselves clear. The two researchers then jointly
12 analysed the interviews to achieve a balanced interpretation of their results.
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22 As the legal provisions allow universities to design their own governance settings for their
23 programmes, allocating roles and responsibilities, a preliminary document analysis was undertaken
24 to describe the two contexts in which the reform had been implemented. The documents considered
25 included specific documents and regulations (i.e. statutes) produced by the two universities, which
26 applied the general rules established in the Law of 2010 and the Decree of 2012 rather differently.
27 As an example, a HoP runs each programme, often helped by a board comprising a limited number
28 of teachers and two student representatives at University A, whereas at University B all the lecturers
29 and professors teaching on the programme are members of the board, together with two student
30 representatives and the TM. At both universities, the HoP approves all the teaching activities and
31 presides over the board. The HoP also informs new students and the public about the programme
32 and usually addresses students' requests. The HoP is not responsible for appointing lecturers,
33 professors or administrative staff, however, and does not manage any significant budget. While the
34 TMs are members of the board at University B, at University A they only support the board,
35 without being part of it.
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47 HoPs in the hard sciences and humanities were chosen, together with the TMs working on the
48 various programmes. Some of the HoPs are currently responsible for more than one undergraduate
49 and graduate programme, so their expertise is broader. We very much appreciated respondents with
50 a longer period in office, especially if they had worked in the same role before the reforms were
51 introduced and could compare the situation before and after the adoption of the latest PMS. All the
52 TMs and HoPs interviewed had over five years of experience in their roles. This study covers 17
53 interviews conducted with 12 HoPs and 5 TMs at the two universities, A (8) and B (9). The
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interviews lasted from 24 to 78 minutes and were all conducted between April and June 2017.

Details of the interviewees are summarised in Appendix A.

The interviews were conducted using a set of open-ended questions to encourage interviewees to discuss their experiences and views regarding the adoption of PMS for their courses. They received an email beforehand to request their participation and summarise the broad aims of the study. The interviews were relatively unstructured, but revolved around a few central themes: the use of performance measures before, during and after the teaching course; how the relationships between HoPs, TMs and lecturers evolved; the complexities of the course assessment process; whether and how PMS supported decision-making; issues relating to quality requirements; and key strengths and weaknesses closely related to implementation of the PMS in their experience. The topics were addressed by starting with the perceived values or ideas conveyed by the regulations and going on to ask about interviewees' experiences in developing the normative requirements within their programme's activities.

Two initial in-depth interviews were included to test and refine the topics covered covered by our questions.. At the beginning of each interview, the study was broadly explained, and any concerns were clarified. The researcher asked the interviewee for permission to record the interview, explaining that it served to ensure an accurate, separate and subsequent analysis of the material collected during the interviews; all but one of the interviewees agreed to the recording. A summary of the unrecorded interview was prepared and sent to the interviewee to confirm its accuracy. The interviewees were assured that no other party inside or outside the organisation would have access to the content or transcript of the interviews. In other words, the researchers took responsibility for establishing a trustworthy relationship with each interviewee.

The interviews were analysed using ATLAS.ti (8.2) software, following the three stages adopted in the literature, i.e. data reduction, data display and data interpretation (O'Dwyer, 2004). The process involved making every effort to be systematic (O'Dwyer, 2004). The researchers first listened carefully to all the interviews, taking notes and identifying several key themes (some of which arose consistently, in every interview). In a second stage, qualitative data analysis software and further listening were used until a pattern began to emerge. Then the themes were grouped under the core categories of the LOC framework (belief systems, boundary systems, diagnostic control systems and interactive control systems). The analysis revealed whether and to what degree each key theme fitted one of the four levers, or whether and how any ambiguities emerged. The two researchers completed their interpretation separately, then conducted a joint analysis. The process involved revising the analysis numerous times. In a third stage, both the authors repeated the data interpretation process independently and then held brainstorming sessions to discuss their findings.

5. Findings: empirical evidence

1 The findings are organised on the basis of the four levers of the LOC framework. The results can
2 thus be analysed by presenting the PMS implementation process for each lever of control and
3 according to the interviewees' points of view (see Appendix B for a more detailed description of the
4 ambiguities that arose within each lever). Overall, the interviews clearly show that HoPs and TMs
5 see the adoption of the reforms in their programmes very differently.
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8 The TMs find the reform extremely valuable, and feel that their administrative processes have
9 improved, even though they now demand more expertise (and take more time) than in the past.

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11 *I don't see any disadvantages of this system. I can't see any alternatives to it ... It's not clear
12 whether an alternative to this reform really exists. (TM1)*
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17 The HoPs are more cautious and sceptical, judging the reforms more problematic and
18 inconsistent. They strongly underscore how time-consuming the procedures are, and the restrictions
19 on their managerial freedom. A few of them agree with the idea of reforming teaching activities, but
20 disagree with how the reform has been put into practice.
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23 *To emphasise the strengths of the reform, the idea was to oblige universities to do something
24 useful. But this aim has been met by introducing more and more constraints, creating a cage that
25 entraps universities, faculties and programmes. The system ends up prescribing a minimum
26 number of academic credits for every set of courses. I agree with the aims, but we've ended up
27 with a situation where everything is strictly regulated, and we receive absurd requests for
28 information. (HoP4)*
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38 Interestingly, both the HoPs and the TMs mention that the reforms foster changes that had
39 already been underway in some programmes.
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42 *A huge change – but I'm not sure these changes were prompted by, or a consequence of the
43 reform. Would the situation be the same by now without the reform? Yes, perhaps it would, but it
44 would probably not have had the same timing. (TM1)*
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47 *There haven't been any particular changes because this programme, which was born in 2001–
48 2002, was already designed as a project largely autonomous from the institution (which was a
49 faculty at the time and is now a department) and from other programmes. (HoP9)*
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5.1 PMS and the belief systems lever

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54 The new requirements have helped organisations to adapt to a set of shared values, based on the
55 premise that programmes have to meet high quality standards because the reform is designed
56 around the concepts of quality and assessment. The word 'quality' recurs frequently in both the
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national regulations and the documents drafted at each programme level. This focus can be seen as a way to transmit these values to internal actors, and to reinforce them systematically.

