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Institutional quality and public sector performance: problems and perspectives

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Abstract

This study explores the methodological issues related to the measurement of public administration performance, on the one hand, and the different dimensions of institutional quality, on the other hand. On both issues, the literature is very extensive. Many studies, using different empirical approaches, also consider the relationship between institutional quality and public provision performance, both at domestic and international level, with reference to different sectors of public intervention. In this study, we provide a brief review of the literature both from the methodological and empirical point

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of view and offer insights on the relationship between institutional quality and public sector performance with a special focus on two different fields, namely health and public procurement.

Sintesi - Qualità istituzionale e performance nel settore pubblico: problemi e prospettive

Questo studio esplora le problematiche metodologiche relative alla misurazione della performance della pubblica amministrazione, da un lato, e le differenti dimensioni della qualità istituzionale, dall'altro lato. Su entrambe le tematiche, la letteratura è estremamente vasta. Molti studi, impiegando approcci empirici differenti, analizzano inoltre la relazione tra la qualità istituzionale e la performance nella fornitura dei servizi pubblici, a livello sia nazionale che internazionale, con riferimento a vari settori dell'intervento pubblico. In questo studio, ci proponiamo di fornire una breve sintesi della letteratura sia da una prospettiva metodologica che da una prospettiva empirica, e offriamo alcuni approfondimenti sulla relazione tra qualità istituzionale e performance del settore pubblico con particolare attenzione a due settori, il settore sanitario e gli appalti pubblici.

JEL Classification: D73; H83; I11; H57

Parole chiave: Qualità istituzionale; Performance del settore pubblico; Misurazione della performance; Fornitura dei servizi sanitari; Appalti pubblici

Keywords: Institutional quality; Public sector performance; Performance measurement; healthcare provision; Public procurement

1. Introduction

The raising importance of the public sector in the economy is nowadays a worldwide trend. General government expenditures in OECD countries averaged 40.8% of GDP in 2019, with European countries having higher government expenditures than others and experiencing a marked increase of an average of 7 percentage points of GDP between 2019 and 2020 because of COVID-19 crisis (OECD, 2021).

Nevertheless, growing (and financially demanding) citizens' expectations for new public services, along with increasing societal challenges and ever-tightening budgetary constraints have put pressure on governments to enhance the efficiency and effectiveness of public expenditure. Thus, the theme of improving the performance of the public sector has gained prominence in the political agenda. However, how to achieve this goal is not trivial and is a matter of considerable scholarly debate. Among others, by shaping incentives and, hence, modifying agents' behaviours, country's institutional features inevitably impact on public-service provision and, in turn, affect national economic growth and development. Besides, the relationship between institutional quality and public sector performance is feedback loop in nature, which further complicates its investigation.

A very extensive literature explores the methodological issues related to the definition and the measurement of public sector performance and institutional quality, underlining the difficulties due to the peculiar and multifaceted nature of both concepts. Moreover, a growing strand of papers analyses the nexus between them, - at domestic and international level, using different methodological approaches and with respect to different fields of

public intervention (e.g., culture, education, health, public procurement) - and specifically the extent to which institutional quality affects public provision performance.

Building on the authors' previous work, this study starts by reviewing the main methodological and empirical issues concerning the definition and measurement of public sector performance (Section 2) and quality of institutions (Section 3), as they emerge from the existing literature. Then, we focus on the relationship between these two aspects, particularly on the transmission mechanisms through which the local institutional quality can affect the performance of the public administration (Section 4). Finally, we discuss empirical applications to two specific fields, which represent significant shares of public expenditure and are extensively studied in the literature, namely health and public procurement (Section 5).

2. Public sector performance

2.1 Defining public sector performance

The definition of performance in the context of the public sector is not straightforward, and, compared to the private sector, is relatively more challenging due to public sector's peculiar features (Lovell, 2002), namely its goals, the structure of incentives and the objectives of politicians and bureaucrats (Dixit, 2002), the specific and heterogeneous concerns of

different internal and external stakeholders. Public sector performance is, in fact, a multifaced concept, involving several dimensions, such as effectiveness, efficiency, appropriateness, equity, as well as responsiveness (Brewer and Walker, 2010), which makes its measurement remarkably challenging.

Nonetheless, measuring public sector performance is of paramount importance, for several reasons. First, given the still relevant size nowadays of public sector in all economies, its performance accounts for a relevant share of the whole economy performance. Second, the public sector affects the private sector performance, directly and indirectly, through the provision of relevant services and infrastructures. Moreover, public funds are extracted from the private sector, mainly through taxes that are generally inefficient. The economic theory also suggests that the objectives and constraints of public managers are different than those in the private sector, which may lead to lower efficiency levels due to weaker incentives (Lovell, 2002). The goals of public sector performance assessment thus include the monitoring of public management actions (that is, providing accountability), the identification of factors affecting performance, and the definition of strategies to improve it.

Though the measurement of public administration performance has a long history, the increasing budgetary pressures especially in western countries has triggered even more interest on it and pushed policymakers towards cost containment actions. Therefore, the measurement of the efficiency dimension in particular has gained an increasing relevance. In the past, efficiency has been assessed mainly through the definition and computation of performance and productivity indicators, while in recent times efficiency measures based on frontier estimation techniques have been increasingly applied in the economic literature.

2.2 Measuring performance

Performance indicators have been used to evaluate performance of public sector¹ as a whole (e.g., Kaufmann et al., 2019) and in specific fields of intervention, such as culture (Pignataro, 2011), education (e.g., Figlio and Kenny, 2009), health and public procurement (see Section 4), etc.

