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evidence from mystery calls

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MEASURING THE PERFORMANCE OF LOCAL GOVERNMENTS: EVIDENCE FROM MYSTERY CALLS

by Silvia Giacomelli* and Marco Tonello*

Abstract

We analyze the *mystery calls* conducted over a representative sample of Italian municipalities surveying the front office services provided by the One-stop shops (OSSs) for doing business. Mystery calls are phone interviews conducted by callers who pretend to be prospective entrepreneurs wanting to start a new business in the municipality, and whose identity and purposes were not known to the OSSs respondents. The random scheduling of the interviews and the evidence collected on the days and on the number of phone calls needed by the interviewers to conduct the mystery calls make it possible to construct new objective measures of local government performance. After showing that the new indicators are well correlated with alternative measures of governments quality, we study their determinants. We find that a better performance is mainly associated with factors related to internal organization, such as a more intensive use of ICT tools and higher levels of employee expertise, while the socio-economic context does not seem to play a major role.

JEL Classification: H11, D23, K22.

Keywords: mystery calls, performance measures, local governments, doing business.

Contents

1. Introduction.....	5
2. Institutional setting	8
2.1 The 'One-stop shop for doing business' in Italy.....	8
2.2 The OSS Survey and the mystery calls	8
3. The performance measures	9
3.1 Construction.....	9
3.2 Descriptive evidence and validation.....	10
4. Determinants of local government performance	12
4.1 Empirical specification	13
4.2 Results	15
4.3 Robustness checks	18
5. Concluding remarks.....	19
Appendix. Variables construction	21
References	23
Figures and Tables.....	26

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1 Introduction¹

In recent years the increasing interest in the role that economic institutions play in ensuring growth has come in parallel with the development of measures of institutional quality, including those related to the various dimensions of government activity (LaPorta et al., 1999). Public and private organizations have built indicators aiming at capturing cross-country differences in the efficiency of the public sector, in the quality of public services, in the capacity of governments to draft and implement business-friendly regulations.² These indicators are generally based on surveys administered to citizens, businessmen, legal experts, investors. Since they capture the perceptions of the respondents, they may be influenced by factors unrelated to what they intend to measure (Chong et al., 2014). Moreover, although it has been recognized that institutional differences at local level also play a relevant role in determining economic outcomes (Acemoglu and Dell, 2010), sub-national indicators of government quality are not so common.³ The study of the determinants of these performance indicators is also of substantial interest for policy making, as it has the potential to highlight which are the main drivers of administrative effectiveness for the local tiers of government (Balaguer-Coll et al., 2007).

In this paper, we propose new objective measures of local government performance and analyze their determinants. We focus on the functioning of the One-stop shops for doing business (henceforth simply referred to as OSSs) which are administrative bodies in charge of implementing economic regulation in Italian municipalities and of handling all the administrative procedures required to start a new business or to restructure an existing one. Our indicators measure the time needed by prospective entrepreneurs to obtain information from the OSSs on the administrative procedure required to start a new business in that municipality.

To collect this information we exploit a survey conducted in 2013 on a representative sample of Italian municipalities through *mystery calls*.⁴ Following the survey design, the interviewers pretended to be entrepreneurs interested in starting a new business and contacted the OSSs to obtain a detailed list of information which had been previously specified in the survey protocol,

¹We are indebted to *InfoCamere* for making the data available and to Elena Proietti for her guidance and insights in using them. We thank Giuliana Palumbo, Lucia Rizzica, Paolo Sestito, Monica Andini, Francesco Manaresi, Ylenia Brilli for their helpful comments, and Cristina Petrassi for her excellent research assistance. We also thank Guglielmo Barone and Sauro Mocetti for sharing with us their data on the municipality inefficiency scores. The views expressed in this paper are those of the authors and do not necessarily reflect those of the institutions they belong to. The usual disclaimers apply.

²See, among others, the Worldwide Governance Indicators (WGI) and the Doing Business Indicators (World Bank), the Product Market Regulation Indicators (OECD).

³Partial exceptions are the Doing Business Sub-National Indicators (available for some cities and some countries) and the European Quality of Government Indicators (EQI) that replicate the WGI indicators for the regions of the European countries (Charron et al., 2014b).