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2 Respondents note this novelty and feel that the unspoken aim of the reform is to regulate
3 universities' different behaviours and approaches to teaching. It would thus provide more
4 homogeneous (and hopefully improved) levels of teaching performance, especially from a student's
5 point of view.
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9 *We weren't convinced that these new management models could change the way programmes*
10 *are run ... but I believe this has actually happened in recent years. Many internal behaviours*
11 *have changed, and so have positions and tasks. Now the concept of 'quality' is being applied to*
12 *the daily activities of the programmes. Quality assessment is an item that is put on the board's*
13 *agenda with clockwork regularity nowadays. (TM5).*
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20 The reform is both an opportunity to reflect on how daily activities are carried out, and to
21 standardise them in order to share knowledge and programme goals, and identify procedures,
22 consequently making them less dependent on single individuals.
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25 *The different reforms made us think. From the administrative standpoint they stopped us, put us*
26 *in a cage, forcing us to keep check. So, from the administrative point of view, we worked better*
27 *because we were less independent, and therefore more consistent with the university's standards.*
28 *So, I perceived a benefit from the administrative point of view and a disadvantage in terms of*
29 *timing. Before the reforms we were more flexible. Regarding the administrative processes, the*
30 *reforms gave us a layout less dependent on individuals and therefore more standardised. (TM1)*
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38 As the overall values are not entirely clear, some interviewees sometimes strongly disagree with
39 them.
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41 *In this reform, we often discuss the concept of quality, but what is quality? To me, quality is*
42 *teachers who teach well and students who learn well. Here, instead, the idea is that quality*
43 *means how many computers you have, what kind of infrastructure you have, and what links are*
44 *on your websites. In my opinion, quality can be measured by the students who, on average, are*
45 *not stupid. (HoP5)*
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52 Difficulties consequently emerge because long-established practices and power relationships
53 have been modified. The critics also point out potential contradictions between the need to
54 cooperate to improve teaching quality and manage scarce resources, and the competition that the
55 reform fosters within each university and the overall HE system.
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It is partly true that there is a tendency to be more competitive and less collaborative because several indicators used to measure performance drive towards competition. We need to have more and more customers, who graduate quickly and achieve certain results. This means that our programmes compete with yours. Providing competition stays within a well-defined area, I don't think it's at all bad. (HoP4)

There may be several explanations for the differences between the HoPs' and TMs' points of view. For a start, TMs have been substantially empowered under the reforms because of the much greater demand for information deriving from the new legal requirements. TMs receive specific training on how to respond to this demand, and some attend graduate programmes on quality and evaluation. So they know the regulations and guidelines in detail, while HoPs often rely almost entirely on TMs to handle all the new bureaucratic requirements. HoPs also tend not to see the activities deriving from the reforms as part of their job, and they have rarely been trained in these areas.

The innovative idea of introducing assessment mechanisms is welcome. The difficulty will be for those who have to implement them, because it's not easy, and it's not really my job. (HoP7)

Ever since the previous reform, there has been a different logic for universities. Honestly, I don't think it worked properly. What results does this managerial idea focusing on efficiency achieve? I don't think it worked well, for example, in terms of the placement of our students. So, this idea and the latest reforms have been received with great scepticism by colleagues and also by students. (HoP5)

The above comment reflects not only widespread scepticism about the capacity of the reforms to achieve their aims, but also a clear concern that some programmes may not perform in the way measured by the indicators. HoPs share this fear and most of them feel that even programmes that perform poorly should be kept alive for their cultural relevance.

Finally, among the beliefs conveyed by the regulations is the notion of the HoPs' new central role. The regulator has clearly identified the HoP as the leader of a particular course programme, but all the interviewees feel this is inconsistent with their actual role. Many of them describe the HoP as 'an individual with no real decision-making power' (HoP8), a 'symbolic or aesthetic leader' (HoP12) or a 'leader with no effective means to lead people and decide on resources' (HoP12).

In short, from the key actors' point of view, the internal belief system is not entirely consistent with the values stated in the reforms. In particular, the belief system of the reforms presents some crucial inconsistencies relating mainly to the application of quality indices to complex services such

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as those provided by HE institutions. While TMs generally accept the values conveyed by the reforms and are trained to handle them, HoPs critically underline the reform's requests. Some academics agree with the essence of the reforms, but see enormous contradictions in the competition and collaboration criteria governing internal decision-making processes.

5.2 PMS and the boundary system lever

Alongside the belief system lever, another interesting issue to consider is whether and how the reforms may have prevented employees from finding innovation opportunities or averted undesirable behaviours. In the LOC framework, boundary systems usually refer to what employees are not allowed to do when seeking innovation and new developments. For instance, the need to obtain ministerial approval (accreditation) for each course means that programme planning and ongoing activities may both be radically revised. The accreditation procedure requires that programmes ensure compliance with a set of indicators that focus mainly on the availability of resources, the distinctive features of the scientific fields involved and the match between programme outputs and job market demands. Accreditation constitutes a minimum threshold, and the demand for a course to be revised may lead to extensive changes.

