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CHAPTER 1 – Introduction

1. Background and research questions

The topic of performance management is particularly relevant in the private sector as well as in the public sector. The relevance of the efficiency and, as a consequence, the interest about the performance management in the public sector, has been highlighted by the New Public Management. Starting from 1980', public organizations started to put more attention to the performance management and evaluation.

In the performance management literature, the debate about the topic of performance measurement and evaluation is particularly glowing, and we can find many different ways to define it. Neely et al. (1995, p.9), comment that: *“Performance measurement is a topic often discussed but rarely defined”*. They also try to give a definition of three concepts: performance measure, performance measurement and performance measurement system. These were:

- *“Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action.”*
- *“A performance measure can be defined as a metric used to quantify the efficiency and/or effectiveness of action.”*
- *“A performance measurement system can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions.”*

The problem is that defining performance is extremely complex and, with specific reference to the previous definition, the limit is that it doesn't label the concept of performance measurement in the literature and in practice.

Starting from the definition, it is possible to underline some fundamental features of performance, which explain the complexity of this concept (Guthrie & English, 1997; Van Dooren, Bouckaert, & Halligan, 2010): the subjectivity and the multidimensionality within the concept of performance (Ricci & Civitillo, 2016). The subjectivity is connected to the fact that every level of performance depends on a combination of different variables: actors involved, policies and programs. The multidimensionality of performance in the public sector refers to the need for a methodology characterized by an integration of economic variables with technical indicators, strategic and operative needs.

Despite these critical aspects, it is fundamental to underline the main role of the measurement of performance.

Why measure performance? R. D. Behn (2003) individuates eight managerial purposes for measuring performance: evaluate, control, budget, motivate, promote, celebrate, learn and improve; specifying for each one, the characteristics of performance measures based on different purposes.

Studies in performance measurement have shown that, thanks to an appropriate measurement and management of performance, organizations can have different benefits, in terms of formulation and implementation of organizational strategy, communication of the results achieved and motivation of employees (P. Micheli & Mari, 2014).

The second question is about the way in which the public organizations should measure their performance. In the literature there are many studies that analyze models used to measure organizational performance (Elg. et al, 2013). Del Bene (2014) affirmed that the system used to measure and evaluate performance must be conceptually, theoretically and empirically coherent. R.S. Kaplan and Norton (1992) consider that measures should be derived from strategy and represent different dimensions of an organization. Andrews, Boyne, and Walker (2011) proposed a model for measuring OP in US federal agencies using three sets of measures: efficiency-related measures, effectiveness, and fairness.

For the public healthcare sector it is possible to do a similar reasoning. In this specific case, the relevance of performance measurement is justified by the fact that health care organizations have a fundamental impact on the individuals' life, thus, measuring the way in which these organizations work is fundamental to judge

if they are effective and efficient. Also for the health care organizations the problem is to find a definition of performance measurement which labeled with the practice and with the real way in which this type of organizations measures their performance. When discussing healthcare organizations, it is necessary to consider that they are complex adaptive systems (P. A. Anderson, 1999; McDaniel, Lanham, & Anderson, 2009). In this specific case, the complexity relies on the phenomena's dynamism, which unfolds in unpredictable ways; these unfolding events are often unique, and it is interesting that a number of complexity theory advocates have identified healthcare as a suitable context for study (Arndt & Bigelow, 2000).

In the past decades, because of this complexity, measuring performance in the healthcare sector was uncommon and, in fact, it was believed that quality was not measurable (M.; Vainieri & Nuti, 2011). But today there is a higher interest in measuring and reporting performance in this sector, and in some cases there is the problem of having too many measures, some of which focus on outputs, outcomes, and processes, and others on single activities that have limited effect on overall health (Cassel et al., 2014). In general, in 90s many industrialized countries started to reconfigure their performance measurement system, introducing multidimensional performance measures (Smith, 2002, Arah et al., 2006), also in the health sector. Even though significant progress has been made in building more advanced performance measurement systems in the healthcare sector, more work is needed (Peter C. Smith, Mossialos, & Papanicolas, 2008).

The Italian Health care system provides universal coverage free of charge at the point of service, and it is organized into three levels: national, regional and local (Lo Scalzo et al., 2009). Still today, Italian Health care system is considered among the most advanced in the world, with excellent results in terms of healthcare and well-being (World Health Organization, 2017). With reference to the performance management aspect, in the Italian Health system there is not a general model used by all the organizations to measure and manage their performance.

Starting from these aspects the first research questions analyzed are: RQ1 "How do Italian healthcare organizations define Organizational Performance?" and RQ2 "Is Organizational Performance measured by Italian healthcare organizations, and if so, how?"

In the literature there are some papers that study organizational performance measurement system at regional and national level, as in Italy (Giovanelli et al., 2015; Nuti, Seghieri, & Vainieri, 2013; Nuti, Seghieri, Vainieri, & Zett, 2012; Vittadini, 2012) as in other countries (P.C. Smith, 2002). There are also other articles based on single case studies of particular public hospitals (Baraldi & Bocci, 2009) (Verzola et al., 2009), but there is a lack in the literature with reference to the specific way in which each Italian public healthcare organizations measure their organizational performance.

To this extent a third and fourth research questions have been analyzed: RQ3 "How do Italian public healthcare organizations measure their organizational performance?" and RQ4 "What are the factors that influence the design of performance measurement systems?"

The Italian healthcare service is based on a solidarity approach, according to which all citizens have free access to a set of medical treatments, regardless of personal income or geographical distribution. This approach requires a high level of resources and health spending in Italy at national level is about 9.1% of GDP in 2015, in line with the OECD average (9%) and it is mainly public (77%, vs 73% of the OECD average) (OECD, 2015). So, the Healthcare sector is one of the most important in terms of overall expenditure Italian Regions. To continue the previous researches, it is interesting observe if there are some connections between performance achieved by Italian public health-care organizations at regional level and the changes in expenditure. In particular, the analysis started from one research question: RQ5 "Is performance in universal health care provision influenced by changes in public expenditure?" This is the last research questions of this thesis.

2. The final output of the PhD Research.

In order to answer to the five research questions three papers are shown:

1. Organizational Performance in the Italian Health care sector
2. Measuring organizational performance in Health care: How Health care organizations measure and evaluate organizational performance
3. Performance and expenditure in public Healthcare organizations

In particular, they respectively answer to the first two, second two and the last research questions. For each paper the respective abstract is reported.

RQ1 “How do Italian healthcare organizations define Organizational Performance?”

RQ2 “Is Organizational Performance measured by Italian healthcare organizations, and if so, how?”

The public sector performance management (PM) literature is particularly rich as this topic is one of the most appealing for public sector scholars (Pollitt, 2005). However, Organizational Performance (OP) has been neglected across the world (Andrews et al., 2011) as well as in the Italian public administration (Martin & Spano, 2015). This chapter investigates how OP is defined, measured, and evaluated in the Italian health-care sector.

Our analysis showed the limited use of performance management in Italian public health organizations and a high variability in the way OP is defined and measured. This makes it difficult to compare the results of different organizations. For this reason, future standardization could allow policy makers to improve the accountability.

RQ3 “How do Italian public healthcare organizations measure their organizational performance?”

RQ4 “What are the factors that influence the design of performance measurement systems?”

Since the 1980s, the New Public Management principles have led to greater interest in a more efficient, effective and accountable public sector (Lapsley, 1999). In the Italian health sector, this influence has been seen since the 1980s, when reforms introducing managerial tools were established. There is a gap in the literature in regard to the way in which Italian healthcare organizations measure their organizational performance. To fill this gap, this article investigates two research questions:

1. How do Italian public healthcare organizations measure their organizational performance?
2. What are the factors that influence the design of performance measurement systems?

To answer these questions, 30 semi-structured interviews were carried out with general directors, administrative directors and planning and control managers from different types of Italian public health organizations that are distributed throughout different areas of the country. The categories of health organizations interviewed are Local Health Enterprises (Aziende Sanitarie Locali - ASLs), Public Hospitals (Aziende Ospedaliere - AOs) and Public National Institutes for Scientific Research (Istituti di Ricovero e Cura a Carattere Scientifico - IRCCS). The content analysis of the interviewees shows interesting results that help us to answer to the research questions. A variety of different models are used to measure organizational performance in Italian healthcare organizations and each model differs in regard to the performance dimensions that are considered and practical implementations. The interviewees highlighted that regional governments play a fundamental role in the design and use of systems for organizational performance measurement and evaluation by setting the general guidelines to follow. The general director also plays a fundamental role by promoting or neglecting the actual use of the systems. The article sheds some light on

the main problems that hinder the measurement and evaluation of performance in Italian healthcare organizations.

RQ5 “Is performance in universal health care provision influenced by changes in public expenditure?”

The Italian National Healthcare Service (INHS), at both national and regional levels, has been characterised by the reduction of available resources that has since generated a quest to reduce expenditures and inefficiencies. This reaction has been accompanied by an attempt to structurally modify the INHS. After a major reform in 1978 that introduced universal coverage for all Italian citizens, subsequent fundamental reforms took place in 1992 and 1999. The main aims of these two last reforms were to increase regional autonomy and to increase the efficiency and effectiveness of the health system. This national legislation set down general rules and guidelines for reforming the system, but the actual implementation was left to the autonomous regions. As a consequence, notwithstanding a national framework, all twenty Italian regions have made individual decisions regarding the form of their regional health service. These decisions are regarded by both the overall system at a regional level and with respect to each individual’s health care trust.

As expenditure and performance are two fundamental features of a health care system, this paper investigates the connections between performance achieved by the public health care organisations in Italy at regional level, and the changes in expenditure over a fourteen-year period (2001–2014). More specifically, the paper analyses how performance changed over time and if, and to what extent, it has been influenced by health care expenditures during the same period. Using two datasets for (1) health care expenditure as measured by the regional public accounts (RPA) and (2) indicators that measure performance (the so-called LEA indicators), the paper aims to answer the following research question:

RQ: ‘Is performance in universal health care provision influenced by changes in public expenditure?’

The results show that changes in expenditure are not significantly related to changes in performance, except for a few performance features. They also show that performance changes over time, regardless of expenditure changes.

In the following table details of the three papers are reported: title, objective, methods, results and contributions.

Title	Objective	Methods	Results	Contributions
1.Organizational Performance in the Italian Health care sector	To analyze the way in which Italian public health care organizations claim to measure their organizational performance in public documents	Qualitative content analysis of public documents published by a random sample of 50 Italian public health care organizations (ASL, AO and public IRCCSs). The results has been validate with 20 semi-structure interviews.	Findings show significant variance in the way in which OP is defined and measured and a limited compliance with the Italian legislation.	It is an explorative paper that fill the literature gap in the literature related to OP in the Italian healthcare sector and to give a general description of the Italian situation with reference to the compliance with the legislation.
2. Measuring Organizational	To better understand the	30 semi-structure interviews were	The results confirmed the	It is a descriptive paper on the OP

Performance in Healthcare. How Healthcare Organizations Measure and Evaluate Organizational Performance	effectively way in which Italian public health care organizations measure organizational performance (models used, specific indicators, influencer elements, ...)	conducted in the period between March and August 2016 involving 30 Italian public health care organizations. The transcription of interviews was analyzed with a content analysis software.	variety of the models used to measure the organizational performance, the limits of the actual systems and the principal influencer factors.	measurement system and limits.
3.Performance and expenditure in public Healthcare organizations	To test if there are some connections between performance achieved by the public health care organizations and the changes in expenditure.	A repeated factorial analysis that includes the expenditure and the performance indicators related to the period 2001-2014.	The results, in line with part of literature, show that there are only limited relations between changes in expenditure and performance indicators.	It is an explorative paper that, showing these limited connections, gives a contribution to the literature to confirm other results and to practitioners to reflect on what happens.

1. Authors: Alessandro Spano, Anna Aroni. Chapter of book System Dynamics for Performance Management 2: Outcome-Based Performance Management in the Public Sector. A previous version of the paper was presented at IRSPM International Conference in Hong Kong on April 2016.
2. Author: Anna Aroni. Paper presented at IRSPM International Conference in Budapest on April 2017.
3. Authors: Alessandro Spano, Anna Aroni, Benedetta Bellò, Valentina Tagliagambe, Elisabetta Mallus. Paper presented at AIDEA Conference in Rome on September 2017.

3. Conclusions

This thesis aims to provide an analysis of the organizational performance in Italian public health care sector. In particular, this analysis started from the respect of the normative that imposes some public documents for all public organizations.

The second step focus on the real way in which public health care organizations measure their organizational performance, with an in deep studies of the organizational performance systems used and the principal influencer factors.

The last one wants to considerer not only the organizational performance, but also the possible connections between expenditure and performance in a particular sector as the public health care sector.

The three papers presented in the next chapters are based both in qualitative and quantitative methodology: qualitative content analysis, semi-structure interviews and statistical analysis (factorial analysis).

As regards the contributions of the papers, all papers are explorative and descriptive studies that try to fill the literature gap related to the OP in Italian public health care sector and provide evidences for policy implications in health care sector. In particular, the results of the study suggest a view that performance management in the Italian Healthcare sector is poorly defined and less than effective. The reason why this happens is partially connected to a theoretical explanation: the intrinsic complexity of the healthcare sector makes a standardized performance measurement system more difficult to be defined. At the same time, the lack of a standardized performance measurement system at national level, badly influenced the measurement process and its effective. In fact, what is emerged is that there are some cases where the systems work, but in other cases not. The presence of a standardized system should solve the problem of an over-reliance on the individual competences, and should improve the effective of all the systems.

Another interesting result which improve the relevance of the contribution of this analysis, is the almost complete absence of a connection between the variation in expenditure and the healthcare performance. This means that there are other factors that influence the healthcare performance, first of all the individual management competences.

In addition, the papers presented concern two different level of analysis:

- Regional level (the third paper)
- National level (the first and the second papers)

The last study was carried out in close with the Sardinian Region, collaborating with managers of public accounts.

Finally, the research activities carried out during the three years PhD period (2014-2017) led to several deliverables to improve the knowledge about organizational performance in Italian public healthcare organizations. Most of them are working papers presented at international conferences, one has been already published in international book.

The following table reports the additional deliverables carried out during the three years PhD research activities.

Topic	Title and authors	Type of deliverable	Main contents	Methods
Mobility in Italian public healthcare organizations	Monfardini P., Aroni A., Moro D., Ledda G. <i>Evidence-based policy making: the case of Sardinian patients mobility for hospital treatments</i>	Working paper, presented at international conference AIES on November 2015	The paper focuses on Italian data and it investigates the patient mobility and its financial effects focusing on an Italian Region (Sardinia).	The most frequent hospital treatments that Sardinian citizens receive outside the region are taken into consideration for a decade, using an ad hoc database containing analytical SDO (scheda di dimissione ospedaliera – hospital discharge report), to show what financial effects they may generate in the regional financial statements.

Integrated care pathways	Spano A., Aroni A., Cannas P. Integrated care pathways: a tool to improve efficiency and effectiveness in healthcare	Working paper, abstract submitted at international conference IRSPM on April 2018	The paper focuses on the development and implementation of integrated care pathways in Sardinian hospitals	Focus group for the development and implementation of new integrated care pathways, to answer to the research question about the way in which processes analysis influence the healthcare performance.
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CHAPTER 2 – Organizational performance in the Italian Healthcare sector

ABSTRACT

The public sector performance management (PM) literature is particularly rich as this topic is one of the most appealing for public sector scholars (Pollitt, 2005). However, Organizational Performance (OP) has been neglected across the world (Andrews et al., 2011) as well as in the Italian public administration (Martin & Spano, 2015). This chapter investigates how OP is defined, measured, and evaluated in the Italian healthcare sector.