Indicators are generally easy to compute and provide useful insights but have several limitations. First, they are based on some restrictive assumptions. Second, they allow for only partial evaluations, since they are computed as ratios of a single input and a single output, while generally public bodies tend to be multi-inputs-multi-outputs entities. Composite indicators may well serve to take into account the latter issue but at some relevant costs. In fact, in returning a comprehensive view of units' performance, they cannot allow to identify the specific source of poor performance. Also, the exclusion of relevant dimensions may distort performance evaluation. Finally, the evaluation based on composite indicators critically depends on the weights assigned to each dimension, whose estimation is not straightforward.

A different approach to overcome the above limits is based on frontier estimation techniques, which are nowadays widely adopted in academic works on public sector efficiency assessment. Such an approach involves the comparison of the actual performance of each observed unit with the optimal performance of those located on the estimated frontier (i.e., the best practice frontier). This approach is based on the efficiency measures proposed by Koopmans (1951) and Debreu (1951) and empirically applied by Farrell (1957). Two main classes of models have been developed to estimate efficiency

¹ Indicators have been widely used also for public provision monitoring for internal purposes (Smith, 1990; Figlio and Kenny, 2009).

frontiers: parametric frontier models and non-parametric frontier models. The Stochastic Frontier Analysis (SFA - Aigner et al., 1977; Meeusen and Van den Broeck, 1977) is a well-known example of the former class, while the latter includes the Free Disposal Hull (FDH) and Data Envelopment Analysis (DEA – Charnes et al., 1978) estimators², which have been increasingly used in public performance evaluation due to their flexibility, despite some limitations and some measurement issues.

One of them regards the identification, selection, and measurement of the relevant set of inputs and outputs on which to base the evaluation of efficiency. The problem arises as in many cases such variables are either not directly observable or not easy to quantify in monetary terms. Recent developments in frontier techniques allow to handle different types of variables, including quantitative (not necessarily monetary) and qualitative variables. A further issue in efficiency measurement and performance evaluation is that of the potential influence of environmental and contextual factors, which are not under the control of managers. This is particularly relevant in countries such as Italy, where remarkable structural economic gaps exist among areas. In such contexts, differences in efficiency levels may partially depend on differences in the operational environment. Therefore, comparing productive units without controlling for exogenous factors may flaw efficiency assessment and lead to incorrect evaluation and low measurement accuracy. Several techniques have been developed in the last decades to deal with this issue³.

2 For a more extensive discussion on this point, see Cooper et al. (2007) and Fried et al. (2008).

3 With respect to non-parametric frontier techniques, two main classes of solutions can be identified. First, two-stage procedures (Simar and Wilson, 2007; Banker and Natarajan, 2008) are based on regressing the efficiency measure against a set of environmental variables that affects efficiency. Second, fully non-parametric methods (Daraio and Simar, 2005) consist in estimating efficiency conditional to the environmental factors and comparing such conditional measure to the one assessed independently (i.e. the unconditional measure) to evaluate the influence of environmental factors on efficiency.

2.3 Efficiency versus quality of public provision

A relevant aspect of public provision performance regards the quality dimension. While pursuing and promoting quality standards is theoretically key in the provision of public services, a trade-off with efficiency improvement efforts often emerges. To deal with the purpose of monitoring quality levels, indicators of quality have been increasingly adopted by public bodies, as a basis for the development of regulatory mechanisms aiming at monitoring and providing incentives for improving quality in public provision in many fields (Smith, 1990), often in connection with financial incentive schemes designed to improving efficiency.

At the same time, such indicators have been used to assess and control for quality in the empirical literature addressing the evaluation of public provision. The identification of the appropriate indicators varies with the field of research. For instance, in health economics, outcome-based indicators, such as mortality and readmission rates for selected diagnosis (e.g., heart failures, acute myocardial infarction, strokes, pneumonia, hip fracture) are commonly adopted (Propper et al., 2004, 2008), given that their computation is relatively easy and standard procedures to control for confounding factors (risk adjustment) are well-established.

Such indicators have also been used jointly with frontier estimation techniques, to control for quality while assessing efficiency. For instance, in evaluating educational institutions' efficiency, the ratio of regular graduates on the total number of graduates, the ratio between the number of years scheduled for each degree course and the average number of years of delay, as well as drop-out rates and average marks are often used to this purpose (Johnes, 2006).

3. Quality of Institutions

3.1 Defining institutional quality

According to a very well-known definition, “*institutions are the rules of the game in a society*” (North, 1992: 477). In fact, institutions affect the choices of the members of a society to the extent to which they set the overall structure of incentives that drives individual behavior. From the seminal work of North (1990, 1992), the role of institutions in influencing economic performance has been largely acknowledged. The institutional framework is found to affect growth and development (Mauro, 1995; Haggard and Tiede, 2011), firms’ efficiency (Yan and Oum, 2014), patent activity (Wagner and Bologna-Pavlik, 2020), the emergence of organized crime (Acemoglu et al., 2020), among others. In the public sector, where public officials need to be kept accountable with implicit incentives (Alesina and Tabellini, 2007, 2008), the role of the institutional framework in shaping the agents’ behaviour is of paramount importance. Similar to the concept of performance, the quality of institutions is not easy to define⁴ and a major challenge arises from its multidimensionality. A well-established classification of such dimensions is the one used in the “World Bank Worldwide Governance Indicators” (WGI - Kaufmann et al., 2010) that distinguishes the following main components:

- *Voice and accountability (VA)*, which captures the extent to which the citizens are active in monitoring the use of public resources by local governments and participate in the political process;
- *government effectiveness (GE)*, which refers to the administrative capacity

4 See Kaufmann and Kraay (2008) on the definitory problem regarding institutional quality.

of the local government and its civil servants to effectively implement policies and to provide public services effectively and efficiently;

- *regulatory quality (RQ)*, which concerns the ability of the local government to formulate and implement effective regulations that promote private sector development;
- *rule of law (RL)*, which refers to the extent to which agents have confidence in and abide by the rules of society and trust policies and the courts;
- *political stability and absence of violence/terrorism (PV)*, which reflects the likelihood of political instability and/or politically-motivated violence, including terrorism;
- *corruption (CC)*, which concerns the extent to which public power is exercised for private gain. A large body of literature has addressed this specific dimension that is particularly relevant in Italy. The economic theory of corruption is based on the presence of asymmetric information in the principal-agent relationship. To deal with it, legal obligations have been introduced in several countries to foster transparency and, hence, to favor public official accountability (OECD, 2021).