Our respondents, both HoPs and TMs, see these issues clearly, describing situations in which whole programmes or several classes have had been stopped due to a lack of resources or serious inconsistencies in the course plan. The need to manage the gap between programme outputs and job market demands emerges as another core issue. The accurate identification of a programme's topics and work experience placements for students makes the interviewees very aware of the need to investigate its fit with the job market. In general, they feel that the ample inclusion of external stakeholders not only brings out critical issues, but also supports the interruption of some controversial practices.

The Decree represents a not entirely successful attempt to introduce some constraints on the atavistic self-referential behaviour of universities. Overall, a real problem that comes out is that there are some programmes that are undoubtedly useful to lecturers but not to students. There was a dramatic gap between the demands of the job markets and the universities' outputs. Each university has strong constraints related to the human resources available today, which has important effects on the programmes it provides. But, in the past, some programmes were not consistent with the needs of students or businesses. (HoP4)

The key actors do not see the need to avoid certain behaviour equally clearly, largely because such undesirable situations had sometimes already been addressed or no longer existed.

In my opinion, a sort of police presence has been introduced. In our system, there are communities that don't need policemen because they are capable of behaving fairly and

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reasonably. In other communities, policemen are absolutely necessary. On average, it has been necessary to introduce a strict enforcement to closely monitor universities. (HoP10)

Moreover, standardisation can be pernicious where programmes have already dealt with the issues the reform aims to fix, and already achieved the desired results.

Those who are already dealing with the issues say they could they could do without the standardisation. Without constraints on the procedures, we have been able to adopt very flexible and agile procedures. Moreover, if you're not obliged to make the changes, you make them if you believe in them. So you don't experience them as bureaucratic demands. For us, the costs exceed the benefits because we were already doing some of the things. Now we have to do them spending a lot of time on the paperwork. (HoP10)

Under the new regulation, HoPs are supposed to be responsible for finding opportunities to improve course quality or deal with unwanted activities, but our interviewees mention three factors that can severely inhibit the HoPs' ability to take action. First, where HoPs lack the power to intervene successfully, other opportunities to stop unwanted behaviours are rare. Given their peer-to-peer status, HoPs cannot use any hierarchical power to induce colleagues to behave differently. They can only urge individuals to commit to modifying some aspects of their teaching. At the same time, departments have the power to manage lecturers' teaching time, so each department decides how much lecturers should be involved in each programme. Because lecturers from several different departments are usually employed on a given programme, HoPs have little or no leverage to influence the choice of lecturers significantly. It is interesting that, generally speaking, the HoPs' substantial powerlessness is clearly perceived by the academics, but not by the TMs. A second factor lies in that, in terms of allocating resources, programmes are managed within severe financial constraints, which act as exogenous boundaries; thus departments allocate meagre resources to implement their strategic objectives. As for the third factor, our analysis reveals that both graduate and undergraduate programmes still have a limited degree of autonomy. Their relationships with other programmes run by the same department can influence them significantly, even after accounting for the strategic positioning of each programme within the department's overall teaching offering. Opportunities, resources and goals are consequently always identified at the department level, sometimes prompting disagreements. Our academic respondents highlight these issues more frequently than the administrative staff.

The greatest problem is the relationship with lecturers who teach on several programmes. The relationship should be addressed by the department, of course, not by the single programme.

Another great problem is the teaching plan for the next year: in this case, the most effective

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hierarchical level may be the department, not the programme. For example, think of a lecturer who works for more than one programme: it is very difficult for one programme (and its HoP) to manage this relationship. (HoP7).

In short, PMS can serve as a barrier to prevent teaching programmes from being disconnected from the needs of the job market and from offering students services without the necessary resources available. Programmes differ, however, and applying the same set of indicators to all of them is judged to be inconsistent with the quality that the HE reforms wish to achieve. This situation creates a sense of inequality and ambiguity that is not easy for HoPs or TMs to overcome. In addition, HoPs have not been given the decision-making powers they would need to fix criticalities.

5.3 PMS and the diagnostic control systems lever

The Decree established the notion of control systems based on their traditional feedback function, indicating the teaching outputs to be achieved, standardising the provisioning processes and identifying clear performance indicators. The Decree thus reinforced the diagnostic control systems lever as it aimed to align individuals' actions with organisational objectives based on this traditional control mechanism. As mentioned earlier, indicators and thresholds were introduced, and all the programmes have generally been required to produce the same set of quantitative information. Most of our respondents appreciate the greater availability of information because it enables them to monitor programme processes and results better than they did in the past. The demand for a broad set of data established by the reforms is judged extremely useful in selection procedures with a view to enrolling the most motivated students.

Now the university has given us the indicators to monitor, we spend more time on planning activities and monitoring students' careers. In this way, we are more in line with the university's strategic objectives, and this is a good thing. (TM1)

One important detail is included in the enrolment data. We ask to test students at the start so that we can select the best ones, who have the necessary skills. The data have also been used to orient the best students on our undergraduate programmes. The numbers give us a picture of the increase in student numbers over time. (TM3)

Moreover, the data are used to diagnose and fix problems in the programmes. For example, serious issues include the large numbers of students who drop out between the first and second years, and difficulties in scheduling lectures during terms or semesters.