Our analysis showed the limited use of performance management in Italian public health organizations and a high variability in the way OP is defined and measured. This makes it difficult to compare the results of different organizations. For this reason, future standardization could allow policy makers to improve the accountability.

Key words: Organizational Performance, Health Care, Italian Public Sector

1. INTRODUCTION

The issue of OP is of particular relevance in the healthcare sector, where the impact of health organizations on individuals' lives is significant and measures of OP are required to understand the extent to which these organizations are effective. Even though significant progress has been made in building more advanced performance measurement systems in the healthcare sector, more work is needed (Peter C. Smith et al., 2008). In fact, the literature on performance management in the healthcare sector reports several cases of incorrect uses and even misuses of performance measures and targets with the introduction of a kind of "governance by targets" and a consequent increased risk of gaming (Bevan & Hood, 2006). Pietro Micheli and Neely (2010) also report a lack of coherence among the different actors involved in the setting of objectives and targets at different levels, from central to local, making performance measurement more complex.

Traditionally, performance in healthcare has been measured using specific indicators such as incidence of pathology, mortality measures, and measures of mortality after a specific treatment. Other measures are increasingly attractive, including those that focus on patient health status, which are often in the form of outcome measures (Peter C. Smith et al., 2008). However, there is a limited "understanding of how performance measurement can be organized to support improvement initiatives in healthcare practices" (Elg, Palmberg, & Kollberg, 2013).

In the Italian public sector, the role of OP has been largely neglected, and more importance has been given to individual performance (Martin & Spano, 2015). As far as the healthcare sector is concerned, OP is attracting increased attention in Italy, but there is still a lack of extensive research on this topic. For example, there is a high variation in the way OP is defined and, consequently, measured. In particular, a comprehensive analysis of the current OP practices as measured by Italian healthcare organizations is still missing. For this reason, our research aims at addressing the following research questions (RQs):

RQ1: How do Italian healthcare organizations define OP?

RQ2: Is OP measured by Italian healthcare organizations, and if so, how?

The chapter is organized into six sections: (1) literature review on OP with specific reference to the healthcare sector; (2) the Italian healthcare system; (3) methodology; (4) results; (5) discussion; (6) conclusions.

2. LITERATURE REVIEW

Although managing performance is a wider concept than measuring it, performance management systems need to be based on sound measurement systems (Martin & Spano, 2015). The performance measurement literature lacks consensus on concepts and definitions as well as on how OP may be measured (Au, 1996; Forbes, 1998; Ostroff, 1992). A. Neely and Platts (1995, p. 9) comment that: "Performance measurement is a topic often discussed but rarely defined." They also tried to provide a more specific definition of three concepts: performance measurement ("the process of quantifying the efficiency and effectiveness of action"); performance measure ("a metric used to quantify the efficiency and/or effectiveness of action"); and performance measurement system ("the set of metrics used to quantify both the efficiency and effectiveness of actions").

The problem with these definitions is that they are too specific and, as a consequence, they do not convey what is now being labeled "performance measurement" in the literature and in practice (Bourne, Mills, Wilcox, Neely, & Platts, 2003). In fact, over the past decades, performance was mainly measured only in its financial dimension (McCracken, McIlwain, & Fottler, 2011) via "simple outcome-based financial indicators that are assumed to reflect the fulfillment of the economic goals of the firm" (Venkatram & Ramanujam, 1986, p. 803). Most recent studies suggest a multidimensional approach to performance measurement considering the organization's strategies as well (Nutti et al., 2013).

Since the advent of New Public Management (NPM) in the early 1990s, the issue of performance management has gathered increased attention (Bouckaert & Van Dooren, 2009; Talbot, 1999) and has become a fundamental issue for improving public services (Nutti et al., 2013). One of the reasons for this increased attention is the fact that governments started to be accountable for the use of public resources and for the results achieved (Bouckaert & Halligan, 2008).

However, even though OP is particularly relevant to understanding why some organizations perform better than others, studies regarding OP in the public sector are not conclusive and there are different definitions of organizational performance (Andrews et al., 2011). In addition, several studies are based on perceived performance rather than on more objective measures, although there is evidence of a positive correlation between perceived OP and objective OP (Dollinger & Golden, 1992). Both the reasons for measuring performance on the one hand and the process followed and the models used to measure it on the other hand are particularly important. With regards to the first aspect, R. Behn, D. (2003) proposed eight purposes that public managers have for measuring performance: evaluate, control, budget, motivate, promote, celebrate, learn, and improve.

With regards to the second aspect, several authors describe how to design systems for performance measurement (Elg et al., 2013). For example, R.S. Kaplan and Norton (1992) consider that measures should be derived from strategy and represent different dimensions of an organization. Andrews et al. (2011) proposed a model for measuring OP in US federal agencies using three sets of measures: efficiency-related measures, effectiveness, and fairness. They identified five agency-level factors that may affect OP (organizational culture, human capital and capacity, agency support for the National Performance Review (NPR), leadership and supervision, and red tape) as well as four individual-level factors (structure of task/work, task motivation, public service motivation, and individual performance). They found that the most

important elements that affect OP are effectiveness, teamwork, building human capital, structure of task/work, protection of employees, concern for the public interest, and task motivation. The main conclusion of this study is that OP is higher in organizations that adopt an involvement strategy—for both employees and other stakeholders.

In a similar Korean study, (S. Kim, 2005) measured OP using a set of 12 items and provided evidence for the effect of individual-level factors on OP (such as job satisfaction, affective commitment, public service motivation, and organizational citizenship behavior). S. Kim (2005) investigated the link between OP and management innovation both directly and indirectly through performance management. In this study, OP was measured using a *core service performance score* constructed by the (Audit Commission, 2002) and based on six aspects of OP: quantity of outputs, quality of outputs, efficiency, formal effectiveness, equity, and consumer satisfaction. Even though there is an established literature on this topic, the problem is that it remains a vaguely and loosely defined construct (Rogers and Wright, 1998). In addition, several studies are based on perceived performance rather than on more objective measures, although there is evidence of a positive correlation between perceived OP and objective OP (Walker, Damanpour, and Devece (2011).

When discussing healthcare organizations, it is necessary to consider that they are complex adaptive systems (P. A. Anderson, 1999; McDaniel et al., 2009) and, since the 1960s, complexity has been a central construct in the vocabulary of organization scientists (P. A. Anderson, 1999). There are many ways in which this complexity can show itself (Daft, 1992); however, even if the concept of complexity abounds in the public sector, the application of this theory is neither self-evident nor as straightforward as it might appear (Arnaboldi, Lapsley, & Steccolini, 2015). In the specific case of healthcare organizations, the complexity relies on the phenomena's dynamism, which unfolds in unpredictable ways; these unfolding events are often unique, and it is interesting that a number of complexity theory advocates have identified healthcare as a suitable context for study (Arndt & Bigelow, 2000). This complexity is also reflected in the way OP may be defined and measured. In fact, complexity theory has rich implications for the strategic management of organizations. Understanding this complexity to improve synergies among business units may improve OP. In the decades past, because of this complexity, measuring performance in the healthcare sector was uncommon and, in fact, it was believed that quality was not measurable. But today there is a higher interest in measuring and reporting performance in this sector, and in some cases there is the problem of having too many measures, some of which focus on outputs, outcomes, and processes, and others on single activities that have limited effect on overall health (Cassel et al., 2014).

Regarding the reasons for measuring performance in healthcare, according to De Vos et al. (2009), professionals use measurement for different purposes, i.e., evaluating, controlling, and improving clinical practice. Although there is little evidence that performance measures are actually used by practitioners to improve performance, Elg et al. (2013) suggest that “performance measurement may be a versatile method for driving improvement in healthcare organizations.” In fact, performance measurement is recognized as a method with many utilization possibilities in healthcare (Elg et al., 2013). For example, implementing a transparent healthcare system is seen as a way to create external pressure and a sense of urgency for change (Elg, Stenberg, Kammerlind, Tullberg, & Olsson, 2011). Van der Wees et al. (2014) suggest that measures of quality are used by clinicians to evaluate the way they interact with patients and to measure quality improvement within their organizations; also, these measures may be used by health insurers to compare the performance of different providers. In addition, performance information may facilitate patients' decisions in choosing a provider.

Several studies have developed conceptual frameworks and models to help build effective OP measurement tools for the healthcare sector. For example, Arah, Westert, Hurst, and Klazinga (2006) proposed a framework in which they present some common key performance dimensions for healthcare organizations. In building this framework, (Arah et al., 2006) considered other previous frameworks and the

OP measurement systems used in some jurisdictions (UK, Canada, Australia, USA, European Community Health Indicators, World Health Organization, and OECD) and created a list of performance dimensions in healthcare: effectiveness, appropriateness, safety, efficiency, continuity, accessibility, equity, responsiveness, patient-centeredness, timeliness, and acceptability. Some of these dimensions are consistent with the dimensions required by the Italian legislation, even if defined in a different way.

A recent study proposed a new model for measuring and evaluating healthcare organizations' OP using two main dimensions: outcome and delivery efficiency. The model is based on a "matrix of performance evaluation" (Elg et al., 2011) and includes 42 indicators, 24 concerning outcome and 18 on efficiency, and an additional area related to "management."

Studies on OP in Italian healthcare organizations are limited. Baraldi and Bocci (2009) analyzed the most common methodologies to measure OP of Italian healthcare organizations. In particular, they surveyed how Italian healthcare organizations measure their performance and observed the increased importance of the balanced scorecard that has been adapted to the features of the healthcare sector. In fact, even though financial indicators are still used—as in profit-oriented organizations—many non-financial indicators have taken center stage, and the balanced scorecard is useful to measure both financial and non-financial performance in healthcare organizations (Nutti et al., 2013). Bocci (2005) proposed a new model of the balanced scorecard for healthcare organizations based on four perspectives (community, internal process, financial resources, and learning and growth).

In 2005, the *Istituto Superiore Sant'Anna* of Pisa created and implemented in some health organizations in Tuscany a new OP measurement method based on the balanced scorecard model. This method is based on six evaluation dimensions (population health status, capacity to pursue regional strategies, clinical performance, patient satisfaction, staff satisfaction, efficiency and financial performance) (Nutti et al., 2013). For each dimension, a set of indicators is defined~130 indicators; the balanced scorecard approach is then used to evaluate OP. Since 2005, this method has been introduced in other organizations in Italy. In particular, eight other Italian regions and the Ministry of Health have adopted the S. Anna method to monitor levels of health services provided in the country (Nutti et al., 2013). This system is, as can be seen by the above description, a multidimensional performance measurement system and has been valued as particularly innovative and comprehensive.

However, as highlighted by Baraldi and Bocci (2009) the most common performance measurement methodologies in healthcare organizations are budgeting, cost accounting, and accounting for responsibility centers. These results show that Italian public healthcare organizations mainly focus on OP's financial dimension.

Broadly speaking, the OP literature in the Italian healthcare sector is limited, and there are few analyses of the actual measurement and evaluation systems. To fill this gap, this chapter focuses on organizational performance and concentrates on the Italian healthcare sector by addressing the following research questions:

RQ1: How do Italian healthcare organizations define OP?

RQ2: Is OP measured by Italian healthcare organizations, and if so, how?

3. THE ITALIAN HEALTHCARE SYSTEM

Italy's healthcare system (*Servizio Sanitario Nazionale* [SSN]) provides universal coverage free of charge at the point of service. The system is organized into three levels: national, regional, and local (Lo Scalzo et al., 2009). The general objectives and the fundamental principles of the healthcare system are guaranteed by

the national level, while services are delivered at the regional level through local health organizations (Van der Wees, Zaslavsky, & Ayanian) and public and private hospitals.

This system is based on public financing via general taxation. There are also private health organizations that provide health services. In particular, the percentage of hospital beds supplied by public sector organizations is 80.7%, with the remainder supplied by nonprofit and private organizations (Trincherò, Brunetto, & Borgonovi, 2013). The organizations that provide healthcare services are:

- Local Health Authorities (*Aziende Sanitarie Locali*, ASLs)
- Public Hospitals (*Aziende Ospedaliere*, AOs)
- Research Institutes for Hospitalization and Medical Treatment (*Istituto di ricovero e cura a carattere scientifico*, IRCCSs)
- Private accredited providers.

The Local Health Authorities are responsible for providing a selection of health services. Each region may have many ASLs, with each ASL responsible for providing healthcare to a given population. Initially, there were 659 ASLs, but several reforms occurred in the 1990s to modify their function and governance system. Their number was further reduced in 2015 to 139. The ASLs provide care directly through their own facilities and also buy services from external suppliers such as accredited private providers.

Public Hospitals, established by Legislative Decree No. 502/1992 and defined as quasi-independent agencies, enjoy financial and operating autonomy. In 1995, many pre-existing hospitals were transformed into 82 AOs. This was further reduced to 77 in 2015. There are three necessary conditions to obtain AO status: “a divisional organizational structure; the existence of at least three clinical units; and a complete emergency department with an intensive care unit” (Lo Scalzo et al., 2009, p. 76). AOs provide healthcare to all residents in a region while ASLs serve a portion of the population. Also, AOs are financed based on the diagnosis related group (DRG) system, while ASLs are financed based on per capita transfers.

The IRCCSs are research-oriented hospitals operating at the local level with competences in research and treatment of important diseases. In 2008, 13 of the 20 Italian regions had 42 IRCCSs divided into 18 public and 24 private institutions. As of 2015, there are 21 public and 27 private IRCCSs in Italy. The scientific activities of the hospitals are monitored by the Ministry of Health, which is also responsible for establishing new IRCCS.

Since 1990, Italy’s health-care system has seen several reforms introduced by different pieces of legislation (Law N. 833/1978, Legislative Decrees N. 502/1992, N. 517/1993, and N. 229/1999) that have changed its structure and established the procedures now in use.

With regards to the issue of OP in the Italian healthcare system, Legislative Decree 150 of 2009 introduced the following eight dimensions:

1. Implementation of active policies for satisfying citizens’ needs;
2. Implementation of plans and programs;
3. Customer satisfaction;
4. Modernization and qualitative improvement of public organizations and employees’ professional skills and the capability to implement plans and programs;
5. Improvement of relations with citizens and other stakeholders;
6. Efficiency in the use of resources, with particular reference to cost reduction;
7. Quality and quantity of services;
8. Equal opportunities.

Our analysis focused on the effective use of these and additional dimensions of OP by health organizations.

4. METHODOLOGY

The research looks at the way organizational performance is (1) defined and (2) measured by Italian healthcare organizations. The data collection methods include document analysis and semi-structured interviews with key informants. To investigate the ways in which the healthcare organizations define OP and measure it, we performed an in-depth analysis of the content of the documents prepared by a sample of Italian public healthcare organizations. In addition, we analyzed the performance documents of the seven Italian healthcare organizations that are accredited by the Joint Commission—an independent, not-for-profit organization that accredits and certifies top performing healthcare organizations and programs in the United States and across the world (Joint Commission, 2016). In Italy, there are seven accredited public health organizations:

1. *AO Santa Maria degli Angeli;*
2. *ASL 3 Alto Friuli;*
3. *AOU Santa Maria della Misericordia;*
4. *Ospedale Cattinara;*
5. *Istituto Giannina Gaslini;*
6. *Presidio Ospedaliero Oglio-Po;*
7. *Ospedale Santa Chiara.*

Content analysis is a research method that “classifies textual material, reducing it to more relevant, manageable bits of data”(Weber, 1990, p. 5). In particular, we used an inductive approach, starting with data and then creating specific categories that can explain the general phenomena. The qualitative data were organized with the process of “open coding” according to which notes and headings were written in the text while reading it. Only after this analysis were the categories created.