⁴The survey was conducted by the Italian Ministry of Economic Development in collaboration with *InfoCamere*. For details see section 2.2. *InfoCamere* is the technological branch of the Italian Chambers of Commerce managing their ICT systems and services.

while the OSS respondents were never told about the fake nature of the calls. Indeed, mystery calling is a widely used tool to assess the quality of the phone services provided by private companies. Its key feature is that the mystery caller’s specific identity and the purpose of the call are not known to the organization being evaluated. Thus, although fake in nature, the mystery calls assess real outcomes; moreover the strict and standardized protocol followed to conduct the interviews ensures the quality and the objectivity of the indicators that we extract from the survey. In our paper, we construct two performance measures based on the *number of days* and the *number of phone calls* needed to complete the mystery call and study their determinants. Since these indicators are likely to capture the attitude of OSSs to quickly respond to the inquiries of entrepreneurs, we consider them as proxies of the capacity of the local administration to ensure a timely completion of the administrative procedures, hence as indicators of their performance.

Recent literature has mainly focused on the construction and analysis of performance indicators, both at state and local level, based on surveys administered to individuals and on the opinions voiced by stakeholders (Charron et al., 2014b, LaPorta et al., 1999), or on non-parametric approaches (Adam et al., 2011, Balaguer-Coll et al., 2007, Barone and Mocetti, 2011). The first group of indicators has the potential of being influenced by biased individual perceptions due to either biased media reporting or to unobserved characteristics of individuals (Leon et al., 2013).⁵ Efficiency measures retrieved from non-parametric approaches, such as stochastic frontier analysis (SFA) and data envelopment analysis (DEA), have the main drawback of being constructed to capture only one dimension of the local government quality, that is, its productive efficiency in providing specific public services (e.g. waste collection, education, childcare), and of being highly demanding in terms of the data required for their calculation. Chong et al. (2014) sidestep these limitations and propose new and objective indicators of government efficiency obtained through an *ad hoc* experiment based on the quality of the mailing services offered by each country.⁶

We contribute to the existing literature in several important aspects. First, we show that the information contained in the mystery calls can be effectively used to construct indicators of the performance of government bodies and organizations that could complement existing indexes based on perceptions and on non-parametric techniques. To the best of our knowledge, our

⁵A growing and recent body of the literature has shown that media exposure has the potential to affect individual behaviors, thus having relevant economic consequences. This is true for consumption and saving behaviors, but also for voting choices, violent behaviors and social norms. Among others, see Della Vigna and Kaplan (2007), De Paola and Scoppa (2014), Barone et al. (2015).

⁶The authors mailed 10 letters per country to non-existent business addresses in almost 160 countries, and measured whether they came back to the return address in the US and how long it took. Based on this information, they built three indicators of the governments efficiency and investigated their determinants.

paper is the first that exploits data obtained from mystery calls. Second, differing from existing measures of government quality that focus on the productive efficiency displayed in providing a given set of public services, the new performance measures based on mystery calls depart from this perspective as they directly capture the capacity of governments to draft and implement business-friendly regulations and to timely respond to the entrepreneurs' needs. This aspect is crucial to gauge the potential effects of government quality on facilitating business and fostering economic development. Moreover, the measures that we propose have the notable advantages of: (i) being independent of biases in the perceptions and opinions of individuals; (ii) having limited data requirements (compared with, for example, methodologies such as DEA and SFA); (iii) being relatively quick to obtain and process. Finally, we exploit the new measures to study the determinants of local government performance in a regression framework. Taking the advantage of being collected for the lowest tier of government (that is, municipalities) and for a service subject to a uniform legal framework across the country, we can focus on the *within country* differences in the local government performance measures. These institutional aspects, together with the random scheduling of the interviews and the use of a large set of municipality characteristics and fixed effects, make the analysis of the determinants extremely reliable in capturing the conditional correlations between the degree of local governments effectiveness and organization-related and context-related factors.