3.2 Measuring quality of institutions

The increasing interest in measuring quality of institutions in the economic literature is due to its acknowledged relevance in affecting economic agents' behavior, and, hence, the economy as a whole. In turn, such interest has resulted in the development, in few decades, of an impressive number of indicators, either simple or composite (Williams and Siddique, 2008), aimed at addressing single dimensions, or at measuring governance or institutional quality overall. Early indicators were generally based on single dimensions, often referring to 'pure' political features of institutions, such as political stability, and based on objective measures. The need to investigate the actual impact on economic agents have brought to the development of indicators based on perceptions (Williams and Siddique, 2008), to deal with the role of informal institutions that are generally harder to capture with objective measures. Among perceived measures, a shift from expert-based indicators to large survey-based ones has emerged in more recent times, reflecting a parallel shift from indicators mainly designed for potential foreign investors to those aiming at drawing a picture of a single country situation as seen by domestic firms and individuals. Intuitively, the rationale behind the above shifts is that scholars and researchers have progressively acknowledged that what people feel about institutional quality (more than what actually is) affects their choices. Thanks to a larger availability of data in more recent times, aggregate indicators have been developed, based on several sources, to provide robustness to such measures (Williams and Siddique, 2008). Among them, the most adopted in the economic literature worldwide is the abovementioned WGI. This is an aggregate composite index, combining cross-country data on governance based on several surveys targeting citizens, enterprises and experts, computed

at national level for more than 200 countries. Other relevant indicators broadly adopted in the economic literature worldwide and in works tackling Italy⁵ include the *Corruption Perception Index (CPI)*⁶, the *European Quality Index (EQI)* - Charron et al., 2014, 2015), which is a perceived measure computed at regional level in EU, and the *Institutional Quality Index (IQI)*, developed by Nifo and Vecchione (2014)⁷.

Notwithstanding, the large majority of available indicators nowadays are unidimensional and computed at national level. Among them, it is worth mentioning some indicators related to corruption and transparency⁸, which are of specific relevance for Italy. Namely, the one developed by Golden and Picci (2005) that measures corruption as the difference between a measure of the physical quantities of public infrastructure and the cumulative price government pays for public capital stocks, and the *Composite Transparency Index (CTI)* developed by Galli et al. (2017), which is a composite indicator based on the transparency obligations requested to the public administration since 2013.

5 See Section 5 for other measures specifically relevant in public procurement and health sectors.

6 The *CPI* of Transparency International is an aggregate indicator based on 13 different data sources from 12 different institutions. It captures perceptions of corruption within the past two years. *CPI* measures only corruption, using a set of data drawn from nine organizations.

7 The *EQI* is a survey-based index, developed by the Quality of Government Institute at the University of Gothenburg. It is a perceived measure computed at regional (i.e., sub-national) level within the EU. Its first wave was published in 2010 and then repeated in 2013, 2017 and 2021. The *IQI* is a composite indicator of institutional quality in Italy, computed at provincial and regional level on early basis since 2004. It is based on the *WGI* framework and it is constructed over five dimensions, relying on objective measures.

8 See Hamilton and Hammer (2018) for a detailed discussion on properties and limits of several corruption indicators.

4. Possible transmission mechanisms

4.1. A general overview

There are several mechanisms through which local institutional quality can affect the performance of public administrations. This is especially true for those publicly funded services characterized by high discretion of providers and difficulties in the measurement of performance, which blur their accountability (e.g., procurement, healthcare, education, cultural heritage).

For our purpose, we follow the above-mentioned standard WGI classification of the “dimensions” of institutional quality:

- *VA*: in general, an active citizens’ attitude in the public domain is deemed crucial to stimulate the provision of public services and make public officials accountable, since active citizens are expected to punish governments, thereby discouraging their misbehaviours (Nannicini et al., 2013). In public sectors characterized by high discretion of providers, the role of VA might be especially important since it determines the stigma effect among the local population of an inefficient behaviour by public officials. In strategic public sectors such as culture and education, the increasing awareness of citizens about the social and economic role played by the services provided by these public administrations might give rise to a higher demand, thus stimulating a better provision of these services (Cellini et al., 2023).
- *GE*: some providers of public services usually need to interact with the reference public authorities, such as most hospitals and museums in Italy; thus, their behaviours may be influenced by the quality of local governance (Cavalieri et al., 2020; De Luca et al., 2021; Cellini et al.,

2023). Government effectiveness of local public authorities might lead these providers to stint on the provision of public services, as well as to refrain from modifying their inefficient behaviours. A better public governance may devote more attention to the provision of those services with a high public interest. On the contrary, a lack of good governance may foster opportunistic behaviours insofar as, when local governments exert low effort in monitoring local providers, their risks of being caught in wrongdoing is perceived as negligible (Coviello et al., 2018b; Guccio et al., 2019; De Luca et al., 2021).

- *RQ*: the relationship between RQ and the performance of public administrations is less clear-cut. A better quality of market regulation might reduce administrative costs and favour the presence of private firms in the area, increasing competition that is usually deemed as a tool for favouring performance. Recent contributions, however, have cast several doubts on the effectiveness as well as the extent of competition in some crucial public services, such as public procurement (Bajari et al., 2009; Coviello et al., 2018a), healthcare (Propper et al., 2004, 2008), museum services (Cellini et al., 2020, 2023).
- *RL*: in general, there is large consensus on the importance of RL in fostering the economic development (Haggard and Tiede, 2011). A high level of RL in the institutional context should induce firms involved in the provision of public services (as in public procurement or in healthcare) to execute the contracts more efficiently as they should perceive a higher probability of being prosecuted for bad performance (Coviello et al., 2018b). More in general, high confidence in courts might make the managers of public providers (such as hospitals and museums) more confident in taking decisions, while the absence of

such confidence may drive them to refrain from taking decisions, thus restraining the provision of services (Cellini et al., 2023). Overall, confidence in the enforceability of contracts should facilitate the efficient service provision.