The analyzed documents include the following: the evaluation system, the performance plan, and the performance report. Each of these documents has specific functions, and it is important to consider all of them in the analysis. The evaluation system sets the guidelines by which performance at both individual and organizational levels is measured and evaluated. The performance plan shows what performance dimensions, objectives, and indicators have been selected, consistent with the evaluation model defined by the system. The performance report provides evidence of the results achieved and of the way the performance measurement process worked. These are the specific documents requested by the legislation on performance management in Italian public organizations (Legislative Decree 150/09).

The census of Italian public healthcare organizations is composed of 237 units. These organizations are divided into 139 ASLs, 77 AOs, and 21 IRCCSs. For analysis, a random sample of 20% was extracted via stratified samples. In this way, the study was conducted through a sample of 50 healthcare organizations and was subdivided in 30 Local Health Authorities (ASLs), 16 Public Hospitals (AOs), and four Research Institutes (IRCCS). A set of substitutes was randomly extracted as alternatives. During the first step of the extraction, we replaced some selected organizations that had not published their performance plans on their websites. These included nine healthcare organizations (18% of the overall sample) that had not published performance plans and were subdivided in four Local Health Authorities (13% of the 30 extracted authorities), four Public Hospitals (25% of the 16 selected hospitals), and one public National Institute for

Scientific Research (25% of the four selected Institutes). These organizations have been replaced with other organizations that did publish a performance plan. This way, the sample is composed only of organizations with officially published performance plans.

To answer the first research question, we noted in each document whether and how OP is defined. We also clustered the definitions to identify recurrent aspects and which organizations comply and do not comply with the legislation. We also searched for innovative ways to define and measure OP.

To answer the second research question, we studied the measurement systems regarding OP, focusing on both methodological and practical aspects. This analysis was made among the ASLs, AOs, and IRCCSs. In addition, all performance reports were clustered using three criteria: strategic areas, objectives, and performance dimensions.

We also identified congruence among the three different analyzed documents. In particular, the study focused on the performance dimensions used in the measurement process. During the analysis of their congruence, we considered whether, in every document, the same performance dimensions were reported. Broadly speaking, we studied whether each document fulfilled its tasks.

To strengthen the results of the document analysis, 30 qualitative semi-structured interviews were conducted between May and August 2016. Two general directors, three administrative directors, and 25 organization and control managers were interviewed. The interviews lasted about 40 minutes and were recorded and transcribed. With regards to the regional distribution, nine interviewees belong to organizations that are located in the northwest of Italy, 10 in the northeast, three in the center, and eight in the south and the islands. The interviewees were asked to answer questions related to the performance management systems used in their organizations and were also allowed to add other comments about the specific performance dimensions measured. The interviews provided a deeper understanding of the ways in which Italian healthcare organizations effectively measure their OP, strengthening the results of the document analysis or, in some cases, highlighting the differences.

5. RESULTS

Our research revealed that just 34% of the organizations (ranging from 25% of AOs and IRCCSs to 33.3% of ASLs) published the evaluation system and a 78% published the performance reports on their websites (ranging from 50% of IRCCSs to 83.3% of ASLs) (see Table 1). If we consider the initial extraction of the sample, before the substitutions, 18% of the organizations did not publish the performance plan (13% of the Local Health Authorities, 25% of the Public Hospitals, and 25% of National Institutes for Scientific Research). This means that just 87%, 75%, and 75% respectively published the performance plan (Table 1).

Table 1
The published performance documents

	EVALUATION SYSTEM	PERFORMANCE PLAN	PERFORMANCE REPORT
ASL	33.3%	87%	83.3%

AO	25%	75%	75%
IRCCS	25%	75%	50%

The first RQ describes how OP is defined by Italian healthcare organizations. The results show that there are many differences among Italian public health organizations in the way OP is defined and measured. In addition, not all organizations explicitly provided a definition of OP. In particular, 62% did not provide any definition at all (57% of ASLs, 69% of AOs, and 75% of IRCCS). The remaining 38% of the organizations explicitly defined OP. Of the organizations providing a definition, 79% (15 out of 19 organizations) used the very same definition provided by the legislation (60% of ASLs, 60% of AOs, and 100% of IRCCS): “The contribution that a subject generates through its action to achieve the purposes and the objectives, and to satisfy the needs for which the organization has been created” (Delibera Civit 89/2010). In three cases only, different definitions were chosen. For instance, one organization defined OP as: “the performance obtained by the firm as a whole and by each organizational unit.” In some cases, even if there is not a specific definition of the performance dimensions, the definition itself has been derived from the strategic areas as defined in the performance plan (this is true for six out of 30 ASLs and two out of 16 AOs) or from the objectives (three out of 30 ASLs). The interviews confirmed these results. In fact, most interviewees did not provide an explicit definition and told us that no specific dimensions are used to measure OP. Respondents reported the way that OP was measured, regardless of its definition. When a definition was given, it was the same as the legislation. In some cases, strategic areas are defined in a way that is consistent with the OP dimensions as defined by the legislation. For this reason, the performance plans of the organizations in the sample were analyzed and contrasted according to two elements—strategic areas and objectives—to understand the underlying performance dimensions.

With respect to whether and how OP is measured by Italian healthcare organizations, after analyzing the performance documents, we then focused on specific performance dimensions, and we contrasted the dimensions used by the organizations with the eight dimensions provided by the legislation (Article 8 of Legislative Decree 150/2009). By analyzing all published documents (evaluation system, performance plan, and performance report), we verified the specific dimensions that health organizations actually use to measure and evaluate OP (Table 2). This analysis shows that the evaluation systems report just a minority of the eight dimensions of OP introduced by the legislation listed above. They range from 50% of the cases for “Quality and quantity of services delivered” to 0% of the “Qualitative and quantitative development of relationships with the relevant stakeholders” (see Table 2 and Annex 1). Only 56% of the organizations specified the performance dimensions used in the measurement process in their performance plan (11 ASLs, 13 AOs, and 4 IRCCSs). In the Performance Report, the presence of the OP dimensions ranges from 64% for “Efficiency in the use of resources” to 15% for “Equal opportunities.” The performance plans show the highest percentage of the presence for all the dimensions with a range from 78% for “Efficiency in the use of resources” to 20% for “Equal opportunities.”

Table 2
% of OP dimensions present in the Performance documents

	Performance Dimensions							
	1	2	3	4	5	6	7	8
ES	25%	13%	31%	31%	0%	38%	50%	6%
PP	48%	30%	36%	44%	26%	78%	74%	20%
PR	44%	21%	28%	38%	23%	64%	62%	15%

ES= Evaluation System, PP= Performance Plan; PR: Performance Report

The most recurrent OP dimensions are “Efficiency in the use of resources” and “Quality and quantity of delivered services” (Table 3).

Table 3
Most recurrent OP dimensions

Type of perf. document	EFFICIENCY				QUALITY&QUANTITY			
	ASL	AO	IRCCS	Overall	ASL	AO	IRCCS	Overall
ES	13.3%	12.5%	-	12%	16.7%	18.8%	-	16%
PP	73.33%	81.25%	100%	78%	66.7%	81.3%	100%	74%
PR	47%	69%	50%	50%	43%	56%	50%	48%

ES= Evaluation System, PP= Performance Plan; PR: Performance Report

In just one case, OP was actually defined and measured using all eight dimensions provided by the legislation (as emerged from both the performance plan and the performance report). The other organizations measured only some of the dimensions requested by the legislation. In almost 60% of cases, the organizations introduced additional dimensions not required by the legislation. In particular, the most recurring performance dimensions in the performance report that differ from the legislation are appropriateness, risk management, processes, research, and teaching (Table 4).

Table 4
OP dimensions present in the Performance Report
not listed in the legislation

PERFORMANCE DIMENSIONS	ASL	AO	IRCCS

Appropriateness	30%	44%	0
Research & Teaching	7%	6%	75%
Risk Management	1%	12%	
Processes	0	31%	0

Appropriateness is divided into two elements: *clinical appropriateness* and *organizational appropriateness*. “Clinical appropriateness” applies to cases in which healthcare interventions occur in such conditions that the probability of benefits outweighs the potential risks in terms of safety for the patient and economy of resources (Scaletti, 2014). “Organizational appropriateness” refers to the fact that healthcare interventions must be provided at the proper level of assistance. For instance, patients that may be treated in a day-hospital center should not be admitted to hospitals. Most organizations use organizational appropriateness rather than clinical appropriateness as a measure.

Focusing on the performance report (which shows what is actually done in terms of performance measurement and evaluation), 22% of the surveyed health organizations did not report any OP dimensions. In fact, 11 out of the 50 surveyed organizations do not mention OP measurements in their performance report at all. In another 18% of cases, the OP measurement is limited to a small number of dimensions. As a consequence, just 60% of the organizations in our sample make some sort of OP measurement using one or more of the eight performance dimensions required by the legislation.

6. DISCUSSION

Measuring and reporting performance in healthcare is recognized as an important tool to improve the quality of the services delivered by healthcare organizations (De Vos et al., 2009; Elg et al., 2013). However, the actual use of performance measurements in the healthcare sector is also limited because of a lack of understanding of how these measures must be used in practice (Elg et al., 2013). More generally, performance information allows governments to monitor healthcare systems’ performance (De Vos et al., 2009).

The results obtained in the research raise some areas of concern. First, we found that just a limited percentage of the organizations (34%) published the evaluation system on their websites. Although it is not compulsory under the current legislation, we believe that such reporting of the methods for evaluation is not fully consistent with the principle of transparency that aims to provide citizens and other stakeholders with all the relevant information needed to learn the results achieved and hold these organizations accountable.

Second, the majority of organizations (62%) did not provide any definition at all of OP and those that did, used the very same definition provided by the legislation, which is very general and even vague. A lack of clarity in the way OP is defined does not help in understanding the actual results achieved and does not give a sense of direction to the people working in the organizations.

Third, the analysis of the performance documents highlighted that Italian public health organizations are only partially complying with the legislation. For example, there is a difference between what is said in the Evaluation System, in the Performance Plan, and in the Performance Report regarding the measurement of OP. In fact, the Evaluation Systems and the Performance Plans promise more than the Performance

Reports deliver. These data may be explained by considering that health organizations have set the evaluation systems in a very generic way and have used the performance plan to better specify the content of the OP dimensions and how to measure them. To some extent, it seems that they tend to underestimate the difficulty in measuring and evaluating OP. As a consequence, when it comes to reporting what dimensions of OP have actually been measured and evaluated, the reported percentages are lower. Fourth, public health organizations did not find in the legislation a model that fits with the peculiar features of the healthcare sector. We found that 58% of the sample use dimensions of OP different from those in the legislation—mainly appropriateness and risk management. In particular, appropriateness is particularly relevant in the healthcare sector. The interviews showed that appropriateness is a dimension used by all organizations to which interviewees belong, but it is reported in only one-third of the analyzed documents. Given the very nature of the healthcare sector, risk management is also very important—as demonstrated by its presence among the performance dimensions.

Not surprisingly, IRCCSs make extensive use of the research and teaching dimensions, given their specificity. In fact, IRCCSs are research-oriented hospitals in which research and teaching dimensions are fundamental.

Broadly speaking, it appears that the actual measurement and evaluation of OP by Italian health organizations is limited, and those that actually perform it use only a limited number of performance dimensions. In addition, there is significant variability in the content of OP and in the process of measuring and evaluating it.

To have a clearer picture of the Italian healthcare situation, we analyzed the performance documents of the Italian public health organizations that are accredited by the Joint Commission (Joint Commission International, 2016). The Joint Commission's accreditation is a guarantee of quality of the healthcare services provided by the accredited organizations. In fact, the validation process is based on international standards of excellence in performance and organization to guarantee security and high quality of the services. The analysis of the content of the performance documents of the organizations accredited by the Joint Commission shows a similar situation compared to the sample. In fact, all the accredited organizations published their performance plans on their websites. Six out of the seven published their performance reports, but only two (30%) published the evaluation system. Even for the most advanced public health organizations, the importance of publishing the evaluation system is apparently low. We compared the performance dimensions required by the legislation with the performance dimensions actually used by the accredited organizations. The analysis shows some differences with regards to the most used OP dimensions versus the sample. In fact, all accredited organizations consider in their performance plans two specific dimensions: the "Implementation of plans and programs" and the "Modernization and qualitative improvement of public organizations and employees' professional skills and the capability to implement plans and programs." In the organizations studied here, we found that the most commonly used performance dimensions are "Efficiency" and "Quality and quantity of services." The additional dimensions used by the accredited organizations are the same cited previously (Appropriateness, Risk management, and Research). Some of the interviewees are from organizations accredited by the Joint Commission. What emerged is that the only difference in comparison to the non-accredited organizations is a higher attention to the quality of the performance:

Some objectives are connected to the quality of the performance because the Joint Commission asks us to maintain and to show specific standards of quality. (Interviewee 17)

In fact, the accreditation program requires some qualitative parameters to be met so the healthcare organizations must measure these aspects with more attention than others to make sure that they meet the required levels of quality.

The semi-structured interviews showed some other interesting results. All interviewees recognized the importance and the relevance of the performance measurement system in place. All of them said that having a good performance measurement system is a necessary condition to effectively manage their organization—particularly with regards to complex organizations like those in the healthcare sector. The interviews showed that in most organizations, the performance measurement system is not sufficiently embedded into the organizational structure and is continually being changed and improved over time:

If I look at the first performance plan, it looks really embryonic; but year after year we improved it. Maybe if I look at the present performance plan in three years, I will realize it has been done in the wrong way (Interviewee 19)

In particular, the first relevant issue is about the role of regional legislation in defining the performance objectives of the healthcare organizations. Broadly speaking, each regional government defines some performance objectives that have to be achieved by every healthcare organization in that region. Thus, the starting point of every performance measurement system is the regional legislation. Another interesting common element is the role of the director general and his influence in structuring the performance measurement system and its operation. The interviewees highlighted that the presence of a director general sensitive to the issue of performance measurement positively influences the effectiveness of the performance system itself, as reported by one interviewee:

In this moment the top management focuses only on financial aspects, and I am sorry about it, because with the previous director general the OP measurement system was more complete. (Interviewee 2)

Broadly speaking, if the director general pays attention to the ways in which OP is measured, then the organization as a whole is more likely to have a more effective performance measurement system; on the contrary, if the director general does not care about this issue, then measuring OP will be neglected with negative consequences for the organization as a whole. In two cases only, the interviewees reported that the system was already well structured when a new director general not attentive to OP measurement came in. This did not hamper the functioning of the systems itself.

7. CONCLUSIONS

The healthcare sector in Italy has traditionally been at the forefront of the innovations and reforms that took place in this country. For example, in the early 1990s, health organizations were the first to introduce accrual accounting and management tools.

Although OP is a particularly relevant topic, it is still neglected in the Italian public sector, which has focused more on individual performance than on organizational performance (Agasisti & Arnaboldi, 2011). The Italian healthcare sector is not different, and often neglects OP. In fact, our analysis shows that 40% of

organizations in our sample do not appear to measure and evaluate OP. The remaining 60% undertake some form of measurement and evaluation of performance at organizational level.