One of the most sensitive indicators is the dropout rate. This information has been widely used to change the programmes in order to reduce the ratio of students to lecturers [...]. I succeeded in

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this battle for two main reasons: one because I used the information, the other because the chancellor supported me. But the information was important. There was recently an attempt to go back to increasing this ratio again, ignoring that we have been achieving results in the meantime. I don't have any counterfactual information, but the dropout rate is now down to 28% from 34%. (HoP5)

There is more attention to quality, and the most often-read information is the students' assessments, the dropout rate, the academic credits achieved in the first and second years. With time, we have also investigated the average grades and attendance of those free to choose their exams. The information has been used for decision-making. In other words, we have made it impossible to run courses without a minimum number of students – partly because the chancellor at the time was adamant about this (sic). (HoP5)

Other respondents are more sceptical about the usefulness of the new dataset and tend to underscore the growing ambiguities in decision-making processes. They argue that the managerial culture has yet to permeate the university and decisions are sometimes made without necessarily paying attention to the performance data generated. They also suggest that the performance measures are only collected to fill in the requisite documents.

Decisions come from different sources, which use completely different elements. This is common in the Italian university sector. There is absolutely no correlation between decisions and this kind of tool. We talk a lot about quality and meritocracy, but we still do what we're used to doing because partisan interests prevail. (HoP3)

For now, the information is there, and nobody is using it; or at least only a few use it to improve the programmes. Now, there is a strong drive for improvement, but this is because we'll soon be examined and assessed. That's my feeling ... It's just like a compulsory duty. (TM2).

A general agreement emerges from the interviews concerning the excessive demand for information. PMS are judged to be extremely demanding about procedures and deadlines, and the word 'bureaucracy' is widely used to describe the state of affairs.

The HoPs' workload has exploded. Since 2012, we've been busy with procedures and documents so that when you finally end up in November with the self-assessment procedure, you might think that you are nearing the end. But then you discover that's not quite so, because you have the assessment to carry out again. It's a never-ending task. (HoP6)

My feeling is that the greater part of such reforms has only multiplied the bureaucratic burden on all the staff, including the teachers, taking away their time and energy for research and teaching activities. The universities already sensitive to such issues have paid attention to quality

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and work experience placements, and they don't need this kind of extra bureaucracy. The universities insensitive to such issues normally limit themselves to complying with the law, without taking any action. (HoP8)

Interestingly, there is a profound awareness of the side effects of PMS, such as the risks coming from the inaccurate use of performance indicators.

In general terms, regarding the use of indicators, I recognise the need to have quantifiable objectives and therefore indicators capable of showing results in an objective way. All this is okay with me, but indicators can have perverse effects because what we produce is peculiar and not always measurable. So, we have to pay attention to the indicators and avoid confusing quality with the achievement of certain indicators. An indicator can easily have perverse effects. (HoP10)

While the associated workload has increased dramatically, the role of the HoP is still voluntary. There are usually no incentives or, worse still, occupying the post can lead to contradictory outcomes for individuals and organisations.

The incentive system is an example of a total failure to implement an idea. In an academic's career, only publications matter. So, a rational actor should care little about the students, show no interest in teaching and other matters, and focus only on publications. Even in the allocation of State funds, teaching is less and less important, and the so-called 'Third Mission' is irrelevant. This is one of the biggest mistakes of the reform. (HoP4)

There are no incentives at all for HoPs or staff. No reduction of teaching hours and no sufficient support. (TM4)

In summary, some of the diagnostic control tools are starting to work correctly, but implementing PMS has proved so harsh that memories of the bureaucratic burden involved are still vivid. Having PMS not consistent with incentive systems for individuals may have dangerous side effects, on both individuals and programmes.

5.4 PMS and the interactive lever

The Decree introduced a wide array of control tools that are usually considered part of the diagnostic control systems lever. Findings reveal, however, that some elements of the new PMS also support the diffusion of interactive forms of control. As it was up to the top managers to identify interactive systems, our interviews revealed that HoPs and TMs had often tried to use performance measures to focus the attention of colleagues, administrative staff, and stakeholders on shared issues.

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Involving new stakeholders in the governance structure enables the debate to expand and gives rise to a broad set of expectations and opinions regarding the programme's results. PMS provide an opportunity to depart from a 'static' (diagnostic) form of control and promote an organisation-level dialogue, creating new communication processes so that TMs and lecturers can share their insight and develop strategic alternatives.

Now the involvement of external stakeholders is really important. This is a substantial challenge in the programme's management. Now there are strong degrees of participation. Firms like to come and tell us their expectations in a positive and collaborative way. (HoP4)

Many respondents also speak of the risk of stakeholders' participation being merely 'symbolic or formal', however.

Identifying specific performance indicators to describe the strengths and weaknesses of each programme is seen as falling very short of offering a complete solution for managing the programme.

In the new procedure, you have to choose from among a set of indicators. You decide which ones are most useful for your programme. It is fairly obvious that you identify a few of them to shed light on a well-defined set of activities. Of course, the aim is not to paint a marvellous portrait of your programme ... until now, assessment documents were seen as a formality, just extra paperwork to produce ... while they may become a significant opportunity to improve your programme. You can use them as an effective management tool ... This is the goal of the reform. (TM2)

The Decree introduced some innovation to enhance the visibility of programmes and the HoPs' awareness of their performance and results. Overall, respondents judge these effects positively.

The quality of the programme is measured using many proxies. Transparency is one of them. This means that you communicate educational goals in an easy and understandable language. Even if the programme does not change, the perceived impact is different. Now we handle both communication and internationalisation, which some years ago were not considered. From the internal point of view, there is a greater involvement of the lecturers. We also pay more attention to consistency in the classes of each programme, but the consistency between the educational goals and the job market is considered too. (TM3)

Obviously, the involvement of external stakeholders may pose a risk if individuals are not fully aware of their roles and responsibilities. While TMs see avenues for making programmes more innovative, HoPs are more cautious and sceptical about the effectiveness of the changes.