- *CC*: the complexities in evaluating performance as well as the difficulties in recovering information by the citizens might make specific public sectors (such as procurement, healthcare, cultural heritage) especially prone to corruption (Søreide, 2014). The presence of corrupt practices may represent an extra tax burden for those agents which have to interact with a corrupt public administration, as it is the case in the public procurement or cultural sectors (Yan and Oum, 2014; Cavalieri et al., 2020; Cellini et al., 2023). Hence, a high level of *CC* might lead public providers to restrain the provision of public services or might be, in general, an obstacle for appropriate provision. Moreover, where corruption is widespread, public agents may find it less morally taxing to behave inefficiently and waste public resources for their private gain.

4.2 Transmission mechanisms in procurement and healthcare

The nexus between institutional quality and public provision performance as well as the general transmission mechanisms described up to now assume different connotations according to the specific field of public intervention. In this Section we provide an overview of those operating in the fields of public procurement and healthcare.⁹ In public procurement the quality of

⁹ A further example is that of the cultural sector, where quality of the local institutional context affects the behavior of cultural institutions in several ways, especially in the Italian context (Cellini et al., 2023). First, most museums in Italy are public and, as such, they have to interact with (and depend on) the reference regional

institutional environment should be extremely important given that gathering information on the efficiency of public works execution is more troublesome than for other public services, as well as for the burdensome procurement process. In a good institutional context, purchasing officers of the contracting authorities (e.g., municipalities, regions) should feel more accountable for their mandated task of monitoring the evolution of public works due to either the higher risk of being punished or career concerns (Guccio et al., 2019); similarly should do contracting firms because of the higher perceived probability of being sanctioned for their inefficient execution (Coviello et al., 2018b). On the contrary, a widespread corruption in the institutional environment might increase the perception (for both contracting firms and purchasing officers) of high returns from rent-seeking activities in the process. Bidding firms may perceive their rent-seeking effort devoted to get the contract awarded in exchange for a bribe as more successful (Hessami, 2014), which may lead to inefficient contract awarding and bad execution (Kenny, 2009).

In healthcare, many treatment decisions are particularly exposed to the discretion of physicians due to the large information asymmetry between providers and patients (Chandra et al., 2011). Therefore, the quality of institutional environment in which physicians operate should be extremely important too (De Luca et al., 2021). There is a variety of mechanisms through which local institutional quality may influence the provision of healthcare services. Local health authorities can monitor delivery decisions of each hospital, publish them in the public domain to eventually shame

authority (Bertacchini et al., 2018; Cellini et al., 2020); thus, their behaviours may be influenced by the institutional quality in the region. Poor governance of regional public administration might lead museums to refrain from increasing their number of services. Moreover, a relevant component of demand for museum services is of a public-interest nature, and the quality of the institutional context in which museums operate matters in this respect. A lower social capital of citizens, in fact, might give rise to a lower demand for cultural services. Institutional local quality also matters for the protection and promotion of heritage..

providers with inefficient behaviours, and trigger audits for detailed accounts of their treatment decisions. A higher probability of an audit would make it more costly for providers to behave inefficiently, thus potentially reducing the extent of inappropriate provision (Kuhn and Siciliani, 2013; Guccio and Lisi, 2016). Whether such measures are introduced also depends on the quality of local administration, the accounting systems they have in place, and their determination and culture to reduce waste of public resources. Aside from such formal measures, an environment characterized by weak rule of law and a lack of good governance may foster providers' opportunistic behaviour, as the risks of being caught in wrongdoing is perceived as negligible (Coviello et al., 2018b). Finally, where corruption is widespread, physicians may find it less morally taxing to provide unnecessary procedures to their patients if this increases their personal benefit at the expense of society as a whole.

5. Empirical applications to selected public sectors

5.1 Health sector

A consolidated series of empirical works has so far assessed the performance of the health sector, especially regarding hospital activities (see, among others, the reviews by Hollingsworth, 2008; Tiemann et al., 2012). The estimation of technical efficiency is the preferred approach, relying on two alternative methodologies: DEA and SFA (see, Section 2). Only one study has investigated the nexus between institutional quality (in its various dimensions)

and the above efficiency measures. Employing a stochastic frontier framework, Boffardi (2022) finds that institutional quality (measured by the *IQI*) matters and cannot be considered a marginal determinant of the 20 Italian regional healthcare systems.

More often the empirical literature has explored the role played by institutional quality in shaping various aspects of the healthcare sector, more or less closely related to its overall performance. Most of the existing contributions focus on the impact of institutions on health outcomes, using macro (country) level variables.¹⁰ As outcome measures, life expectancy at birth, under-five and infant mortality (or survival) rates, and maternal mortality ratio are largely preferred.¹¹ These analyses are typically cross-sectional in nature but panel data to control for time-invariant unobserved heterogeneity are used at times (Besley and Kudamatsu, 2006; Stroup, 2007; Lazarova and Mosca, 2008; Wigley and Akkoyunlu-Wigley, 2011; Mackenbach and McKee, 2015; Patterson and Veenstra, 2016; Achim et al., 2020; Hall et al., 2021).

Few other papers have addressed the same research question but with a more rigorous methodological approach. Specifically, they employ different instrumental strategies to deal with the endogeneity issue of institutional quality so as to identify a causal effect rather than a simple statistical association (Rajkumar and Swaroop, 2008; Knowles and Owen, 2010; Justesen, 2012; Collignon et al., 2015; Habibov, 2016; Li et al., 2018; Rehmat et al., 2020).