Our research provides evidence of a significant variance in the way OP is defined and measured, with subsequent comparison problems. In some cases, this variance may be, at least in part, explained by the different types of organizations, i.e., local health authorities are different from public hospitals and from research institutes for hospitalization and medical treatment. However, there is also a significant variance among organizations of the same kind. Although this difference is, to some extent, normal, it shows a limited alignment of performance measurement systems among Italian health organizations. It also shows the difficulty deriving from implementing a top-down performance management system enforced by law (Pietro Micheli & Neely, 2010). In addition, the research confirms the persistence of two traditional problems of the Italian public sector. One refers to the limited attention given to the role and importance of performance management (Martin & Spano, 2015). The second is the false conviction that changes can be introduced by law.

Our study tried to fill the gap in the literature related to OP in the Italian healthcare sector by providing an in-depth analysis of the way OP is defined and measured. Some implications emerge from this research. First, the cited limited compliance with the legislation, in a country where formal respect of the legislation is paramount (Martin & Spano, 2015), needs to be better analyzed and understood. In fact, the strong presence of OP dimensions that differ from those listed in the legislation confirms one of the most criticized aspects of the existing legislation, which is that the legislation is the same for every kind of public organization regardless of differences in typology, size, specific context, and the like (Giovanelli et al., 2015). For example, none of the eight cited dimensions is specifically suitable for the healthcare sector. Thus, it is not surprising that a significant portion of the organizations in this sector decided to complement the legislation with other dimensions that are perceived to be more useful in capturing what OP is in this specific context. In fact, the legislation sets the general rules that are the same for all public organizations in Italy, regardless of the many existing differences among the different types of organizations, e.g., municipalities and health organizations. This emphasizes the need to adapt the set of OP dimensions prescribed by the legislation to the specific context. Thus, it is no surprise that in the case of the healthcare sector, some organizations select different dimensions from the ones provided by the legislation. Consequently, the overall framework that imposes the same rules to all Italian public authorities and agencies needs to be revisited.

Second, our data show that there is limited actual use of performance measurement by Italian public healthcare organizations, and a significant portion of the surveyed organizations do not measure OP. The limited attention to the definition of OP and its measurement has been confirmed, to some extent, by the analysis of the healthcare organizations accredited by the Joint Commission, i.e., those organizations that should represent the best practices in terms of organizational performance. Nevertheless, even accredited organizations don't measure all the performance dimensions required by the legislation; they measure just a portion. While the most common OP dimensions of the organizations in the sample are "Efficiency" and "Quality and quantity of services," accredited organizations more often use two other dimensions: "Implementation of plans and programs" and "Modernization and qualitative improvement of public organizations and employees' professional skills and the capability to implement plans and programs." While it is no surprise that quality improvement is of paramount importance for accredited organizations, it would be interesting to better understand the reasons underlying the different importance given to the other OP dimensions. In addition, accredited organizations use the same additional dimensions introduced by the other organizations in the sample, such as "Appropriateness" and "Risk management." This confirms on the one hand that these two elements are very important in the healthcare sector, and on the other hand that there is a need for a general cultural change to foster a stronger commitment to measuring and evaluating

performance and a realization that a centralized approach is not always the best choice (Pietro Micheli & Neely, 2010).

Third, there appears to be a shortfall in designing and implementing performance management policies and frameworks that are homogenous across the Italian regions and that flow from the national to the regional and local levels, creating what are considered 20 different healthcare systems (one for every Italian region) (Bertin & Cipolla, 2013).

Fourth, the actual measurement of OP is often left to the initiative of individual directors general rather than being an embedded feature of the health organizations, as would be expected.

One of the main limitations of this study is that it is based on documents that have been published on the websites of the Italian health organizations. Some organizations measure OP even though they do not publicly report doing so. However, given the existence of a formal legal requirement, we tend to believe that organizations would be inclined to publish the results of OP measurement. However, it could also be that if an organization does not publish performance documents that have been prepared, it may be due to achieving poor results.

This chapter contributes to the debate on the measurement and evaluation of performance at organizational level in Italian health organizations by analyzing the way OP is defined and measured. The chapter illustrates that Italian public health organizations pay little attention to measuring performance at the organizational level regardless of the legal requirement. We believe that measuring and evaluating OP is fundamentally important and will explain how these public organizations are meeting citizens' needs. We believe that further research is needed to better understand how OP should be defined and measured, not just with regards to healthcare organizations but for all public organizations.

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CHAPTER 3 - Measuring Organizational Performance in Healthcare. How healthcare organizations measure and evaluate organizational performance

Abstract

Since the 1980s, the New Public Management principles have led to greater interest in a more efficient, effective and accountable public sector (Lapsley, 1999). In the Italian health sector, this influence has been seen since the 1980s, when reforms introducing managerial tools were established. There is a gap in the literature in regard to the way in which Italian healthcare organizations measure their organizational performance. To fill this gap, this article investigates two research questions:

3. How do Italian public healthcare organizations measure their organizational performance?
4. What are the factors that influence the design of performance measurement systems?

To answer these questions, 30 semi-structured interviews were carried out with general directors, administrative directors and planning and control managers from different types of Italian public health organizations that are distributed throughout different areas of the country. The categories of health organizations interviewed are Local Health Enterprises (Aziende Sanitarie Locali - ASLs), Public Hospitals (Aziende Ospedaliere - AOs) and Public National Institutes for Scientific Research (Istituti di Ricovero e Cura a Carattere Scientifico - IRCCS). The content analysis of the interviewees shows interesting results that help us to answer to the research questions. A variety of different models are used to measure organizational performance in Italian healthcare organizations and each model differs in regard to the performance dimensions that are considered and practical implementations. The interviewees highlighted that regional governments play a fundamental role in the design and use of systems for organizational performance measurement and evaluation by setting the general guidelines to follow. The general director also plays a fundamental role by promoting or neglecting the actual use of the systems. The article sheds some light on the main problems that hinder the measurement and evaluation of performance in Italian healthcare organizations.

Key words: Organizational performance, Public sector, Healthcare sector, Italian healthcare system

INTRODUCTION

The measurement and evaluation of organizational performance (OP) in the healthcare sector are particularly relevant because healthcare organizations have a fundamental impact on individual lives. Thus, measuring the way organizations work and the results they achieve is fundamental to judging their effectiveness. In the past, there was a belief that the only objective of healthcare organizations is citizens' health, without any type of reasoning about the economic efficiency of achieving this goal (Cinquini, Mitchell, Norreklit, & Tenucci, 2011). This thinking was characteristic of Italian healthcare organizations, which are non-profit organizations and thus traditionally have a tendency to work without any attention towards financial efficiency (Nutti et al., 2012). However, resources are limited, and the importance of efficiency is growing (Cinquini, Vitali, Pitzalis, & Campanale, 2009). With the introduction of a diagnosis-related group (DRG) system, the priority issues transitioned to new methods of reimbursement, efficiency, and cost control. In particular, the introduction of this method generated a need for more accurate information in order to evaluate the efficiency of services (King, Lapsley, Mitchell, & Moyes, 1994).

With the introduction of New Public Management principles, healthcare organizations have started to use a multidimensional performance measurement system instead of traditional financial measures (Nutti et al., 2012). Several studies have focused on the way that OP is measured at the regional or national level (Baraldi & Bocci, 2009; Giovanelli et al., 2015; Nutti et al., 2012; Verzola et al., 2009),

but there is a lack of literature on the ways in which healthcare organizations measure their OP. Thus, the following research questions were formulated:

RQ1 “How do Italian public healthcare organizations measure their OP?”

RQ2: What are the factors that influence the design of the performance measurement systems?

The article contributes to the debate about OP by describing how Italian public healthcare organizations measure their performance and whether there are any internal or external factors that influence the design and structure of the OP measurement system. The article is structured as follows. The next section analyses the literature on the OP and on the performance measurement in the healthcare sector. Section three provides a general description of the Italian healthcare system, and sections 4 and 5 present the methodology and results. Section 6 presents a discussion of the results, followed by the conclusions.

LITERATURE ANALYSIS

Performance measurement became a fundamental topic of research in the early 1950s. Since this time, researchers and practitioners have understood the importance and necessity of measuring performance (R. D. Behn, 2003). Researchers have created several models to measure OP. With specific reference to the private sector, the principal models that have been proposed in the literature and implemented by organizations include the *Tableau de Bord* (Epstein & Manzoni, 1997; Pezet, 2009), a model used to measure financial indicators and to translate the vision and mission of an organization into a set of objectives and performance indicators. *The Performance Measurement Matrix* (Keegan & Jones, 1989) uses the key metric approach. *The Strategic Measurement and Reporting Technique* (Cross & Lynch, 1989), which is also known as the SMART Pyramid, is a model that includes internally and externally focused measures of performance. *The Results and Determinants Framework* (Fitzgerald & Brignal, 1991) is a model that classifies measures into two basic types: those related to results and those focusing on detriments of those results. The *Strategic Balanced Scorecard* (R.S.; Kaplan & Norton, 1996) is considered a strategic measurement system and control system, and the *Performance Prism* (A.; Neely, Adams, & Kennerley, 2002) consists of five integrated facets that identify areas of organizations to address (Watts & McNair-Connolly, 2012). This list reveals a general trend of focusing on multidimensional performance measurement systems that can measure different aspects of OP.

In the case of the public sector, the New Public Management reform has promoted the use of performance measurement to drive a more efficient, effective and accountable public sector (Lapsley, 1999). Starting from this reform, the adoption of a sophisticated multidimensional performance measurement system has been suggested based on organization strategies, (Nutti et al., 2012). Various performance measurement models have mainly been used in the public sector (Arnaboldi et al., 2015). The first one is *Budgetary Control*, which involves traditional accounting techniques characterized by ignoring non-financial indicators to measure OP. The other three models come from the private sector. *KPI & Benchmarking* can be considered together because both of them include just partial performance indicators in the models, and whatever is measured is included. The difference is that Benchmarking includes a comparison with other organizations, while KPI does not. *The Balanced Scorecard* is a Harvard model of performance management with multiple dimensions. Its objective is to measure the OP from different perspectives (Financial, Internal, Learning and Growth, and Customers). Finally, *Lean Management* was developed by Toyota and has been adopted in public administrations (Carter et al., 2011); it focuses on the standardization of work into repeatable processes and measuring the efficiency of each step. Like other public organizations, healthcare organizations have had significant improvements in regard to performance measurement systems. In

Sweden in the late 1980s, and later in other European countries, a range of New Public Management approaches were adapted to the healthcare sector. The objective was to re-configure publicly operated hospitals and change them into a growing variety of independently managed and semi-autonomous organizations (M.; Vainieri & Nuti, 2011). ,

Some international organizations such as the World Health Organization (WHO) and the Organization for Economic Cooperation and Development (OECD) have created conceptual frameworks to help countries in building effective tools for measuring and improving OP (M.; Vainieri & Nuti, 2011). These tools are aimed at answering questions such as those regarding what makes for a good health system and how to determine whether or not a health system is performing as well as it could. Obviously, the answers depend on the perspective of the respondents. Both the WHO and OECD had the need to reach a balanced judgement. Starting from the definitions of health action, which is considered as a set of activities with the primary intent of improving or maintaining health, they singled out three goals that each health system should pursue: (1) health improvement, (2) responsiveness and access and (3) assuring fairness of financial contribution. Therefore, the first objective of a performing health system is to improve the health of the population. In particular, the WHO measures health improvement with two main indicators focused on the average health status and reducing health inequalities. The responsiveness metric includes two major components: respect for people and client orientation. Finally, fairness of financial contribution refers to every household paying a fair share of the total health bill for a country (Murray & Frenk, 2000).

With specific reference to the OP measurement, over the past 25 years, there has been substantially growth in the measurement and reporting of health-systems performance to help improve them. Many factors have contributed to this growth, such as pressure to contain costs, patients with more information needs about their treatment and increasing audit and accountability of the health professions and health service institutions (Peter C. Smith et al., 2008). Given the diverse information needs of the different stakeholders in health systems, it is unlikely that a single method of reporting performance would be useful for everybody. For this reason, various degrees of progress have been made in the development of performance measures and data collection techniques for the different aspects of health performance.

Kouzes and Mico (1979) describe healthcare organizations as acting in three domains: policy, administrative management, and professional service. In the context of healthcare, performance measurement is recognized as a method with great potential (Elg et al., 2013). At the policy level, the trend for creating transparent healthcare system is recognized as a way of creating external pressure and a sense of urgency for change. The accounting and strategy literature highlights the links between management control and performance measurement, which are also central aspects of new administrative management.

Although performance measurement efforts have progressed in recent years, many health systems still rely on readily available data as a basis for performance measurement (Peter C. Smith et al., 2008).

THE ITALIAN CONTEXT

The Italian National Health Service (NHS) was established on 23 December 1978. This system is based on the principles of universal coverage, social financing through the use of general taxation and non-discriminatory access to the healthcare services. The NHS is mainly funded by general tax revenue.

In Italy, the development of performance measurement systems can be traced back to the reforms in the 1990s, when different regulatory acts were introduced to promote management, regionalization,

and introduce competition criteria in the internal market (Fattore, 1999). In 1995, the use of DRGs was introduced. A DRG is a system for classifying patient care by relating common characteristics such as diagnosis, treatment and age. DRGs also introduced a new form of payment for hospital activities.

The 2001 reform introduced important changes to financing in the Italian health system and transferred the power to manage financial resources to the regions. As a consequence, 21 autonomous health systems were created, and healthcare funding became a regional responsibility with a consequent decentralization of control. In the following years, many regional health budgets ran into deficits, requiring the central government to impose recovery plans in eight regions.

From this moment on, the Italian healthcare system needed a more consolidated and ambitious approach to quality monitoring. Thus, quality-related activities were developed, and performance management tools have been used in regions and autonomous provinces. Currently, this system is organized into three levels: the national level, regional level and local level.

NATIONAL LEVEL: The state sets the “essential levels of care” (LEA) and ensures the general objectives and fundamental principles of the national healthcare system.

REGIONAL LEVEL: Regional governments are responsible for ensuring the delivery of services through a network of population-based local health organizations and private accredited hospitals.

LOCAL LEVEL: Starting in 1992, there has been a network of public and private healthcare structures and providers at the local level. These organizations are:

- Local Health Enterprises (*Aziende Sanitarie Locali; ASL*)
- Public Hospital Enterprises (*Aziende Ospedaliere; AO*)
- National Institutes for Scientific Research (*Istituti di Ricovero e Cura a carattere scientifico; IRCCS*)
- Private Accredited Providers.

Local Health Enterprises: Local health enterprises provide services directly through their own facilities or through services supplied by public hospital enterprises, research hospitals and accredited private providers. The regional department of health appoints a general manager for each regional local health enterprise based on professional qualifications and technical skills. General managers are appointed for 5 years and are responsible for ensuring the financial performance of the local health enterprise, as well as reaching the objectives set out by the regional health plan and the local planning process. They have targets to be reached within their five-year mandate, and their results are assessed every 18 months; if mid-term targets are not met, they can be dismissed.

General managers carry out a three-year strategic plan in which they define the organization’s mission and goals and with which they can manage human, financial and technological resources. They also select a financial manager (*Direttore Amministrativo*) and a medical manager (*Direttore Sanitario*). Sometimes, a social services manager is also nominated (*Direttore dei Servizi Sociali*) to achieve specific targets.

Public Hospitals Enterprises: Legislative Decree No. 502/1992 established public hospital enterprises as quasi-independent public agencies called *Aziende Ospedaliere* (AOs). They provide highly specialized tertiary hospital care and were given financial and technical autonomy in 1993.

Not all Italian hospitals can obtain the status of public hospital enterprises because they have to satisfy certain conditions:

- A divisional organizational structure
- The existence of at least three clinical units considered by Legislative Decree No. 502/1992 to

be “highly specialized”

- A complete accident and emergency department with an intensive care unit.