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I studied managerial tools at the business and management department, but I don't see people seizing the opportunity to be entrepreneurial within the university. Of course, a programme is devoted to teaching, but it might be managed with the tools that are taught here. These new rules leave more space than before for innovation and allow the universities to follow their strategic aims. (TM2)

In short, PMS have brought some innovation that is broadly acknowledged by all respondents. In terms of helping programmes to be innovative, TMs have a more positive view, whereas HoPs tend to be more sceptical.

6. Discussion

The research question posed in this paper deals with the ambiguities perceived by key actors in the implementation of PMS in the HE setting. A detailed analysis is conducted along the lines of the main four LOC, within a comprehensive framework, because introducing PMS affects MCS as a whole. This avoids the risk of a shallow knowledge of these ambiguities giving rise to very detailed opinions about the introduction of performance measures, while typical features of public sector, professional and knowledge-intensive organisations are acknowledged. Ambiguities arise both within and between the LOC, and our explicit focus on the perceptions of academics and administrators gives us a very informative picture. In particular, this discussion focuses on the main contradictions emerging within each lever, and the overlaps between different levers (Figure 1).

Insert Figure 1 around here

Universities still benefit from a considerable degree of autonomy, and they need to make the vision underpinning the PMS as clear as possible (Moll et al, 2011). There may be cultural resistance to performance measures, especially when they are imposed by national reforms (Newton, 2003). In each programme, the belief system lever is vital in fostering the reform's fundamental values of quality and assessment, and it appears to be strongly influenced by the glaring contradictions in the introduction of PMS. In particular, concerns arise regarding the enhanced responsibilities formally assigned to HoPs, which are inconsistent with the current decision-making process. TMs meanwhile are mostly a by-product of newly-introduced PMS, but they have been explicitly trained to exploit all their advantages, while HoPs have not. Often, despite TMs' best efforts, the bureaucratic burden perceived by HoPs has increased while incentives are lacking. The additional bureaucratic demands were immediately apparent to all actors, while the enabling potential of PMS was only perceived later on, and then not by all actors (Melo et al, 2010). As in Batac et al. (2009), the present study shows a clear distinction between administrative and

academic actors. Differences in their roles within the organisation are vital in influencing their perception of the strengths and weaknesses of PMS applied to teaching programmes.

Administrative staff generally see a positive impact of PMS as a way to improve the quality of internal processes. Academics are usually more critical: too much bureaucracy is seen as the main obstacle to a real interactive use of PMS. In particular, the role of HoPs seems to have changed as a result of the reforms, and the empirical evidence points to at least three different reactions. Some HoPs have hybridised their role, agreeing to comply with the PMS and the related demand for information. Some have refused to do so, opposing their new role on cultural grounds. Some have limited their involvement by delegating as much as possible to TMs, while retaining their previous HoP role.

The quality thresholds established for a given programme are perceived as *boundaries*, so performance indicators convey a precise idea of the quality required by the reforms, and of which programmes can or cannot meet the requirements. Contradictions arise when many HoPs say that most programmes are generally managed within severe financial constraints, which act as exogenous limits. As they become increasingly aware of the details of new PMS, several HoPs soon realise that part of their programme's results depend heavily on the resources allocated. A shortage of resources may consequently sometimes be used as a relevant argument to avoid blame for poor performance. Interestingly, HoPs clearly understand that implementing PMS demands their leadership and commitment, but not all of them are willing or able to spend time and resources on trying to make it work.

The role of bureaucratic procedures emerges as an important aspect, especially for the diagnostic control systems lever, and this accounts for how compliance with the norm appears to be a key PMS issue. The complexity of the rules is generally perceived as a constraint on actors' behaviour, preventing them from abusing of their autonomy (Capano et al., 2017). Within these constraints, however, introducing PMS may lead to greater transparency, interesting challenges and new relationships between a programme's stakeholders (Melo et al, 2010). For instance, the amount of additional information available is much appreciated because it allows HoPs and TMs to monitor programme processes and results better than they could have done in the past. The broad set of information required by the Decree also proves extremely useful in the selection process, helping to enrol the most motivated students. Despite these advantages, concerns are raised about the application of the same rules to different organisations that enjoy a degree of autonomy. HoPs are more sceptical about the usefulness of the new dataset required because they feel that decisions are often made without necessarily considering the performance indicators. TMs, on the other hand, emphasise improvements in the quality of administrative procedures, even if they are more time-consuming than before. In other words, HoPs and TMs both recognise the extra bureaucratic

burden, but the former do not see its advantages, while the latter judge it necessary to improve results.

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2 The reform aims to introduce PMS, which are considered appropriate when clear and shared
3 objectives are identified, accurate performance indicators are available and results are likely to
4 influence subsequent actions. This approach has to come to terms, however, with the multiple and
5 fragmented meanings attributed to organisational goals and performance indicators. There is
6 evidence to suggest that the efficacy of such legal requirements is dubious because knowledge of
7 the outcomes is usually incomplete. The factors distinguishing success from failure are difficult to
8 identify or changeable, and the people in charge have very little room for manoeuvre. Interestingly,
9 some respondents welcome the introduction of PMS as long as they succeed in forcing programmes
10 to abandon their traditional self-referential approach. The idea that a programme's aim is to train
11 students for the job market seems to have finally permeated the universities, albeit to a variable
12 degree (especially among a niche of professors), suggesting a lesser cultural value for an academic
13 education unconnected to the job market. Many issues emerge regarding a new, more interactive
14 use of PMS (Wouters and Wilderom, 2008). The debate can be widened by involving new actors in
15 governance, engaging both internal and external stakeholders, and ensuring that performance
16 indicators are discussed regularly at board meetings.