10 See Ciccone et al. 2014, for a recent review of the literature in low and middle income countries. De Luca et al. (2023) classify the relevant literature according to the way institutional quality is measured, namely in terms of: 1) *quality of governance* (notably, the WGI) (e.g., Klomp and De Haan, 2008; Lazarova and Mosca, 2008; Helliwell et al., 2018; Hall et al., 2021); 2) *level of democracy* (e.g., Besley and Kudamatsu, 2006; Stroup, 2007; Wigley and Akkoyunlu-Wigley, 2011; Mackenbach and McKee, 2015; Patterson and Veenstra, 2016) and *economic freedom* (e.g., Esposto and Zaleski, 1999; Stroup, 2007); 3) *presence of corruption* (e.g., Hanf et al., 2011; Factor and Kang, 2015; Achim et al., 2020).

11 Along with these indicators, subjective perception (satisfaction) about health (Helliwell et al., 2018) or health care (Habibov, 2016) and specific disease-related mortality rates (Factor and Kang, 2015) are also considered.

Regardless of the measures and the methods used, the conclusions reached by these studies are quite consistent: better institutional quality (in terms of either better governance or more political/economic freedom¹² or less corruption) is a crucial factor to achieve better health outcomes, as this is likely to affect the budget allocation to the health sector (e.g., spending on health infrastructure, the share of primary, secondary and tertiary care and the spatial distribution of health facilities). However, the nature of the relationship between institutional quality and health-related outcomes differs across studies, being often indirect or modified by contextual factors. Among others, social capital values, empowerment, accountability, civic engagement and trust can act as mediators (Ciccone et al., 2014).

A smaller strand of literature considers the effects of institutional quality on health outcomes at a more disaggregated level (ranging from a few countries/regions to individuals) and with highly heterogeneous study designs. Here, the lack of micro-level measures of quality of institutions results in a very limited number of articles investigating the effect of better governance (De Luca et al., 2021), high democracy (Kudamatsu, 2012; Krueger et al., 2015) or greater economic freedom (Hall et al., 2018) on various (objective or self-reported) health outcomes.

On the contrary, corruption can be better measured at a granular level. Therefore, numerous contributions have studied the impact of a large spectrum of corrupt behaviours¹³ on healthcare service delivery and, hence, on health-related outcomes (e.g., Azfar and Gurgur, 2018). Among the latter,

12 The accumulation of democracy and its history, rather than its actual level, is found to be important for health outcomes (Wigley and Akkoyunlu-Wigley, 2011).

13 Corruption in the healthcare sector can take different forms (European Commission, 2013): bribery in medical service delivery; procurement corruption; improper marketing relations; misuse of (high) level positions; undue reimbursement claims; fraud and embezzlement of medicines and medical devices. See, Sforza et al., 2020 for a recent review of the literature on corruption in healthcare organisations.

informal payments and bribes have attracted most attention, due to their high spread in developed and developing countries.¹⁴ Although quantitative empirical analyses are scarce, these two forms of “petty” corruption are usually recognized to undermine efficiency and equity of the healthcare system by means of their mediated effect on the distribution of services and resource allocation (Ensor, 2004).¹⁵ Moreover, both these phenomena lower trust in the public health system, which is found to be strongly associated with self-rated health (Mohseni and Lindstrom, 2007). Finally, informal payments and bribes have also an effect on the dynamic performance of the health sector as they create perverse incentives that potentially reduce motivation for healthcare reforms (among others, Balabanova and McKee, 2002).

Another highly cited form of corruption is absenteeism of healthcare workers. Evidence from qualitative studies in poor countries suggests that absenteeism results in uncertainty as to whether the public healthcare services will be properly delivered and about waiting times, discourages users from accessing health care services, leads to a dependence on private healthcare providers and ultimately has a negative impact on individual’s health (Ackers et al., 2016). Factors commonly cited in the literature as driving absenteeism include low and/or unreliable salaries in the public sector, poor work environments including demanding workloads and lack of monitoring and accountability (among others, Chaudhury et al., 2006).

14 See Cherecheş et al. (2013) and Pourtaleb et al. (2020) for two systematic reviews of the literature on informal payments.

15 These types of payments can also have positive effects on the health system, through an increase in physicians’ motivation to work in the public sector (Gaal and McKee, 2005; Chereches et al., 2013). However, when health system financing relies largely on informal payments, providers find sufficient incentive to provide more attractive but unnecessary services that lead to greater production inefficiencies (Gordeev et al., 2014). All in all, the final effect of informal payments on health care efficiency and equity is highly dependent on the mechanisms involved, which are reflected in the definition of informal payments as either “donation” and “fee-for-service” (Gaal and McKee, 2005).

Monitoring activity is also crucial for the effectiveness of measures aimed at contrasting other forms of corruption, with positive effects on the prices paid by hospitals for homogeneous basic inputs in Argentina (Di Tella and Schargrodsky, 2003) and on the quality of healthcare in Rwanda (Gertler and Vermeersch, 2013) and in Uganda (Björkman and Svensson, 2009). Two Brazilian studies (Lichand et al., 2016 and Zamboni and Litschig, 2018) agree on the even greater impact of random auditing in curbing corrupt behaviour in the healthcare sector (e.g., overbilling, kickbacks and procurement corruption). However, they reach different conclusion on the ultimate effect of random auditing on public health service delivery.¹⁶

Regarding the Italian context, Cavalieri et al. (2017) consider the execution of public contracts for infrastructure in the hospital sector and find that the performance in the provision of health infrastructure is negatively affected by environmental corruption. Three papers study the effect of institutional quality and corruption on health-related outcomes, using the Italian region as the unit of analysis. Lagravinese and Paradiso (2014) reach the conclusion that corruption in Italian regions particularly affected contracted-out private hospital expenditure and pharmaceutical expenditure in the 1998–2008 period. Francese et al. (2014) find that institutional features (i.e., political orientation of the regional government with respect to the central one, the importance of decentralised own revenues to finance current health spending, occupation and years of experience of the regional president), along with supply and pricing policies do matter for the inappropriateness of healthcare

16 Using a difference-in-difference strategy, Lichand et al. (2016) find a worsening in health indicators (i.e., hospital beds and immunization coverage) following the launch of the Brazilian anti-corruption program, as it reduced opportunities for individual rents and increased the risk of being punished for accidental procurement mistakes. On the opposite, Zamboni and Litschig (2018) find no evidence that the same auditing program affected the quality of publicly provided preventive and primary healthcare services - measured through user satisfaction surveys.