The organizational structure of public hospital enterprises is the same as that of local health enterprises, and so are the tasks entrusted to the managers.

A specific group of public hospital enterprises are defined as Teaching Hospital Enterprises, where healthcare delivery is augmented by research and teaching activities. In such enterprises, universities are involved in the appointment of the general manager.

National Institutes for Scientific Research: The IRCCSs are research-oriented hospitals that are authorized and monitored by the Ministry of Health. They operate at the local level with competencies in research and treatment of important diseases. The Ministry of health identifies the Scientific Director of each IRCCS and provides basic funding for scientific research.

. Legislative Decree 150/2009 (known as the *Brunetta* reform) has drawn attention to the systems of measurement and performance management. This decree places citizens at the centre of the government’s planning system and the evaluation of services while attempting to improve the efficiency and productivity of the public sector as a whole. It builds on the guidelines of the Public Administration reform issued by the Italian Ministry for Public Administration and Innovation in 2008 (Cosseddu, Cozzolino, & Felli). The reform highlighted the need to improve the quality of public services through a new management approach oriented towards the continuous improvement of performance, the adoption of standards and benchmarking, and the measurement of customer satisfaction (Cosseddu et al.).

The reform aims to measure and assess the results of each public administration unit in terms of the efficiency of human resources, the satisfaction level of the final users, and the transparency of its action. In response to this new legislation, Italian public organizations have been forced to implement or improve their accountability instruments (Mauro & Talarico, 2015). These rules apply to all public organizations, including healthcare organizations. Despite this law provision, which requires all public organizations to publish their performance measurement system and their evaluation, the healthcare organizations found it difficult to implement these rules and to demonstrate their accountability.

The Italian healthcare system is considered among the most advanced in the world, with excellent results in terms of healthcare and well-being (World Health Organization, 2017). Among industrialized countries, Italy was seen as one of the top health system performers along with France and Spain (Blendon, Kim, & Benson, 2001 2001). However, the system does have some limits, and recently, it has suffered from various issues. Considering the high taxes that Italians have to pay, it seems that the quality of services is not as it should be, even for healthcare (Peter C. Smith et al., 2008).

Focusing on performance management, in the literature there are some studies analyse the performance measurement system at the regional level (Nuti et al., 2012) or hospital level (Baraldi & Bocci, 2009; Verzola et al., 2009). M.; Vainieri and Nuti (2011) investigated every single regional system in Italy to analyse the differences and similarities between their respective Performance Measurement Systems (PMSs). The results show that some regions based their PMSs on a balanced scorecard approach (Basilicata and Bolzano), while others such as Trentino based their PMSs on the European Foundation for Quality Management framework. The Marche region’s PMS is based on the value chain, a theoretical framework used to analyse each step of organizational process. Lombardy based its PMS on the Joint Commission Hospital Accreditation framework (JCHA), and

Tuscany developed its own framework using a model developed by the *Scuola Superiore Sant'Anna* of Pisa. However, these studies focus on the regional level and not on how each individual organization measures its performance. For these reasons, this exploratory research seeks to understand how each Italian healthcare public organization actually measures its OP at organization level.

METHODS

Between May and August 2016, 30 semi-structured interviews were carried out to answer the research questions. To investigate how OP is measured and evaluated, the interviews were conducted with representatives from a group of Italian public healthcare organizations whose performance management systems had been analysed previously. The interviewees were from a sample of Italian public organizations composed of 21 ASLs, 7 AOs, and 2 IRCCS. The methodology of the semi-structured interview has been used (Edmonson & Macmanus, 2007). Such interviews are characterized by the presence of a list of questions and topics that need to be covered during the conversation. As opposed to structured interviews, a semi-structured involves the interviewer following the guidance of the interviewee but can still change the direction of the conversation when considered more appropriate. The strength of this type of interview is that the questions can be prepared ahead of time, which allows the interviewer to be prepared and appear competent during the interview (Cohen & Crabtree, 2006).

The 30 organizations to be interviewed are represented by four organizations accredited by the Joint Commission (Commission, 2017) and 26 that were not accredited. For privacy reasons, the names of the organizations are withheld. The presence of accredited organizations in the sample, has allowed us to see whether there are any differences between the performance measurement systems used by these types of organizations in comparison to other Italian public healthcare organizations. The Joint Commission is an organization that has a target of defining the standards that healthcare organizations (public and private) must meet to obtain accreditation. The standards are for both clinical and organizational aspects; therefore, one would expect that accredited organizations would measure OP in a more specific way than other public organizations. In Italy, there are 24 accredited organizations, of which six are public; we have interviewed representatives from four of these organizations.

The interviews were conducted with two general directors, three administrative directors, and 25 planning and control managers. From a geographical perspective, the interviewed organizations are composed of nine organizations from the north-west of Italy, 10 from the north-east, three from the centre, and eight from the south and the islands (ISTAT). In this way, it is possible to gain a general perspective of the situation of the OP measurement in the public healthcare organizations from each part of Italy, even if some areas are more represented than others.

The semi-structured interviews were performed using a list of questions. The first part of the interview focused on the definition of OP, and the second part was related to how healthcare organizations measure their OP, whether they follow a specific framework, and which specific organizational dimensions and objectives are defined and measured. The third part was about the regional government's role, and the fourth was about the professional's role. In the fifth part, the interviewees were asked about whether there were any type of connections between organizational and individual performance. The last part involved questions to investigate the perception of the importance of OP measurement systems.

The average length of the interviews was approximately 40 minutes. Each interview was audiotaped and transcribed, and the interviews' contents were analysed using Atlas.T software. The main points of the content extracted from the text were marked with a series of codes (quotations) that were grouped into similar concepts to create code families.

RESULTS

This section reports the results of the interviews according to the code families used for the analysis. A brief description of each code family is also provided.

Definition of OP

The interviews started with questions about the way in which the interviewees' organizations define and measure OP. The majority of the interviewees did not provide a specific definition of OP. Only in rare cases was a definition provided, and in only one case was the definition different from that presented in the legislation.

“The capability to measure the OP and to make it effective and efficient”

The interviews highlighted that public healthcare organizations give limited attention to OP. The results show that there is general confusion around this topic.

OP system

After the first questions to investigate general knowledge about the topic, the interviews focused on the core of the research: the OP measurement and evaluation system. Some questions aimed to understand what system is used, what the underlying model is, what dimensions are used to measure OP, and what the objectives are for each dimension. The results show that each organization has a specific performance measurement and evaluation system that is different from the others. This differentiation does not appear to be influenced by geographical aspects. In fact, there are some organizations from the same geographical area that have significantly different systems for performance measurement and evaluation. The most popular model used to measure OP is the budgetary model (43.33% of the organizations). Only a few organizations (13.33%) use the Balanced Scorecard model, and in one such case, the interviewee indicated that they had some difficulties with implementing the model:

“I used it in another organization and I discovered that if the right organizational culture is not there, it does not work”

There were also many cases (43.34%) where organizations do not follow a specific framework for the measurement. Some of them measure only financial performance, while others also measure the quality and efficiency of the processes. But a general issue revealed by the research is that the respondents were not able to specify which types of indexes are used to measure the selected variables.

Connection between individual performance and OP

The respondents recognized the relevance of the connection between individual performance and OP. Some interviewees (43%) reported that the OP objectives are not connected to the individual performance objectives, even if they believe that the definition of individual performance objectives should be start from the organizational objectives.

“The lack in our system is that there is no connection between the organizational objectives and the individual objectives”

In this way, it would be possible to share the organizational strategy with the staff.

The region's role

The interviewees were asked to identify who defines the general rules for the identification of the performance dimensions and performance objectives. The results show that the regional government plays the fundamental role in each organization. The regional government also provides the general guidelines for setting the objectives that each individual health organization is required to achieve.

“The objectives are derived from regional government, which plans them for every healthcare organization”

Each Italian region identifies specific performance objectives. Sometimes, these objectives can be the same as other regions. In fact, specific indicators are listed at the national level, and each individual region could employ them for the performance measurement of their healthcare organizations. This is related to the “*Piano Nazionale Esiti (PNE)*”, a document written by AGENAS for the Ministry of Health that provides a comparative assessment of efficiency, safety, effectiveness and quality of medical care at the national level.

Individuals' roles

Even though the region had an important role, interviewees highlighted the importance of the influence that some key individuals have on the design and implementation of the OP measurement and evaluation system. In particular, interviewees recognized that the general director is the most influential individual. The general director's background determines the setting of OP measurement. For instance, when they have a relevant interest in performance management and when they have specific competencies in this topic, the performance measurement system is better designed and implemented. In contrast, when the general director is not focused on this aspect, there is a negative effect on the OP measurement system.

“The general director's background has influenced the measurement and evaluation system”

There are only some exceptions where the performance measurement systems are not influenced by the general director, and even if the holder of the position changed, it would not influence the OP measurement system.

“The structure of the system is independent from the will of the general director, and the reason why this happens is that the present system has been realized across many years”

The impact of OP on organizational culture

The general system to measure and evaluate the OP is considered as a fundamental way to improve the organizational spirit. Rather than there being many cases of wrong uses of performance systems in the public healthcare organizations, almost all the interviewees indicated that the implementation of a performance system is helpful for sharing the business strategy with the staff.

“The objectives definition is the starting point for sharing the business strategy with professionals”

In this way, employees become more involved in the business life, they can feel that they are a fundamental part of the organization, and the work environment becomes more comfortable. This is an interesting result according to social capital literature, in which common shared values are an essential requirement for successful cooperation and coordination (Hammer et al., 2013).

DISCUSSION AND CONCLUSIONS

The interviews provide important elements that allow us to answer the research questions. At the first time the analysis shows that there are several different ways used by the Italian healthcare organizations to measure OP. Again, the results emphasizes that OP is still a complex topic, particularly in the healthcare sector. The difficulty in designing a performance measurement system comes from various aspects. The analysis highlighted that general directors play the key role in the functioning of the system, and if they do not have specific competencies and skills in relation to OP measurement, the organization's performance measurement end evaluation system is more likely to be less structured. This is consistent with the literature, according to which the quality of a management system depends on "professionals' compliance with policies and procedures within hospital units or departments" (Hammer et al., 2013). M. Vainieri, Ferrè, Giacomelli, and Nuti (2017) report similar findings in an empirical study, which shows that the managerial competencies of top managers in Italian health organizations have a significant positive effect on OP.

In some cases, managers argued that another limit is represented by the delay with which regional governments provide health organizations with general guidelines and objectives. As a consequence, healthcare organizations cannot define their own objectives on time and face problems in achieving them. Some organizations have performance systems that can measure and evaluate the performance of organizations from different perspectives. For example, accredited organizations focus more on specific performance dimensions (finance, quality and efficiency) and can provide a general perception of how the organizations work and their direction. At the same time, the designs of their performance measurement systems appear more efficient thanks to the guidelines defined by the Joint Commission.

Other critical aspects reported by the interviewees refer to the connection between organizational and individual performance. These two types of performance should be connected since their respective objectives should be linked to be congruent with the organization's strategy (R.S. Kaplan & Norton, 1992). In the interviewed healthcare organizations, there were some cases in which this connection is present, but in other cases, the individual objectives are defined without any congruence with the objectives defined in the performance plan. For example, this happens in the situations where OP is measured only through economic and financial objectives, and the individual performance is measured by only the quality of work of healthcare professionals.

Furthermore, the interviewees noted that for the performance measurement process, they only measure some specific mandatory indicators without any attention to the results and without any particular reflection on the organization's requirements. Managers reported that the goal of implementing an OP measurement system is to increase efficiency. Therefore, even if there are clear problems in the OP measurement system, the interviewees recognized the importance of this aspect for improving the organization's strategy and the performance at the organizational level. In some cases, they recognized the limits of their systems and the need to improve them.

Italy is an interesting case because its healthcare system has high performance overall (Blendon et al., 2001). The individual performance is largely studied and has relevant practical implications, but the role of OP has been largely neglected in the Italian public sector. Despite the limited numbers of interviews, this study highlights the way in which Italian healthcare organizations measure OP, as well as the problems and opportunities that healthcare organizations face when implementing OP systems. Although OP systems are potentially important, they have to comply with some requirements. First of all, the public healthcare sector is complex, so models used in the private sector must be adjusted for the specific needs. Although there are some frameworks that satisfy the requirements, obstacles remain in organizational cultures. Managers and doctors who work in the

Italian healthcare organizations do not have a natural inclination to measure their performance. And even if there are some cases where professionals care about this aspect, the problem is that there must be collaboration between all healthcare employees for the system to work.

Theoretical and practical contributions have emerged in this research. One is the general perspective provided for how Italian healthcare organizations measure their OP. Second, the results could help to improve the management literature, inform professionals of the current situation, and provide a starting point to improve it. Future research should be conducted to support the results by comparing the Italian situation to other environments.

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CHAPTER 4 - Performance and expenditure in public healthcare organizations

Abstract

The Italian National Healthcare Service (INHS), at both national and regional levels, has been characterised by the reduction of available resources that has since generated a quest to reduce expenditures and inefficiencies. This reaction has been accompanied by an attempt to structurally modify the INHS. After a major reform in 1978 that introduced universal coverage for all Italian citizens, subsequent fundamental reforms took place in 1992 and 1999. The main aims of these two last reforms were to increase regional autonomy and to increase the efficiency and effectiveness of the health system. This national legislation set down general rules and guidelines for reforming the system, but the actual implementation was left to the autonomous regions. As a consequence, notwithstanding a national framework, all twenty Italian regions have made individual decisions regarding the form of their regional health service. These decisions are regarded by both the overall system at a regional level and with respect to each individual's health care trust.

As expenditure and performance are two fundamental features of a health care system, this paper investigates the connections between performance achieved by the public health care organisations in Italy at regional level, and the changes in expenditure over a fourteen-year period (2001–2014). More specifically, the paper analyses how performance changed over time and if, and to what extent, it has been influenced by health care expenditures during the same period. Using two datasets for (1) health care expenditure as measured by the regional public accounts (RPA) and (2) indicators that measure performance (the so-called LEA indicators), the paper aims to answer the following research question:

RQ: 'Is performance in universal health care provision influenced by changes in public expenditure?'

The results show that changes in expenditure are not significantly related to changes in performance, except for a few performance features. They also show that performance changes over time, regardless of expenditure changes.

Introduction

In many OECD countries, health care expenditures represent a significant share of GDP (Ambrosetti, 2015; World Health Organization, 2017). In Italy, for example, health care spending accounts for about 7% of GDP, or 11% of total public spending, in line with the OECD average (World Health Organization, 2017). In the United States out of pocket spending was twice the OECD median in 2005 (G. F. Anderson & Frogner, 2008; CERGAS, 2009). Despite spending more for health care, the U.S. reported average or slightly below average level of health care service quality compared to other countries (G. F. Anderson & Frogner, 2008). In fact, health care spending is a necessary but not a sufficient condition for achieving good results that come from providing citizens with effective health care services. In other words, whether the performance of the public healthcare system is influenced by public spending or not is a worthwhile goal. For this reason, this research aims at investigating the connection between health care spending and the performance of Italian public health organisations, at a national level, by answering the following research question:

RQ: 'Is performance in universal health care provision influenced by changes in public expenditure?'

The paper is structured as follows: the next section analyses the literature regarding the connection between performance and expenditure. Section three and four provide an analysis of LEA (Essential level of assistance) and of the Italian health expenditure; while section five and six present,

respectively, the study's methodology and results. A discussion about the results is presented in section seven, followed by the conclusion.