The results show that our indicators are well correlated with measures of local government performance capturing alternative dimensions, such as productive efficiency and stakeholder perceptions. In the analysis of the determinants we consider two main sets of factors that may affect the performance: factors internal to the organization (e.g. the degree of use of ICT tools, the characteristics of the work-force employed, organizational practices), and factors that define the social and economic environment in which local governments operate (e.g. economic development of the territory, degree of social capital, pervasiveness of organized crime and corruption). We find that better performance is mainly associated with internal organization factors, especially a more intensive use of ICT tools and a higher level of employee expertise, while the socio-economic context does not seem to play a major role.

The rest of the paper is organized as follows. Section 2 describes the institutional setting, the OSS survey and the mystery calls technique. Section 3 presents the construction and the validation of the performance measures, and provides descriptive statistics. Section 4 presents our analysis on the determinants of local governments performance. Section 5 concludes and derives policy implications.

2 Institutional setting

2.1 The One-stop shop for doing business in Italy

The One-stop shops for doing business (OSSs) were established in Italy in 1998 with the aim of providing a single administrative point of contact to get the information and authorizations required for starting a business, in line with international best practices. The OSSs are hosted and managed by municipalities (the smallest administrative entity in Italy), and their creation is considered as one of the most important measures adopted in Italy to simplify administrative procedures for firms (Ongaro, 2004). However, over the years, the creation of OSSs has produced disappointing results: their establishment has been limited, particularly in small towns, and displayed high heterogeneity both in terms of quality of the services provided to firms and in the administrative procedures handled.

In the years 2010 and 2011 the functioning of OSSs was significantly revised to overcome the main obstacles that hindered their effectiveness and to update their modes of operation.⁷ As a result of this process, by the end of the year 2012 almost all the municipalities (i.e. 7,649 municipalities, about 95 percent of the total) were offering OSS services with a minimum set of quality standards defined by the legislation.⁸

2.2 The OSS Survey and mystery calls

Between January and March 2013, the Italian Ministry of Economic Development (MED), in collaboration with *InfoCamere*, conducted a survey over a sample of Italian municipalities, in order to monitor the implementation of the reform, in particular with respect to the delivery of the front-office services (i.e. availability and accessibility of information, procedures for submission of applications, payments).

The survey was conducted in two steps: the first consisted in a qualitative inspection of the OSS web portal, the second in telephone interviews conducted by callers whose identities and purposes were not known to the OSSs respondents, i.e. the *mystery calls*. In the first step, the analysts were required to navigate the OSS portal to check whether it was compliant with

⁷The process was initiated by Law No. 133/2008 ('SUAP Reform', from the Italian acronym of the OSS: *Sportello Unico per le Attività Produttive*). The regulation was enacted in 2010 (Presidential Decree No. 160/2010) and became fully effective in October 2011. The main changes introduced by the new regulatory framework include: (i) the full digitalization of the procedure (access, information, communications between administrations and communications with the firms); (ii) the broadening of the types of administrative procedures handled by OSSs; (iii) the possibility for municipalities to adopt the technological platform offered by the Chambers of Commerce in order to overcome the *inertia* and the difficulties of local governments in the establishment of the OSS. This possibility became an obligation if municipalities were not able to activate their own OSS independently by the due dates.

⁸A similar process occurred in Portugal, under the program *Empresa na Hora*. For details see Branstetter et al. (2014).

new regulation in terms of the type and quality of front-services offered.⁹ In the mystery calls, the interviewers pretended to be entrepreneurs interested in starting a new business (a retail shop or a laundry), and asked the OSS for information on the required procedures. The OSS respondents were never told about the fake nature of the calls and the interviewers had to follow a strict protocol that defined the set of information to be collected, and had a maximum number of 10 phone call attempts to complete their request. Moreover, the interviewers were trained to be ready to handle the different situations that could arise during the mystery calls (MED, 2013).

The OSS Survey was conducted on a random sample of 1,000 Italian municipalities selected in order to satisfy three criteria: (i) include all regional and provincial capitals;¹⁰ (ii) include at least 50 percent of the resident population and 50 percent of the firms registered in the Business Register; (iii) respect the proportion both at national and regional level of the two main types of OSS, i.e. those directly developed and managed by the municipalities, that we label *OSS with in-house technology* (OSS-IHT), and those managed by the municipalities exploiting the ICT platforms provided by the Chambers of Commerce, that we label *OSS with external technology* (OSS-ET). The final sample contains 50 percent of the overall population and 53 percent of all firms located in Italian municipalities.¹¹ Given the criteria imposed, the survey design oversampled medium- and large-sized municipalities: this must be taken into account when interpreting the results.