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18 Apart from the evidence of ambiguities arising within each lever, the focus of interest in this paper
19 concerns the nature of ambiguities that may affect several levers. First, there is the role of the HoP:
20 this position is filled on a voluntary basis, but there is no incentive to do so; worse still, taking up
21 the post can have perverse outcomes for individuals and organisations. Second, the enhanced power
22 and leadership envisaged for the role of HoPs are not always supported by real decision-making
23 powers regarding resources. Programmes have a limited autonomy and they influence (and are
24 influenced by) other programmes run by the same department. As a result, PMS may shed light on
25 strengths and weaknesses not considered by HoPs and TMs because they relate to processes or
26 activities managed at department level. Decision-making processes are also often inconsistent
27 because decisions are made without considering the newly-available performance indicators.
28 Finally, because the same performance indicators are applied to different programmes, they are
29 sometimes not perceived as congruent with the quality values fostered.

30
31 These elements enable us to take a closer look at apparently incomprehensible contradictions,
32 showing that reforms implemented by HE organisations can have numerous ambiguities. For
33 instance, contradictions in the enhanced role of HoPs, the individual incentive system, and the
34 limited autonomy of teaching programmes can be seen as inconsistent overlaps between the belief
35 system and the diagnostic and interactive control dimensions. Alternatively, contradictions between
36 the levers governing boundary and belief systems, and interactive control systems may stem from
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using a similar set of performance indicators for all programmes while fostering a strong idea of each programme's autonomy and competitiveness.

The process of implementing managerial reform, which requires a strong degree of institutional commitment to its acceptance and management, may be severely obstructed by the persistence of such ambiguities. In cases where the process is still incomplete, we see a plurality of interests and points of view that often underscore conflicting and critical attitudes to the managerial reforms.

7. Conclusion

This study aimed to investigate individual key actors' perceptions concerning the introduction of PMS in public universities. Focusing on PMS enabled us to elucidate individuals' reactions to significant managerial changes introduced by recent public sector reforms. Previous research was less informative about the nature of the ambiguities arising from managerial reforms because it tended to concentrate on general problematic issues in implementation processes (e.g. Lapsley 2008, 2009; Arnaboldi et al. 2013; Maran et al. 2018). Here, a more specific framework is used to shed light on the contradictions that emerge, bearing in mind that PMS usually affect many aspects of MCS. In particular, our analysis applies the LOC framework (Simons, 1995, 2000) to MCS in order to identify the nature of such ambiguities and their mutual relations. This approach enables us to look in more detail at the ambiguities that may arise when accounting technologies like PMS are introduced in complex organisations. Key actors' perceptions are seen as particularly important, now that recent studies have shed more light on the importance of the reactions to PMS of 'hybrid managers', professionals in managerial roles (Broadbent, 2011; Melo et al. 2010; Kurunmäki, 2004) and employees (Maran et al., 2018; Tessier et al., 2012; Pipan et al., 2010; Espeland et al., 2007). Some studies have called for further research on the individual's role in management-oriented systems: Tessier et al. (2012) argue that employees' perceptions and attitudes need to be explored because their positive or negative reactions may either support them in their work or impose the need for strict compliance. Maran et al. (2018) recommended more reflection on the role of human factors in PMS.

Semi-structured interviews were conducted with HoPs and TMs of graduate and undergraduate university programmes, and the relevant internal documents were analysed. By concentrating on how these key actors see the introduction of PMS and analysing their perceptions with Simons's LOC, we obtain a more detailed picture of the ambiguities that can arise. Numerous contradictions emerged in response to the reforms adopted, both within each lever and between the four levers. In our analysis, these ambiguities simultaneously involve the belief systems lever and the boundary systems lever, but also the diagnostic and interactive control systems levers (which appear to be inconsistent with the set of values or thresholds defined by the PMS).

1 Although the belief system lever is vigorously exploited to make the PMS acceptable and deal
2 with cultural resistance, compliance with the new norms is perceived as both a diagnostic control
3 systems lever and a boundary system lever. The academic actors (HoPs) generally have a
4 significant role in the interactive use of PMS because they can promote its use at board meetings
5 and in stakeholder interactions. As Kominis et al. (2012) explained, the relationships between the
6 levers need to be balanced when implementing PMS, but this balance is not easy to achieve,
7 especially in the short term and – judging from the present findings - among such different actors as
8 TMs and HoPs.

12 This paper makes two main contributions. It adds to our understanding of the ambiguities that
13 can emerge following managerial reform in public organisations. By adopting the LOC framework,
14 it reveals the fundamental contradictions in the main dimensions of MCS. It also provides more
15 insight on individuals' diverse perceptions of PMS. In the university setting, it shows glaring
16 differences in the attitudes of the main key actors (TMs and academic HoPs). It can help regulators
17 by shedding light on how public organisations react to the introduction of managerial innovations
18 such as PMS. Enhancing our understanding of organisations' reactions may enable future reforms to
19 be designed and implemented more effectively. Since similar reform trajectories have affected HE
20 institutions in several countries, our findings may be applicable to other contexts too.

29 Like all such research efforts, this study has some limitations, which relate mainly to bias in
30 interpreting the content of the interviews due to the qualitative approach used (although our
31 software-based analytical procedure should have contained this problem). Another limitation
32 concerns the choice of interviewees, because they clearly cannot fully represent the overall Italian
33 academic world even though they were chosen for their different backgrounds, and for the different
34 programmes they were involved in. The authors also acknowledge that implementation of the PMS
35 in the programmes considered may still be incomplete (Maran et al., 2018), so the final outcome is
36 still not clear. New normative requirements may also be added to the Decree from time to time.