Performance and Expenditure

The connection between performance and public expenditure has been widely studied in the literature with controversial results. According to Boyne (2003), the idea that more resources will lead to better results is the simplest theory of public service improvement. However, more spending is a necessary but not a sufficient condition for achieving better performance. In particular, Boyne analysed the impact that a set of variables has on performance, resources, regulation on public service, market structure, organisational structure and management. His review of the literature dealing with the relationship between expenditure and performance showed that in almost ninety percent of the cases this relationship is insignificant. Broadly speaking, there is only modest support for the proposition that extra resources is a route to achieve better public services (Boyne, 2003).

With regard to the health care sector, even though there is a general assumption that an increase in health expenditures will determine a corresponding increase in health care provision (K. Kim & Moody, 1992), this relationship is far from proven. For example, Filmer and Pritchett (1999) and Filmer, Hammer, and Pritchett (1997) found very limited impact on health care outcomes coming from socioeconomic characteristics or public expenditures. Anderson & Frogner (2008) compared the expenditure on health care in different OECD countries. What emerged is that in the United States the percentage of GDP devoted to the health care was the highest among OECD countries from 1997 to 2005. Even in 2016, United States had the highest ratio of total health expenditure to GDP (OECD 2016). However, 'despite the higher spending, the United States scored average or slightly worse than average on many quality of care indicators compared to other industrialised countries' (G. F. Anderson & Frogner, 2008, p. 1722). M. Vainieri et al. (2017) argue that public health systems that spend more [do] not necessarily have better performance. Nuti, Daraio, Speroni, and Vainieri (2011) provide empirical evidence that show that higher performance is not a direct consequence of a higher financial capacity, but rather the efficient and effective combination of available resources and population needs.

Mihaiu, Opreana, and Cristescu (2010) consider that in some cases, in the public sector, inefficiencies are not real, but rather emerge from difficulties in measuring efficiency in that specific sector. They start from the definition of efficiency as 'maximising the results of an action in relation to the resources used' and then draw a comparison between the private and public sectors. They hoped to dispel the myth that the public sector is ineffective, considering that the key problem in the public sector is the process of identifying and measuring inputs and outputs. Yet, in fact, in many cases the direct and immediate economic benefit is missing in the public sector. Consequently, they elaborated a scoring function to measure the performance of the public sector that better provides a fair representation of reality.

The main limitation of the aforementioned research is that, even if a lack of connection between health care expenditure and performance is proven, no explanation is given for reason why it happens. Similar studies try to identify the causes of this phenomenon. Rajkumar and Swaroop (2008) investigated the reason why public spending often does not yield the expected improvement in outcomes. They observed that merely allocating more public resources does not necessarily lead to the desired outcomes and argued that better governance is crucial in determining the effectiveness of public spending. As a consequence, governance explains why in some cases, even with an increase in spending, public organisations' performance does not improve and in some cases even diminishes. In addition to governance, other variables have also been used to test the impact of spending on performance. Novignon, Olakojo, and Nonvignon (2012) consider education, technological change,

income and cultural differences as dominant drivers of health care outcomes. Demographic structures and economic conditions must be considered to better understand the relationship between public spending and performance. Management is another variable which could influence the performance trend (Lega, Prenestini, & Spurgeon, 2013). However, the literature concerning the impact of management on health care organisations' performance is controversial. Some authors recognise that management could influence performance in a positive or negative way (Zoe, 2008), while others do not find any relationship between the two (Street, Car-Hill, & Posnett, 1999). Recent studies have considered the importance of management in the health care sector, finding an increasing interest in evaluating the impact of managerial practices on clinical performance (Lega et al., 2013).

Ablo and Reinikka (1998) showed that budget allocations alone were not sufficient to generate higher levels of service because 'public funds do not reach the intended facilities as expected, and hence outcomes cannot improve' (1998:2)

Arbor (1985) focused on the effects that organisational structure has on health care provision, without considering spending. That study considered some structural features and analysed the relationship that each of them had with health care provision. The research shows that some features, such as hospital size, have a limited positive relationship with economic efficiency. Nevertheless, other features, such as the volume of patients, is positively and significantly correlated with it.

Other studies found a positive relation between expenditure and performance. Anand and Ravallion (1993) and Hojam (1996) found that public health spending has a statistically significant effect on health status. Soon afterwards, Bidani and Ravallion (1995), found that public spending has a beneficial impact on the healthiness, using a sample of thirty-five countries.

The Italian National Health System

The Italian health care system, which is still today considered to be one of the most advanced in the world (World Health Organization, 2017), is based on a solidarity approach. It accords free access to all citizens a battery of medical treatments, regardless of their personal income or location. This approach requires a considerable resources. Accordingly, in 2015, health care expenditure per capita was equal to 112,408 million euros (about 7% of GDP), which is not far off from the OECD average (9%), and it is mainly public: 77% vs 73% average for the OECD (OECD, 2015). A particular feature of the Italian health care system is that it is a regionally based national health service where, in fact, beginning in 2001, substantial legislative power was given to the regions (Spano & Aroni, 2017). Tediosi, Gabriele, and Longo (2009) showed the effect that this reform had on the overall Italian health care system and highlighted the difficulties and the contradictions of the decentralisation process in a country characterised by wide international differences and huge public debt (Tediosi et al., 2009). In general, this phenomenon generated disparities among regions, in terms of financial results as well as service standards, and this happened because each region follows diverse strategies, and has dissimilar management.

Over the last few decades, significant attention has been paid to the reduction of spending on health care (between 2006 and 2009, many regions entered a recovery plan), but there is a lack of research on the link between spending and performance in the Italian health care sector. For this reason, this study investigates that link.

Expenditure on healthcare, regional public accounts

The source of data: regional public accounts

The source of the statistical information reported in this paper (with reference to expenditure data) is the 'Regional Public Accounts' database (RPA), which provides financial information (cash-based) at national and regional levels, drawn from the balance sheets of public organisations and other entities that are controlled directly or indirectly by public organisations. In the RPA system, each entity is considered as a dispenser of final expenses by removing the flows between different public organisations. A consolidation process is carried out to obtain the total value of the public expenditure directly disbursed in the territory or revenue acquired, without risk of duplication. Cash flows are classified by sector and by nature (economic categories), and identified to obtain consolidated accounts that include homogeneous income and expense items. Public expenditure on the health care includes funding for: prevention, protection and care; public health services; management of pharmacies along with the supply of products and equipment; management of social-healthcare centres and preventive veterinary medical institutes; expenditures for the support and financing of health care activities and expenditure for terminal illnesses.

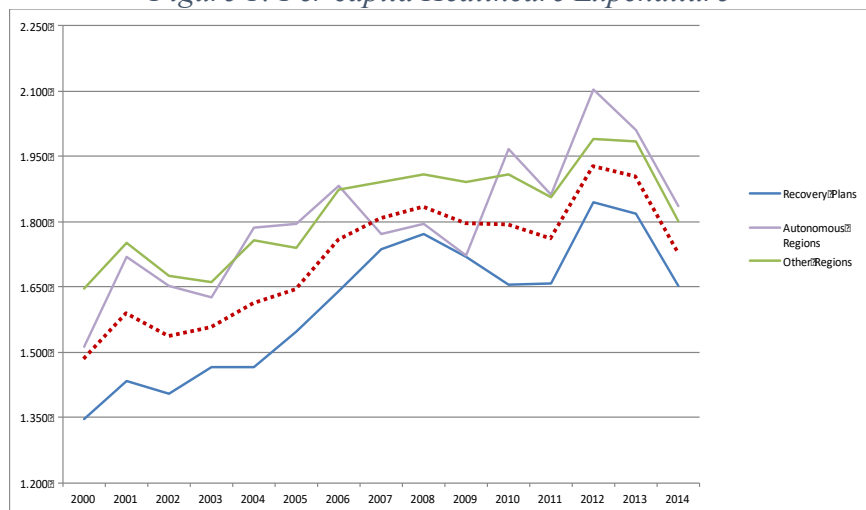
Total expenditure is measured net of loan repayments. Data are expressed in constant 2010 euros per capita. The population used is the annual average published by Italian National Institute of Statistics (ISTAT). RPA data are deflated using the GDP deflator published by ISTAT.

Health spending

Public health spending accounts represented close to 11% of total public spending in Italy, and around 7% of its GDP (average 2012–2014). This latter percentage tended to increase in ensuing years, due to GDP's decline in the period following the economic crisis, coupled with the rigidity of some health care spending components, wherein coverage is ensured for essential health assistance.

In 2000–2014 (Figure 1), national health spending was largely discontinuous and faced a considerable regional variability.

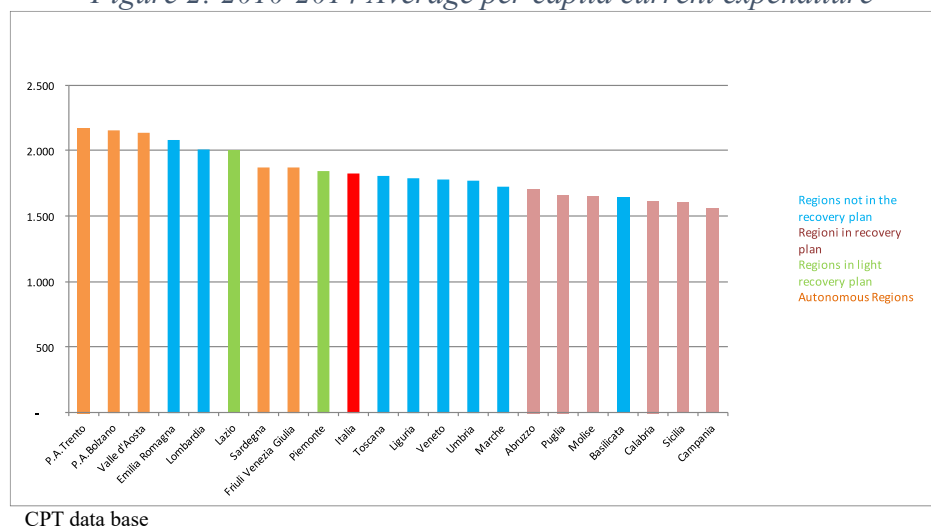
Figure 1: Per capita Healthcare Expenditure



CPT data base

During the last five years, the Trento autonomous province sustained, on average, the highest level of expenditure over the period considered, followed by the Autonomous Province of Bolzano and Valle d'Aosta (Figure 2). There are twelve regions that spend less than the national average, and all are in the Central-Southern regions, except from Veneto and Tuscany. Between the first and the last one (Campania), there is an average gap of € 610 per capita.

Figure 2: 2010-2014 Average per capita current expenditure



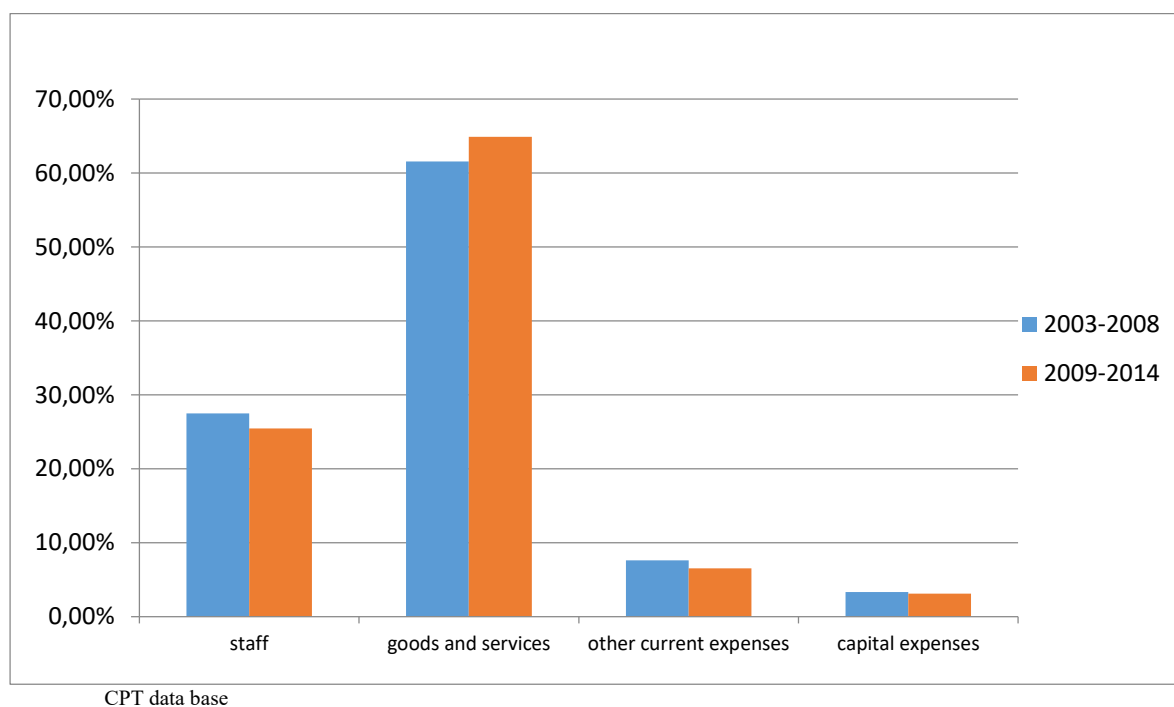
Focusing on the average rate of change in healthcare expenditures, it is possible to see that it has had a strong growth in the early years of the analysis, while the variation significantly lessened, even becoming negative, during the last three years. The highest growth was recorded from 2006 to 2008 and is, in fact, the combined effect of a significant increase in spending in 2006 and its reduction over the next two years. Further, it was due to specific measures to contain spending such as deficit recovery plans, which had been allowed to reduce spending, having their effects fully felt after 2008. Indeed, during 2009–2011, significant spending constraints in the regions resulted in a reduction of the overall spending (–1.35%), even though some regions (the special autonomous regions in particular) experienced increases. More specifically, the negative trend was mainly due to Italy’s southern regions, where deficit recovery plans were prominent. In 2006, Liguria, Lazio, Abruzzo, Molise, Campania, Sicily and Sardinia regions set up a three-year deficit recovery plan that was signed in 2007. At the end of 2009, the Calabria region also signed its deficit recovery plan for 2010–2012. In 2010, the Lazio, Abruzzo, Molise, Campania and Sicily regions extended their deficit recovery plans for the next three years (2010–2012), while Liguria and Sardinia came out of it. In the same year, Piedmont and Apulia signed and started a recovery plan, although characterised by a lower level of intervention (so-called ‘lightweight’) compared to the other regions subject to a recovery plan.

The slight decrease in spending over the last three years was the result of the combined effect of several factors. On the one hand, the considerable push towards growth in spending, following the enforcement of legislative decree no. 192/2012, which approved the measures aimed at reducing time for the payment of trade debts, and the subsequent decree law no. 35/2013, which envisaged anticipating liquidity reserve totalling €17 billion for the regions from 2013 and 2014, for the payment of accumulated healthcare debts by 31 December 2012.

For these reasons, starting from 2013 health spending has entered ‘competition’ with other types of spending.

Current expenditure (personnel, goods and services and other current expenses) has the highest impact on total health expenditure (85% to 90%), and real estate investments having the lowest impact on it (3%), tending to decrease over time (e.g. 2% in 2014) (Figure 3).

Figure 3 Health Care Expenditure Items



Payments made by health authorities for personnel declined during 2009–2014, with a greater decrease in 2014 compared to 2013, even if the general trend, in the studied period (2001–2014), evinced growth. The trend between 2009 and 2014, was affected both by the choices of health care trusts regarding the outsourcing of services, and by national policies such as the revision of equipment, turn-over blocking and recruitment policies, as well as the limitation in recognising the increase in employees' remuneration and the freezing of collective interim pay guarantees.