3 The performance measures

3.1 Construction

To obtain our performance measures, we exploit the information recorded by the interviewers on the number of days and the number of phone calls needed to contact the OSS and carry out the mystery calls as specified in the survey protocol.¹² Specifically, we build two different Local Government Performance measures: the first is the number of days needed to conclude the mystery call (henceforth, LGP1), and is obtained as the difference between the date in which the first phone contact to the OSS is established and the date in which the mystery call is concluded.

⁹Notice that the OSS regulation set minimum requirements for the OSS web portal and for the services offered by the OSS. However, the OSS is free to customize the portal and the services offered.

¹⁰Italian regions correspond to NUTS 2 level. Each region includes a variable number of provinces (NUTS 3 level); each province and region has a capital city, which are generally the largest cities of the region or province and the cities where the regional or the provincial governments sit.

¹¹The proportion of OSS-IHT in the sample is 66 percent; at the national level, the proportion of OSS-IHT at the time of the survey was 61 percent.

¹²It should be stressed that the aim of the OSS Survey is not to provide direct information on the actual functioning of the OSSs (for instance, in terms of timely completion of administrative procedures).

The second is given by the number of telephone contacts needed to conclude the mystery call (henceforth, LGP2). A mystery call is concluded when all the information to start a new business as detailed in the survey protocol are obtained by the interviewer. As these variables measure the attitude of OSSs to quickly respond to the inquiries of entrepreneurs, we consider them as proxies of the capacity of the local administration to ensure a timely completion of the administrative procedures, hence as indicators of their performance. Notice that our performance indicators increase with the level of *bad* performance displayed by the local government.¹³

[Figure 1 here]

The two measures are similar in terms of statistical properties and are highly correlated (their pairwise correlation is 0.77). As shown in Figure 1, LGP1 is a discrete variable ranging between 1 and 37 (the maximum number of days needed to conclude the mystery call in the sample); LGP2 is a discrete variable ranging between 1 and 10, as the survey protocol prescribed that interviews had a maximum number of 10 phone calls to establish a contact with the OSS and conclude the mystery call. The two variables are highly left-skewed: for about 47 percent of the municipalities the interviewers were able to collect the information on the day they made the first contact, while in about 42 percent of the cases one contact was sufficient.

3.2 Descriptive evidence and validation

We conduct our empirical analysis on 995 municipalities, as five interviews had to be dropped because of missing values in the variables needed to construct the LGP measures. Table 1 presents some descriptive statistics. On average, 3.5 days (LGP1) and 2.3 phone contacts (LGP2) were needed to conclude the mystery call. For large municipalities (i.e. those with more than 50,000 inhabitants, Panel A) it took about 5 days (LGP1) to conclude the mystery call, while this figure falls to about 3.2 for small municipalities (i.e. those with fewer than 15,000 inhabitants). Also the number of contacts (LGP2) increases with the size of the municipality.

[Table 1 and Figure 2 here]

Figure 2 focuses on the differences in the LGP indicators across the country. This is a rather important aspect as Italy displays large territorial heterogeneity, both in formal and in informal institutions, tracing back to distant political and historical factors, and this has been shown to deeply influence the behavior of individuals and firms (Guiso et al., 2013, Ichino and Maggi,

¹³In a later section we will test the robustness of our results constructing alternative performance measures. Existing literature exploiting non-parametric approaches generally focuses on the construction of both efficiency or inefficiency scores (Balaguer-Coll et al., 2007, Barone and Mocetti, 2011). Both efficiency and inefficiency measures are also exploited in Chong et al. (2014).

2000). Notice that, for visualization purposes, we collapsed the measures to the provincial level by computing simple averages of the municipal values. Southern regions display higher values of the LGP measures compared with the Northern and Central regions (thus pointing to worse performances). On average LGP1 (number of days) is equal to 4.5 in the Southern regions, to 3.4 in the Central regions, and to 3.0 the Northern regions, and LGP2 (number of contacts) is equal to 2.8, 2.1 and 2.1, respectively (Table 1, Panel C).