(as measured by cesarean section rates) over the period 1998–2005. Their results also suggest that decentralized diagnosis-related group (DRG) tariffs might be an effective policy tool to control inappropriateness. A similar relationship has been recently analysed by De Luca et al. (2021) who employ more disaggregated hospital level data for the period 2007–2012 and an instrumental variable approach based on historical data. Their results suggest that higher institutional quality does improve the appropriateness in the provision of childbirth services in Italy.

Last but not least, a recent strand of research has exploited the ongoing COVID-19 pandemic to highlight the relevance of institutional quality (measured by the World Bank's *WGI*) for enabling healthcare systems functioning and responsiveness. Thus, Baris and Pelizzo (2020) report that countries with higher quality of governance were more effective in reducing COVID-19 fatalities, while Chien and Lin (2020) find that better governance was generally associated with stronger resilience of national health systems to the pandemic. In the same vein, a study by Liang et al. (2020) report a negative association between COVID-19 mortality rate and government effectiveness. Institutional quality is also found to be a key factor for the success rate of COVID-19 vaccination campaigns (Tatar et al., 2021), especially at the subnational level (Del Bo, 2023).

5.2. Public procurement

The performance of public procurement is a debated issue worldwide at political and economic level. In fact, public procurement accounts for about 15% of GDP in developed countries (OECD, 2021) and has positive

impact on countries' competitiveness (OECD, 2013), with infrastructures contributing to the accumulation of economic and social capital at local level. However, the above positive effects, that is the capability of obtaining value for money, cannot be taken for granted. In fact, even if public decisions on resource allocation - e.g., what to procure and where - are efficient, still the final outcome of public contracts - i.e., their capability to provide the expected benefits - mainly depends on the rules governing public contracts (Bajari et al., 2009). Procurement contracts are highly heterogeneous, including supplies, services and public works, with different economic features: public works exhibit the peculiar characteristics of being long-term contracts, having as object a not standardized output, with the consequence that their performance crucially depends on the implementation stage.

Worldwide the efficient execution of public works is affected by two main phenomena: costs overruns – i.e., the additional costs incurred by contracting authorities above those agreed on in the contract - and delays – i.e., the extra time required for the completion of works (OECD, 2013). As Cavalieri et al. (2019) outline, though efficiency in the execution of public contracts is a multi-faceted concept which cannot be grasped by single indicators, the above measures have several advantages - being related to asymmetric information and the occurrence of corruption - and are widely used in the literature. Indeed, referring to these variables, either together or separately, several contributions have investigated the determinants of public works performance with different methodologies. In what follows, some results will be briefly overviewed, with a main focus on Italian public works contracts.

Focusing on cost overruns, potential explanations refer to objective 'technical' reasons - i.e. the uncertainty related to complexity of works (Flyvbjerg, 2005) -, to the so-called 'optimism bias' – i.e. a 'subjective' will

to underestimate costs, when designing the project (Flyvbjerg, 2005), - and to the firm's 'opportunistic behaviour'– i.e. the exploitation of contract incompleteness, which makes public contracts prone to renegotiations (Bajari et al., 2009; Estache et al., 2009).

A widely debated issue is whether the extent of such an opportunistic behaviour is affected by the degree of competition in the selection procedure (whether open or negotiated procedures), the auction format (whether first price or average bid), the entry mechanism (whether open to all qualified firms or restricted entry to only invited firms) as well as the characteristics of the bidders, with the connected different degree of discretion granted to the contracting authority. Guccio et al. (2012a) show that underbidding and cost overruns tend to be associated with auctions; Bucciol et al. (2013) find that cost overruns are lower under the average bid format but only when the entry is restricted, because it makes difficult for bidders to collude, coordinating their bids; Decarolis (2014) provides evidence that high rebates at the awarding stage may imply a failure in the fulfilment of the contracts terms (in terms of completion time, cost budget or work quality) if bids screening is not effective in ensuring binding commitments for contractors; Coviello et al. (2018a) find that buyers discretion increases the probability that the same firm wins repeatedly while improving the procurement outcomes. In a different perspective, Beuve & Saussier (2021) make the important point that renegotiation does not necessarily lead to opportunistic behaviour and outline the beneficial effects of discretion, which allows public procurers to make contract renewals, considered as a proxy for successful performance, dependent on what happens during the contract execution.¹⁷

In the same vein, to reduce firms' opportunistic behaviour and cope with

¹⁷ The authors use data from French contracts in the car park sector.

the contract incompleteness, a feature of the selection procedure, which has raised attention in the literature, refers to the characteristics of the bidders, namely supplier's reputation, which is usually widely considered in the private sector. From a theoretical perspective, in general terms, there is wide consensus that using past performance when choosing the participants to auctions has positive effects on the procurement outcome (Doni, 2006; Spagnolo and Dini, 2005; Dellarocas et al., 2006). Building on some experimental evidence, Spagnolo (2012) shows that reputation can be designed to stimulate new entry, guaranteeing high quality fulfilment of contracts, and Decarolis et al. (2016) highlight the effectiveness of announcing the use of past performance measures when awarding a public procurement. Focusing on public works procurement, Fiorino et al. (2018) use an Agent Based Model to show that when reputation is taken into account in awarding the contracts, less cost overruns are obtained. It is worth noting that the relevance of granting flexibility to the contracting authority is acknowledged in the European Union legal framework and has led, among the other things, to the introduction of the 'company rating' as a legal public procurement regulation tool.