The impact of personnel costs in relation to total current expenditure shows considerable variation among the regions in 2000, ranging between the extreme values found in Sardinia and Lombardy (less than 20%) on the one hand, and Molise, Valle d'Aosta and Trento on the other (over 35%). In 2014, it fluctuated between the lowest values of Lombardy and Lazio (less than 20%) and the highest values of Valle d'Aosta and Bolzano (over 33%).

The expenditure on goods and services was less affected than other things than by cuts in spending. The net effect on the trend is determined by several variables. Beginning 2013, there was a reduction in the volume of purchases of goods and services (except for in-hospital pharmaceuticals), as well as the obligation for healthcare trusts to renegotiate contracts with their suppliers. Those firms were permitted to withdraw from the contracts if unit prices listed therein exceeded 20% of the reference prices determined by the Public Contracts Monitoring Center. Beginning in 2014, the corresponding prices have been reduced. Even the publication of reference prices by the National Anticorruption Agency (ANAC) for a set of goods and services as a tool for programming and controlling spending has helped keep this spending item under control.

Despite this fact, the increase in the weight of components over the whole expenditure may be explained by a substitution effect. It is the result of blocking recruitment and by continuing spending on hospital pharmaceuticals, which has seen significant growth rates due to the introduction of expensive innovative drugs, especially for cancer treatment.

After a generalised reduction of total expenditure in almost all regions between 2000 and 2006, and again between 2008 and 2011, the trend began to rise again in 2012 and especially during 2013 and

2014. This shift was a result of interest expense for cash advances under decree law no. 35/13, which was primarily directed at the Lazio region, the region that made the most use of cash advances.

LEA Indicators

In 2001, the Italian Constitution was revised and, among other changes, the power to set the ‘essential levels of care’ (*Livelli Essenziali di Assistenza*, or LEAs), which must be guaranteed to all residents (Torbica & Fattore, 2005), was left to the central government. The LEAs are treatments and services that must be guaranteed to all residents in Italy, free of charge, by the Italian national health system (INHS) (Health, 2017). The expression ‘levels of care’ was introduced by the 1978 reform with the objective of guaranteeing equal health care insurance throughout the country. One limitation of this reform was that it did not define the details for the specific treatments and services that were to be included. Significant progress was made during the 1990s, when the national health plan was approved and a new reform was introduced. Since then, the importance of principles of equality with respect to the access of care has been emphasised and the LEA system has been implemented. In addition, criteria for defining LEAs were clearly set forth: human dignity, effectiveness, appropriateness and efficiency. The problem was that the LEA system remained a merely theoretical concept for a long time, without any practical implications (Torbica & Fattore, 2005). One way to solve that problem was to distribute the legislative powers among the Italian regions, which allowed compliance verification for the stipulated LEAs. This progress was realised through agreement between the central and regional governments, after a pertinent decree was issued in 2001, the LEA decree (Torbica & Fattore, 2005). In this decree, a list of health care services that must be guaranteed by the INHS was provided. These services were categorised under three macro-levels of medical assistance: public health services, community care and hospital care. These levels were then divided into twenty sub-categories (twenty-one until 2012): six for public health services, nine for community care and five for hospital care. Each dimension had a specific weight assigned to it and a different set of indicators relevant to it (see Table 1). Each dimension refers to a specific topic, in particular: (1) controlling vaccination levels; (2) prevention activities; (3) and (4) safety at work; (5) livestock; (6) and (7) have, respectively, two and one indicators for the regulation of certain criteria requested by the *Piano Nazionale Esiti*.¹; (8) and (9) monitor the characteristics of buildings, in terms of beds and how many are reserved for the elderly; (12) measures the percentage of annual prescription drugs consumed; (13) specialised outpatient healthcare of M.R.I.s; (14) staffing the office of mental health; (15) the three indicators that measure three different aspects of hospitalisation services; (16) and (17) provide an indicator for each thing that considers the appropriateness of specific DRGs; (18) an indicator for caesarean deliveries; (19) an indicator that considers the diagnosis of femoral neck fractures among the elderly; and (20) the efficiency of emergency rooms. Some dimensions are measured by more than one indicator, and there are thirty-two indicators in total, but only twenty-five of them are constantly monitored by Italian regional authorities.

Table 5 Levels of Assistance

Macro Levels of assistance	Dimensions	Set of indicators
Public health services	6	12
Community care	9	13
Hospital care	5	7

¹ The *Piano Nazionale Esiti* consists of a new set of indicators to measure health performance.

Total	20	32
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In addition, the decree defined a system for monitoring the implementation of the LEAs at the national level. Until 2002, a special technical body composed of representatives of the Ministry of Health, the Treasury and regional governments was responsible for monitoring and evaluating the actual provision of services the LEAs. A new technical body (the National LEA Commission), was established in 2005. This commission is composed of four representatives from the Ministry of Health, two from the Ministry of Economics and Finance, one from the Treasury and seven regional representatives. One of their tasks is to ensure that each region's conduct is in line with the requirements, using a list of the indicators for the aforementioned macro-levels (public health services, community care and hospital care) and allowing the commission to specify findings for each region. The fundamental role of this supervision is to monitor the appropriateness, quality and efficiency of treatment and medical care.

In this study, we decided to use the aforementioned indicators to measure the performance of each regional health system.

Methodology

To answer the research question, two independent variables have been selected (time and change in spending) to explain the dependent variable (organisational performance measured with LEA indicators). Spending data came from the 'regional public accounts' database (RPA), described earlier, while the LEA indicators are performance indicators defined and measured by the Italian Ministry of Health.

To analyse the effects of (1) time (2) changes in spending, and (3) the combined effect of these two variables on the LEA indicators, we utilised mixed, repeated measures of factorial analysis over time, and changes in spending for different measures of expenditure between factors. These factors consider different values for the independent variables between 2001 and 2014. The between factor is related to the change in spending for four different measures of expenditure, namely: real estate investments, expenditure for medical equipment, services and personnel. These variables have been chosen because they indicated a statistically significant difference throughout the 2001 to 2014 period. (Note: all of these expenditure variables increased during that period, except for expenditures related to real estate investments, which decreased). We created a dummy variable where 1 indicates a statistically significant change in the expenditure and 0 otherwise, using a *t*-test analysis.

Results

Our analysis suggested that there is a limited relationship between them and the change in expenditure levels over time.

For six of the twenty-five LEA indicators considered, neither a relationship with spending nor with time was found. Thirteen LEA indicators were influenced by time only. Six LEA indicators were also related to various spending items.

More specifically:

1. One LEA indicator related to vaccines was positively influenced by time and by the variations in expenditures for medical equipment.
2. The percentage of checked sheep and goat rearing was positively influenced by time and by the variation in expenditure for services.

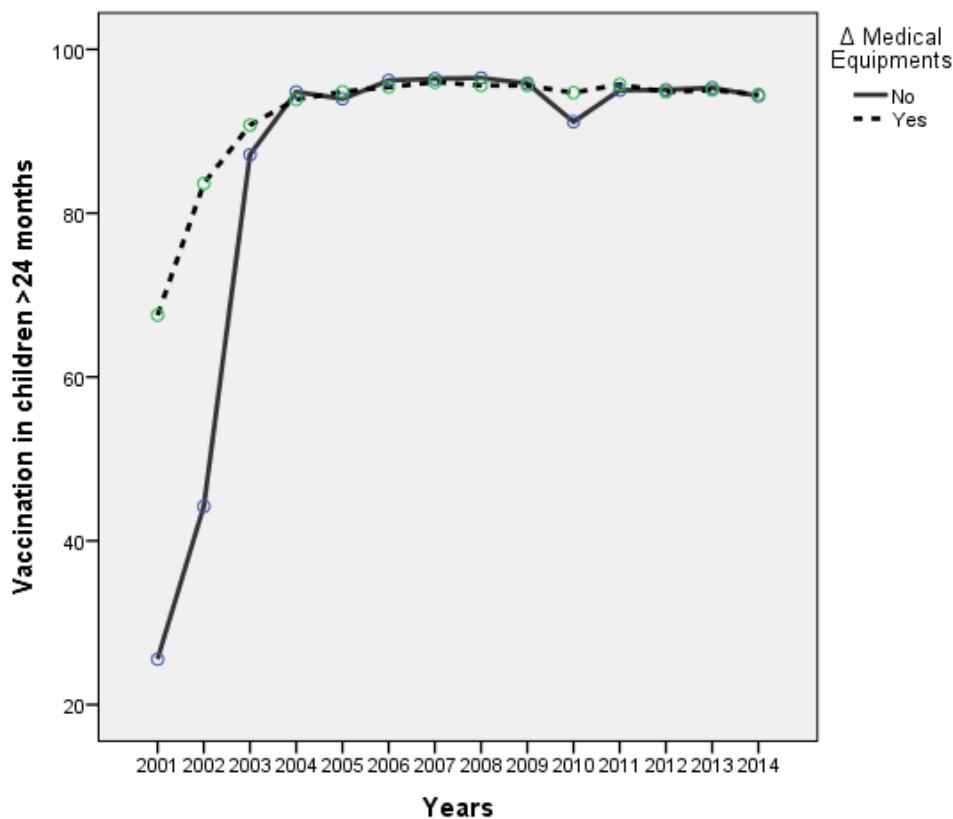
3. The weighted sum of specific standardised rates for some avoidable conditions or pathologies in ordinary hospitalisation (e.g. paediatric asthma, complications of diabetes, heart failure, urinary tract infections, bacterial pneumonia in the elderly, COPD) is positively influenced by time and by the variation in expenditure for medical equipment.
4. Number of equivalent beds for elder care in residential facilities was positively influenced by time, by the variation in expenditure for real estate investments, along with services and expenditure for medical equipment.
5. Number of beds for elder care in residential facilities was positively influenced by time and by the variation in expenditure for medical equipment.
6. The percentage of ordinary surgery DRG admissions on total admission was positively influenced by time and by the variation in expenditure for real estate investment.

The graphs below show the way in which the six LEA indicators changed over time, as well as in relation to changes in spending.

1. Vaccination of children > 24 months

In the case of the LEA related to the vaccination coverage for children > 24 months, the mixed, repeated measures factorial analysis showed the main effect of time and the effect of the change in expenditure related to medical equipment. The combined effect of time and the change in spending was not significant.

Figure 4

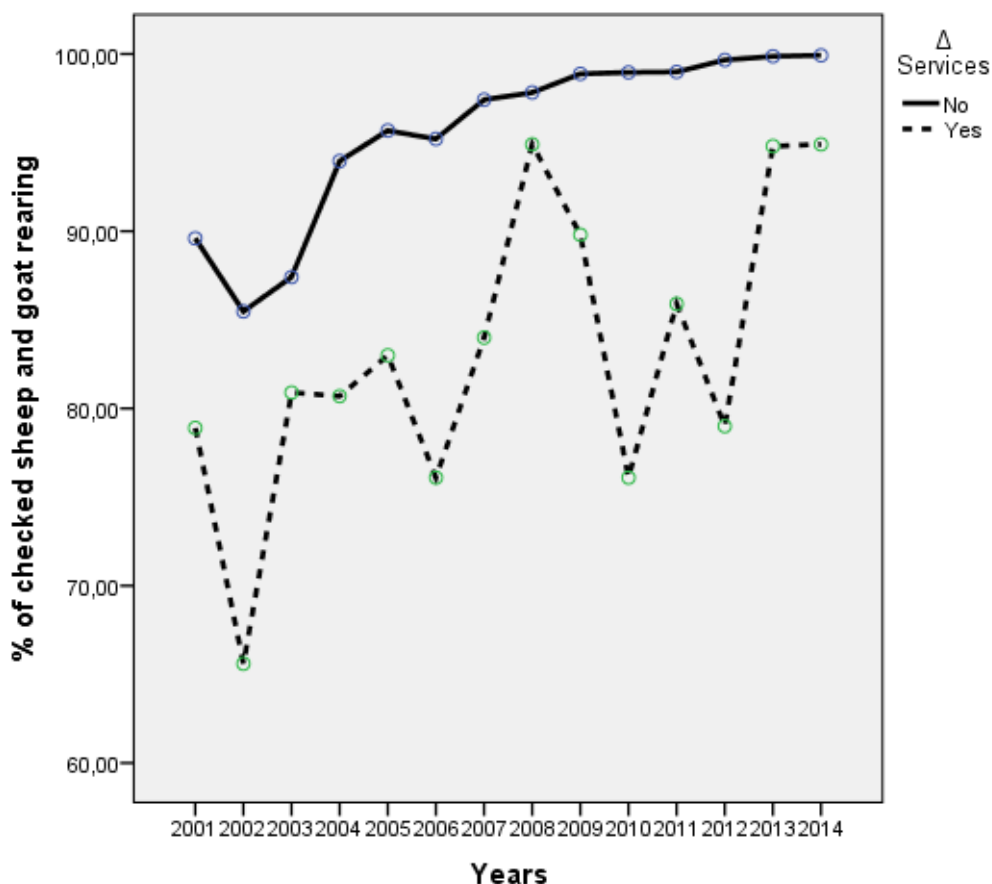


Graph 4 shows how the indicator increased over time (due to the effect of time). Moreover, there was a statistically significant difference between the regions (dotted line) where there was a statistically significant change in the spending related to machinery (increase) and the regions where this change had not yet occurred (other line). More specifically, even if the trend were the same, the regions where there had been a change in expenditure related to medical equipment reported slightly higher levels of vaccination, compared to the regions where this change had not occurred.

2 The percentage of checked sheep and goat rearing

In the case of the LEA related to the percentage of checked sheep and goat rearing, the mixed, repeated measures factorial analysis showed the main effect of time and the effect of a between factor, the change in expenditure related to services. The combined effect of time and the change in the spending was not significant.