44 The topic of this paper could therefore be investigated in more depth. First, it would be worth
45 following up the notion of possible contradictions between the four levers of the LOC framework to
46 identify any factors that may heighten or diminish them. For instance, the belief system may not be
47 consistent with the strategic goals, which are the focus of the managers' and employees' attention.
48 Our understanding of how control systems function may be improved by gaining more insight on
49 employees' reactions. Future studies could also look at other organisations, such as local authorities,
50 ministries or healthcare organisations, to further elucidate the role of key actors. Finally, further
51 research could focus on the impact of PMS on other important actors, such as teaching staff and
52 students, or adopt a macro-level point of view, such as challenges posed by the system funding roles
53 and power relationships within the national HE system.

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43 **National laws and decrees**

44 Law n. 168/1989 “Istituzione del Ministero dell’Università e della Ricerca Scientifica e
45 tecnologica” – “*Establishment of the Ministry for University and Scientific and Technological*
46 *Research*”

47 Law n. 240 /2010 “Norme in materia di organizzazione delle università, di personale accademico
48 e reclutamento, nonchè delega al Governo per incentivare la qualità e l'efficienza del sistema
49 universitario.” – “*Rules on Academic Organisation, personnel and recruiting, and delegation to the*
50 *Government to improve quality and efficeincy of the University System*”

51 Legislative Decree n. 69/2013 “Disposizioni urgenti per il rilancio dell'economia” – “*Urgent*
52 *dispositions for improving the economy*”

Italian Constitution, Article 33, English version available at:

http://www.senato.it/application/xmanager/projects/leg18/file/repository/relazioni/libreria/novita/XVII/COST_INGLESE.pdf

Legislative Decree n. 19/2012 “Valorizzazione dell'efficienza delle università e conseguente introduzione di meccanismi premiali nella distribuzione di risorse pubbliche sulla base di criteri definiti ex ante anche mediante la previsione di un sistema di accreditamento periodico delle università e la valorizzazione

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Fig. 1: Ambiguities of reforms and control levers

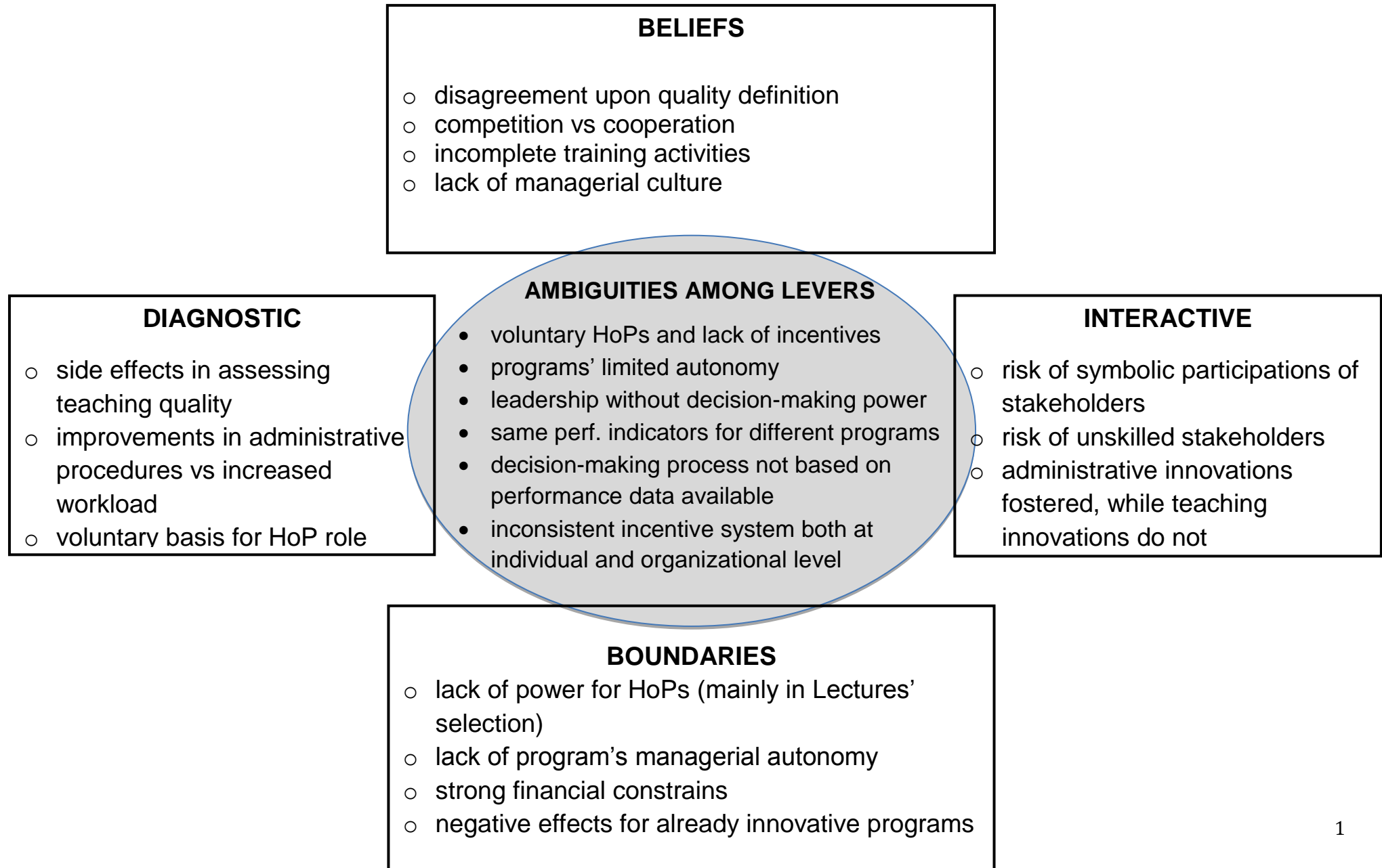


Table 1: Performance indicators defined by the reforms' acts:

Document	Examples of goals	Indicators
<u>Multi-year Self-Assessment Report</u> This contains an analysis of the results of the previous 3-year cycle and sets the goals for the subsequent 3 years.	- to reduce the average time taken to obtain a degree	% of students graduating within the legal duration of the program
	- to increase the number of international students	% of international students in the student population
	- to monitor students' careers to improve their employment options	% of graduates in employment compared with those on similar programs
	- to create a management system for addressing students' complaints	2% increase in students' satisfaction in 3 years
Document	Content	Indicators
<u>Annual Monitoring Report</u> This contains all the legally-required indicators for monitoring teaching activities.	General indicators for the program	Number of students enrolled Number of students passing exams on time
	Teaching indicators	% of students enrolled with at least 40 credits % of students graduating within the legal duration of their course % of students from other regions - ...
	Internationalization	% of credits obtained abroad out of total credits obtained % of students graduating with at least 12 credits obtained abroad
	Further teaching indicators	% of credits obtained in 1 year out of total available credits; % of students enrolling for second year with at least 20 credits % of students enrolling for second year having earned at least one third of the credits available ...
	Process and career indicators	% of students graduating within the legal duration of the course % of dropouts after n+1 years

		...
	Quantity and quality of teachers	Ratio of students to teachers Ratio of students to teachers for first-year courses
Document	Content	Indicators
<u>Students' assessment report</u> This contains the aggregate data from the quantitative questionnaire answered by students for each course.	Course	Sufficient preliminary skills Proportionate teaching load Adequate teaching materials Clarity of exam organization Newness of content
	Teacher	Punctuality Ability to arouse interest Clarity in lecturing Availability during office hours
	Interest and satisfaction	Interest in the course Satisfaction with the course Satisfaction with the teacher

Appendix A. Interview overview

Code	Univ	Role	Date	Lenght
TM1	B	TM	27/04/2017	24 min
TM2	A	TM	28/03/2017	45 min
TM3	B	TM	04/05/2017	48 min
TM4	A	TM	05/05/2017	46 min
TM5	A	TM	11/05/2017	56 min
HoP1	A	HoP at bachelor level	29/03/2017	40 min
HoP2	A	HoP at master and bachelor level	08/05/2017	59 min
HoP3	A	HoP at bachelor level	08/03/2017	78 min
HoP4	A	HoP at bachelor level	13/03/2017	33 min
HoP5	A	HoP at master and bachelor level	02/05/2017	Transcribed
HoP6	A	HoP at master and bachelor level	09/05/2017	42 min
HoP7	B	HoP at bachelor level	11/05/2017	33 min
HoP8	B	HoP at bachelor level	04/05/2017	33 min
HoP9	B	HoP at bachelor level	11/05/2017	60 min
HoP10	B	HoP at master and bachelor level	12/05/2017	52 min
HoP11	B	HoP at master level	22/06/2017	40 min
HoP12	B	HoP at bachelor level	14/06/2017	58 min

Appendix B. Detailed description of ambiguities within each control lever

Belief system:

Reform's features:

- Quality and assessment are the core values to be achieved by each program

Ambiguities:

- TMs are trained and know the reform's requests in detail. HoPs do not perceive the managerial activities as part of their responsibilities, and they are rarely trained.
- The managerial culture may not have completely permeated the university, so qualitative information is sometime collected simply to fill in the necessary forms
- A shared definition of quality is missing so HoP and TMs tend to disagree upon.
- The reform pushes competition among programs while teaching quality and scarcity of (financial and human) resources would suggest cooperative behaviours.

Boundary system:

Reform's features:

- Programs have to reach thresholds to obtain the accreditation procedure. For instance, assigning too many classes to external teachers is not permitted since as well as maintaining a high gap between program outputs and job market demand.

Ambiguities:

- HoPs lack power to intervene successfully in order to stop unwanted behaviours.
- Programs are managed under strong financial constraints, which represent exogenous limits *per se*.
- The obligations to comply with standard procedures may negatively affect those programs, which already introduced managerial changes to improve programs' quality.

Diagnostic system:

Reform's features:

- A great amount of information is now available and it allows HoPs and TMs to monitor program-related processes and results better than in the past.

Ambiguities:

- The broad set of data may be useful in managing the program (i.e., in selection procedures, in fixing problems such as high drop out rates, and in monitoring program's goals) but there may be dangerous side effects when only few performance indicators assess teaching quality.
- TMs underscore improvements in the quality of the procedures, even if they are more time-consuming than before. While HoPs highlight that the associated workload has increased dramatically, being the HoP's role still covered on a voluntary basis.

Interactive system

Reform's features:

- Involving new actors in the governance activities and using performance indicators enhance the debate, and both internal and external stakeholders are involved.
- Programs are more visible to the public than they are before, and HoPs and TMs more conscious of the results achieved and resources available.

Ambiguities:

- The reform pushes a wider participation and accountability but brings the risk of involving people who are not fully aware of their roles and responsibilities.
- Stakeholders' participation may be merely "symbolic"
- TMs see avenues for making programs more innovative being fostered by the new regulations, while HoPs are more cautious and skeptical about these opportunities.