Several contributions have also investigated the determinants of delays. The presence of delays may imply cost overruns, if delays occur because of the revision of the original project, but there can be also delays without cost overruns. However, delays generate further extra costs, not included in cost overruns, in terms of the welfare losses deriving by the fact that social needs are not satisfied on time (Lewis and Bajari, 2011).

Guccio et al. (2014a) show that the size and the nature of the procurer 'make a difference': longer delays are more connected with sub-central governments than with central government and, within the former, with small municipalities. De Carolis and Palumbo (2015) find that delays are

affected by the auction format - e.g. longer delays are related to average bid format - and by the type of contracting authority, with longer delays connected to municipalities. Indeed, the existence of a relationship between the completion time and the characteristics of the contracting authority is also outlined by several contributions: Gori et al. (2017) find that more and longer delays are associated to insufficient experience of the procuring entity and that delays and longer work durations are more likely to occur in presence of late payments due to strict spending restrictions. Carlucci et al. (2019) find a relationship between the duration of the contracts and the quality of human capital of public administration¹⁸. Very similar results are obtained by Baltrunaite et al. (2021) who find that durations are significantly correlated with the features of the contracting authority, such as workforce composition, workload and experience, and administrative efficiency.

Some studies have analysed the drivers of both cost overruns and delays, employing specific indicators for each of these two measures. Decarolis and Palumbo (2015), using a large dataset of Italian public works contracts, find that price and time renegotiations are not correlated and that they are significantly associated with the characteristics of the design stage: contracts assigning both the design and the execution of the project to the winning firm appear to cause shorter time renegotiations and greater cost renegotiations. Cavalieri et al. (2019) investigate the impact of the design phase on the performance of public works contracts execution using a regression-based approach for each of the two performance measures, delays and costs overruns, and find that the presence of an external designer is associated with higher project costs and time delays.

18 They also find that shorter duration is associated to the presence of women and of experienced politicians in political bodies and that more flexible/discretionary selection procedures reduce the duration of 30 days.

Investigating cost overruns and delays separately, however, does not allow to evaluate the overall efficiency of public works contracts execution. To overcome this limitation, some papers investigate the performance of public contracts considering both phenomena simultaneously. Guccio et al. (2012b) explore the application of DEA approach to measure the relative capacity of decision-makers to achieve the cost and time targets.¹⁹ With a similar methodology, focusing on the public contracts for cultural heritage conservation in Italy and using a two-stage DEA analysis, Guccio et al. (2014b) show that there is room for improving the performance in such a field and that it is negatively affected by the degree of specialization of the contracting authority²⁰ and by the openness of the tendering procedure. Using the DEA approach, Ancarani et al. (2016) consider the adoption of a screening process at the selection stages to assess *ex-ante* the technical, financial and economic capabilities of private contractors and provide evidence that public works contracts perform better when fully qualified firms execute the work.

Several studies, with different methodologies, have also analysed the association between the performance of public works contracts and various dimensions of institutional quality. With respect to Italian contracts for roads and highways, using a two-stage analysis, Finocchiaro et al. (2014) show that a corrupted environment²¹ affects negatively the execution of public works, measured in terms of cost overruns and delays, providing some support to

19 In Guccio et al. (2012b) application of DEA to Italian public works contracts, actual time of completion and actual cost are treated as inputs, and planned time of completion and agreed cost as outputs. The benchmark is not the time and cost targets set for each work in the design stage, but the actual best behavior in terms of time completion of works of a given financial size (and vice versa).

20 The interest of highly specialized procurers, such as *Soprintendenze*, for their reputation and their capability to control the decision-making process provide a rationale for the above mentioned negative effect; *Soprintendenze* tend to maximize reputation among the peers and their efforts appear to be mainly allocated toward the completion of the works, with less attention to the control of costs.

21 Two measures of corruption at provincial level are used: the number of crimes against public administration per 100,000 inhabitants and the index of corruption proposed by Golden and Picci (2005).

the common wisdom that corruption has detrimental effects on the efficiency of institutions. Extending this result, Finocchiaro et al. (2018) also show that increasing competition reinforces the negative effects of environmental corruption on public works execution.

As for the relationship between corruption and competition, some studies show that competitive open procedures are not immune to corruption and/or collusion (Compte et al., 2005) and that the increase in competition in procurement does not necessarily imply the reduction of corruption (Celentani and Ganuza, 2002).

Focusing attention on the performance of public contracts for healthcare infrastructures, Cavalieri et al. (2017) find that environmental corruption²² negatively influences the performance of these contracts and, furthermore, that this negative effect is greater for healthcare procurers than for other contracting authorities.

However, as Bandiera et al. (2009) outline, it is difficult to distinguish between corruption (*active waste*) and inefficiency (*passive waste*).²³ Guccio et al. (2019), following this dichotomy, disentangle different types of waste in contract execution and suggest that time delays are negatively associated with the quality of governance and that cost overruns are positively associated with environmental corruption.²⁴

Other dimensions of institutional quality are also investigated in relation to public procurement performance. D'Alpaos et al. (2013) show that the supplier's incentive to delay is greater the lower the 'efficiency' of the judicial system; similarly, Coviello et al. (2018b) find that where courts are inefficient

22 This paper uses the same corruption measures as Finocchiaro et al. (2014).

23 Their results show that in Italian public contracts for goods and services, *passive waste* accounts for 83 percent of total estimated waste.