Figure 5

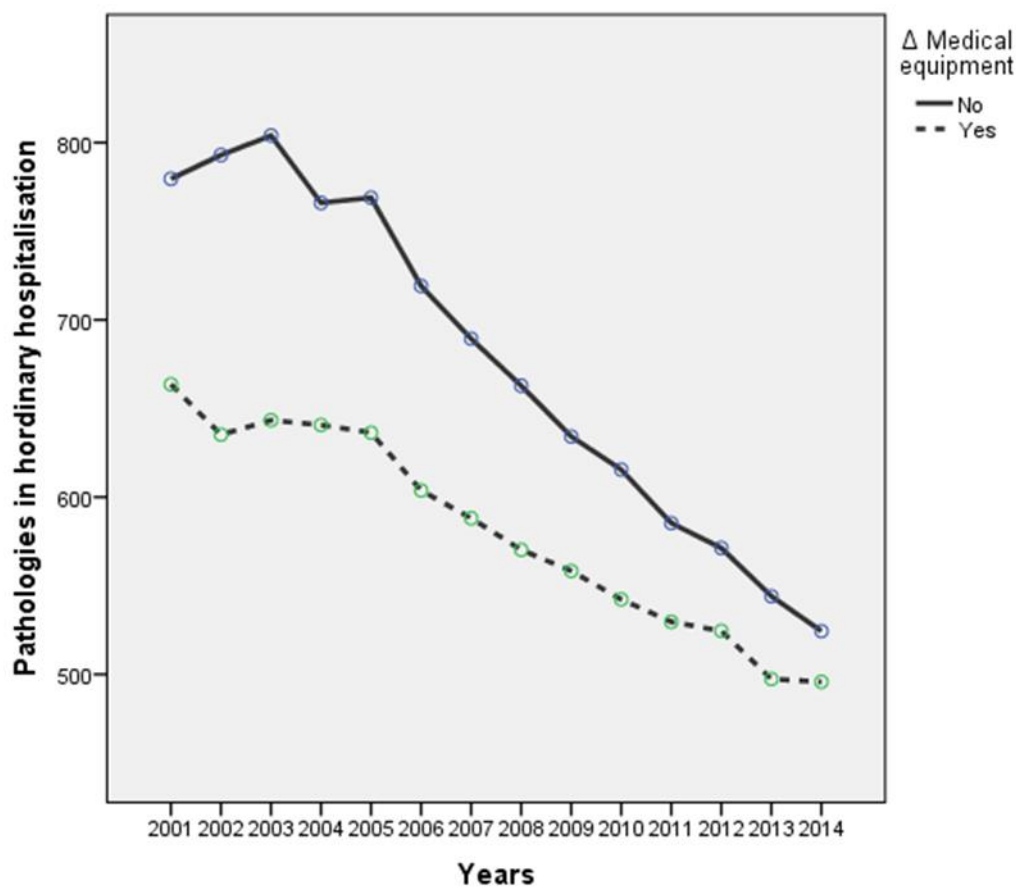


A positive trend is shown by an increase in the value of this LEA indicator over time. Moreover, there is a statistically significant difference between the regions where there has been a statistically significant change in spending related to services (decrease) and the regions where this modification has not occurred. More specifically, the trend of the first category of regions (dotted line) is not linear and have many spikes (e.g. in 2002, 2006, 2008, 2010, 2011, 2012, 2013 and 2014), while the other regions have a more linear trend (the other line). Despite these trend differences, the regions where there has been a change in the expenditure related to services have a lower percentage of checked sheep and goat rearing, compared to the regions where this change has not occurred.

3 Pathologies in ordinary hospitalisation

Graph 6 focuses on the LEA related to the weighted sum of specific standardised rates for certain avoidable conditions or pathologies in ordinary hospitalisation. The mixed repeated measures factorial analysis shows the main effect of time and the effect of a between factor, the change in expenditure related to medical equipment. The combined effect of time and the change in spending is not significant. The decrease in the indicator's value is a sign of a positive performance trend.

Figure 6

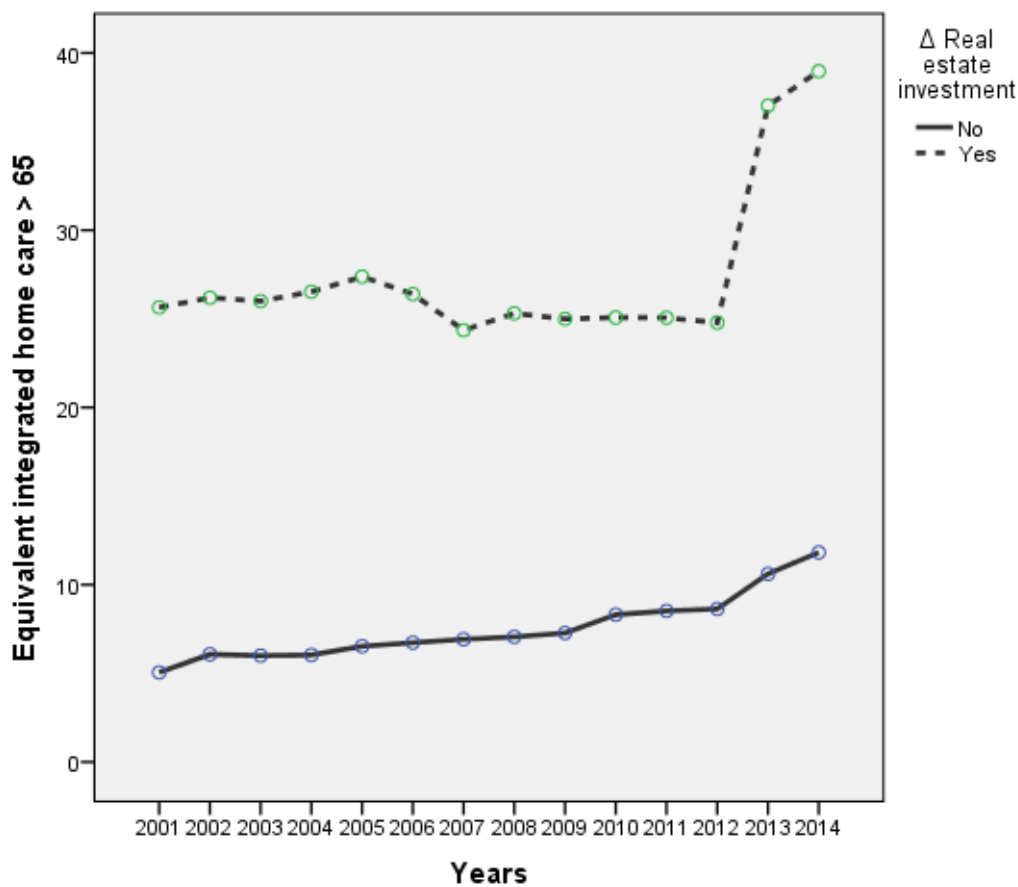


Graph shows how the indicator has decreased over time. Moreover, there is a statistically significant difference between the regions where there has been a statistically significant change in spending related to equipment (decrease) and the regions where this change has not occurred. More specifically, even if the trend is the same, the regions where there has been a change in the expenditure related to equipment have a lower level of the weighted sum of specific standardised rates for some avoidable conditions or pathologies in ordinary hospitalisation, compared to the regions where this change has not occurred.

4 Number of equivalent beds for elder care in residential facilities

In the case of the LEA related to the number of equivalent beds for elder care in residential facilities, the mixed, repeated measures factorial analysis shows the notable effect of time and the effect of the change in expenditure related to services, medical equipment and real estate investment. The combined effect of time and the change in spending is not significant.

Figure 7

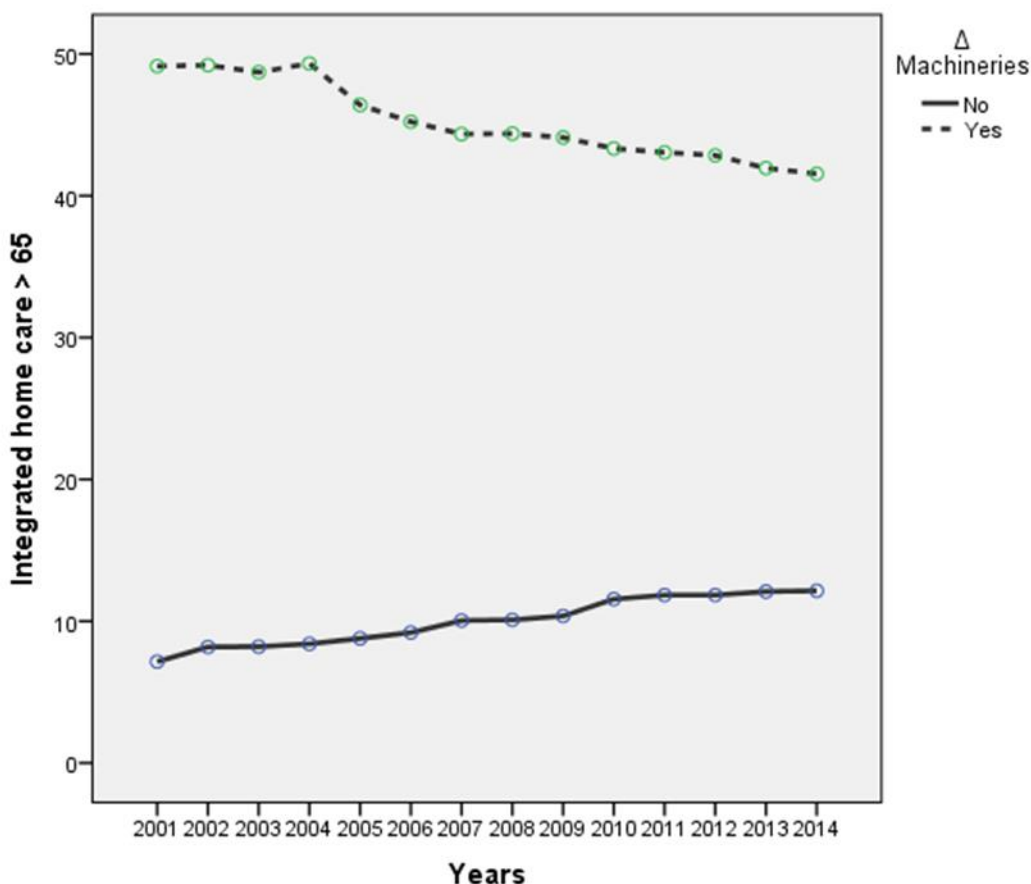


Graph 7 shows how the indicator has increased over time and, as an example, the effect of the change in spending related to real estate investment. In fact, there is a statistically significant difference between the regions where there has been a change (increase) in spending related to the three different elements and the regions where this change has not occurred. More specifically, the trend between the two categories of regions is similar, even if after 2012, for the first category the LEA increase was significantly higher than that of the second category. The regions where there has been a statistically significant change in expenditure related to services, medical equipment and real estate investment, have higher levels of equivalent integrated home care, compared to the regions where this change has not occurred.

5 Number of beds for elder care in residential facilities

The case of LEA related to number of beds for elder care in residential facilities shows how, while in the regions where there has not been a statistically significant change in the expenditure related to machineries, the number of integrated home care facilities increased over time, in the regions where this change occurred, the indicator decreased. At the same time, the regions where the change in expenditure is significant have a higher indicator value compared to regions where it has not occurred. Also in this case, the combined effect of time and the change in spending is not significant.

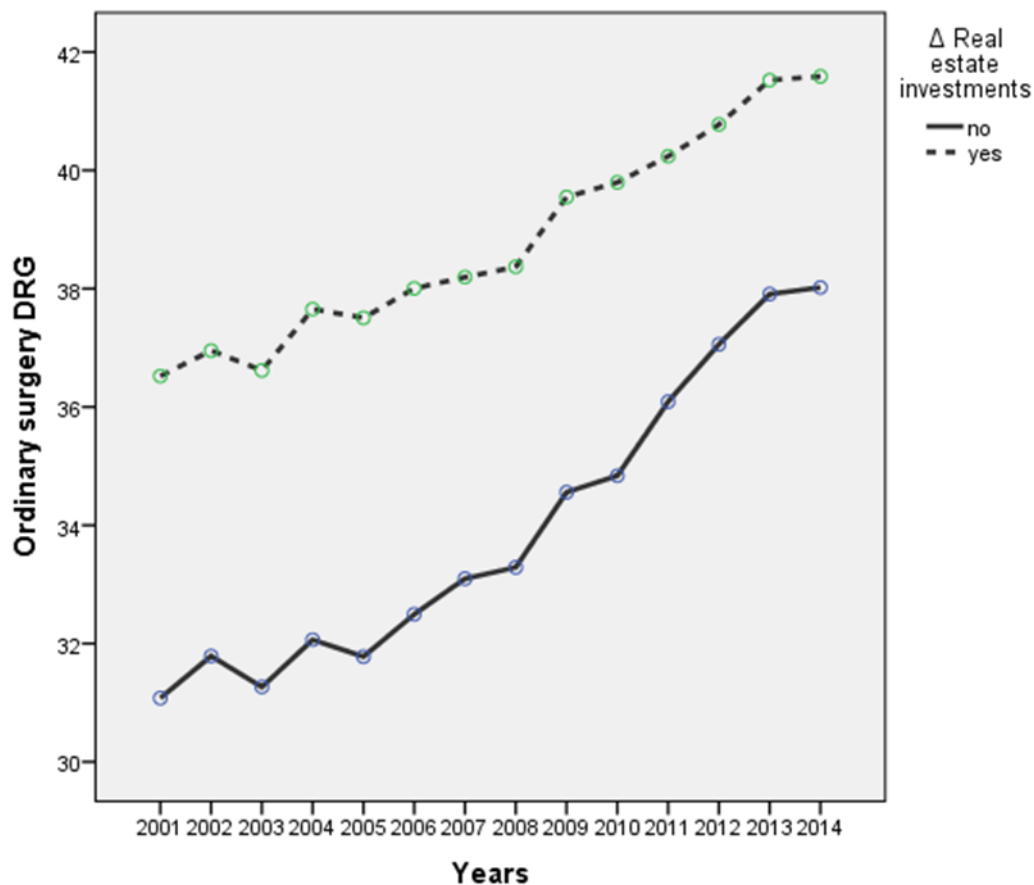
Figure 8



6 Ordinary DRG surgery admissions

The last graph focuses on the LEA related to the percentage of ordinary DRG surgery admissions on total admission). The mixed, repeated measures factorial analysis shows the main effect of a between factor, the change in spending is not significant.

Figure 9



The positive trend is shown by an increase of the value of this LEA indicator over time. Moreover, there is a statistically significant difference between the regions where there has been a statistically significant change in spending related to real estate investment and the regions where this change has not occurred. More specifically, it means that even if the trend is the same, the regions where there has been a change in expenditure related to real estate investments have higher percentage of ordinary surgery DRG admissions on total admission, compared to the regions where this change has not occurred.

Discussion and Conclusions

The aforementioned results allow us to answer the research question related to whether performance in health care is influenced by spending.

The results show that performance has changed over time. In fact, the statistical analysis showed the effect of time on performance, as measured by the aforementioned indicators. This latter aspect may be related to several reforms that affected the Italian health sector, with increasing attention paid not only to cost reduction, but also to improving performance, through the introduction of more stringent measurement and evaluation systems. These reforms also impelled greater attention to the importance of improving both the efficiency and effectiveness of the regional health systems and ameliorating the managerial and organisational skills in each individual health trust. Among all the LEA indicators, only a limited number are influenced by expenditure. For those that are influenced there is a positive and statistically significant relationship between health expenditure and results.

The main conclusions of this research are that performance in public health care organisations is only marginally influenced by spending, as demonstrated by our data. In fact, no significant changes in the performance indicators are reported over the analysed period (except from a few of the LEA indicators), neither when health expenditure increased until 2012, nor when it decreased, from 2013 onwards. The same results apply to those regions where recovery plans were implemented, and for autonomous regions where health care expenditure has seen a different trend. This finding is in line with the literature that found no significant connection between performance and expenditure in public health organisations.

A possible explanation is that there are other variables that influence performance in health care, i.e. the design of the health system at national and regional level and the way health organisations are actually managed (Ham, 2008; Lega et al., 2013), including the managerial skills of the individuals managing these organisations (M. Vainieri et al., 2017). For example, better management practices in hospitals are associated with better results in terms of reduced mortality rates for some diseases (Bloom N., 2009). These factors may be more important than mere spending levels.

Another explanation is that changes in expenditure may generate their effects in the long run, in particular for those related to capital expenditure. As a consequence, the changes in the performance indicators should be related to expenditure in previous years.

Another reason for the lack of any significant relationship between expenditure and these results may be due to the limited capability of the LEA indicators in properly measuring performance. In fact, more recently, public health organisations and the Italian Ministry of Health started to use a different set of indicators, included in the *Programma Nazionale Esiti* which allow comparisons for individual groups of treatments among different organisations, rather than a comparison of regional health systems, as dealt with in this paper.

Our results show that more in-depth analysis needs to be performed to investigate the influence of detailed expenditure items on specific performance indicators to better understand the potential implications of individual items of expenditure on health care performance

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