24 The quality of governance is expressed by the *IQI* sub-indicator *GE* and environmental corruption by the *IQI* sub-indicator *CC* (Nifo & Vecchione, 2014). For details on these indicators, see above Section 2.

public works are delivered with longer delays, delays increase for more valuable contracts and a. higher share of the payment is postponed after delivery.

Looking at the political side, Coviello and Gagliarducci (2017) using a dataset on Italian municipal governments, show that an increase in politicians' tenure in office is associated with worse procurement outcomes, suggesting that staying in power longer leads to collusion between government officials and local bidders.

Ravenda et al. (2020) examine the effects of Mafia infiltration on the performance of public works contracts and show that Mafia infiltration is positively associated with cost overruns - this effect being weaker for large contracts - whereas it is negatively associated with delays.

Adopting a wide perspective considering several dimensions of institutional quality, Cavalieri et al. (2020) provide evidence that institutional quality, measured with objective and subjective indicators, overall matters for the performance in the execution of Italian road contracts, and that some specific dimensions, namely the quality of governance and environmental corruption appear to be more relevant than others.

The empirical evidence and results reported above suggest some policy implications. Cost overruns and delays can be considered 'red flags' of the malfunctioning of the procurement system in the public works field, offering evidence that the execution phase of public works contracts matters and that open procedures are not always able to ensure good performance in presence of incomplete contracts. This would cast some doubts on the effectiveness of regulation restricting the discretion of the purchasing officer and emphasizing competition as a tool for selecting the best contractor, which appears not in line with the economic features of public works contracts. Moreover, rules aimed at reducing bureaucratic discretion are likely to prevent the development of

competences of procurement agents, which are key elements to avoid that the contracting authority is ‘captured’ by private contractors.

On these grounds, a proper regulatory framework might imply wider discretion for officials – for instance, allowing for taking into account the firm’s reputation – combined with *ex post* accountability for procurement decisions, also through benchmarking analyses. At the same time, allowing stakeholders to exercise their scrutiny over the performance of public officials is likely to be an effective boost to promote the integrity of public action. To this end, the availability of systematic and reliable information is needed as well as the exploitation of the potentialities offered by technology.

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ECONOMIA ITALIANA 2023/2

Qualità istituzionale, efficienza e produttività nella Pubblica Amministrazione in Italia

Il benessere economico e sociale di un paese è strettamente legato alla qualità delle istituzioni e all'efficienza e all'efficacia della Pubblica Amministrazione, aspetto che di fronte alla sfida della realizzazione del PNRR assume una rilevanza ancora maggiore.

In questo volume, i cui editor sono **Emma Galli** della Sapienza Università di Roma e **Alberto Petrucci** della Luiss Guido Carli, vengono analizzate dal punto di vista empirico alcune problematiche che riguardano il funzionamento del settore pubblico e in particolare gli effetti della qualità istituzionale e dell'efficienza della Pubblica Amministrazione sulla produttività dei fattori e sulla crescita economica, interessando tutti i livelli di governo, nazionale, regionale e locale.

Numerose sono le domande sollevate nei saggi raccolti nel volume: quali sono gli effetti della qualità delle istituzioni sulla crescita e sulla riduzione dei divari territoriali in Italia? Quali i problemi di misurazione della performance dell'Amministrazione Pubblica? Quali legami vi sono tra la Pubblica Amministrazione e la produttività dei fattori delle imprese? Qual è l'impatto sulla digitalizzazione e sulla produttività del lavoro? Quanto pesa la lentezza del sistema della giustizia nelle decisioni di investimento? Qual è l'influenza della pubblicazione dei dati relativi alla spesa pubblica locale e al livello dei servizi pubblici sulle scelte di policy dei governi locali?

Molti i saggi che analizzano tali questioni. **Beniamino Quintieri, Francesco Salustri, Giovanni Stamato e Simona Mandile** trattano degli effetti della qualità istituzionale sul valore aggiunto pro capite e sulla produttività totale dei fattori delle imprese italiane. Il lavoro di **Ben Lockwood, Francesco Porcelli, Antonio Schiavone e Michela Redoano** analizza le implicazioni in termini di *policy* della divulgazione dei dati sulla spesa pubblica e sulla qualità dei servizi a livello locale. **Orlando Biele, Annamaria Nifo, Annalisa Pezone e Gaetano Vecchione** affrontano il tema della certezza del diritto come dimensione istituzionale cruciale per lo sviluppo economico. Il lavoro di **Nadia Fiorino e Maria Gabriela Ladu** esamina la relazione tra la trasformazione digitale e la produttività del lavoro in un campione di 204 Regioni europee. La misurazione della performance e delle diverse dimensioni della qualità istituzionale è oggetto del lavoro di **Marina Cavalieri, Domenico Lisi, Marco F. Martorana e Ilde Rizzo**. Il tema degli appalti pubblici è oggetto del lavoro di **Giuseppe Francesco Gori, Patrizia Lattarulo, Maria Rosaria Marino e Nicola Carmine Salerno**.

Al di fuori del tema monografico, completano il numero il contributo di **Simone Pellegrino** sulla *Flat Tax* e tre rubriche che riguardano, rispettivamente l'attuazione del PNRR (**Riccardo Gabrielli e Giorgio Piccinini**); dal Made in Italy al *Sens of Italy* (**Mariano Bella e Luciano Mauro**); l'evoluzione del mercato dei giochi nel post Covid (**Stefano Marzioni, Alessandro Pandimiglio e Marco Spallone**).

ECONOMIA ITALIANA nasce nel 1979 per approfondire e allargare il dibattito sui nodi strutturali e i problemi dell'economia italiana, anche al fine di elaborare adeguate proposte strategiche e di *policy*. L'Editrice Minerva Bancaria è impegnata a riprendere questa sfida e a fare di Economia Italiana il più vivace e aperto strumento di dialogo e riflessione tra accademici, *policy makers* ed esponenti di rilievo dei diversi settori produttivi del Paese.