[Table 2 here]

As an additional step of our descriptive analysis, we assess whether LGP1 and LGP2 are correlated with other measures of local government performance in Italy taken from the existing literature and from surveys. The correlations are presented in Table 2, while the Appendix Table A.1 contains the description and the source of each alternative performance indicator used. Notice that validation should entail the detection of positive correlations with indicators that decrease when the quality of government improves, and negative correlations with indicators that increase when the quality of government improves. In Panel A of Table 2 we average LGP1 and LGP2 at the regional level and correlate them with measures of the quality of regional governments provided by Charron et al. (2014b) and Giordano and Tommasino (2013). Charron et al. (2014b) construct the European Quality of Government indicator (EQI), a survey-based measure that collects citizens' perceptions on several dimensions of the quality of regional governments (i.e. government effectiveness, rule of law, voice and accountability, control of corruption); the indicator increases with better perceptions. Giordano and Tommasino (2013) construct measures of efficiency in the production of public services (e.g. civil justice, health, education) calculated with non-parametric DEA techniques. The LGP indicators are highly and negatively correlated both with the EQI and with the DEA efficiency indicator (for the latter, LGP2 performs slightly better in terms of statistical significance).

Moreover, from the 2012 wave of the *Multipurpose Survey on Households* (Italian National Institute of Statistics, ISTAT), we construct measures of the quality of a given set of local public services as perceived by citizens and users. They include the register office, the health care front-offices, the postal services front-offices and public transport. In particular, for the register office, health care and postal services we construct an *efficiency* indicator expressed by the share of users who declare to have waited less than 10 minutes in each office to obtain the service.¹⁴ For the public transport services, we take the share of users who are (sufficiently or very) satisfied with the service. The correlations in Table 2 (Panel A) are highly statistically significant and

¹⁴Although the ISTAT survey also contains the information on the share of users who waited between 11 and 20 minutes, we decided to focus only on the extreme cases. Additional results for the intermediate cases are available upon request.

show that our LGP measures are negatively correlated with the indicators of efficiency of the services.

In Panel B of Table 2 we report the correlations between the LGP measures and available measures of municipality efficiency. The first is the Construction Permits indicator from the Sub-National Doing Business, which measures the time needed for an entrepreneur to obtain a construction permit for a warehouse to be used for his business.¹⁵ Albeit closer in spirit to our measures, this indicator is based on the opinions of experts, not on objective measures, and was developed for a limited number of cities within each country (11 in the case of Italy). The correlation with the LGP measures is positive, although not statistically significant, probably because of the extremely low number of observations. The last measure tested is the municipality inefficiency score calculated by Barone and Mocetti (2011). This captures a different dimension of local government performance, namely cost efficiency in the production of a number of public services (including street lighting, childcare, waste collection). Our performance measures and the inefficiency scores are not correlated, and show the wrong sign. This result could reasonably be due to the poor match (only 279 observations) between the 1,000 municipalities in the OSS Survey and the 1,458 municipalities for which the authors found the data to construct the scores (Barone and Mocetti, 2011).¹⁶

Overall, despite the limited number of existing alternative indicators, mostly referring to more aggregated territorial levels (namely, regions) and to different dimension of local government quality, the pattern emerging from the correlation analysis leads us to conclude that our indicators are proper measures of local government performance. In this respect, the methodology that we exploit to obtain our new measures (i.e. mystery calls) has the notable advantage of being potentially replicable using larger samples. On top of that, it could be extended to cross-national uniform services provided by public entities (e.g. issuing a driver's licence, a passport or a visa).

4 Determinants of local government performance

In this section, we provide an analysis of the determinants of local government performance as measured by the LGP indicators. First, we outline the empirical specification and the variables used; then, we show how two different sets of factors, internal organization and socio-economic factors, might influence the functioning of the OSSs and their performance.

¹⁵See <http://italian.doingbusiness.org/Reports/Subnational-Reports/Italy/>.

¹⁶Notice that also Balaguer-Coll et al. (2007) had similar problems in finding a sufficiently detailed dataset to construct municipality scores using non-parametric techniques, and thus exploit only about 400 municipalities located in the Comunitat Valenciana (Spain).

4.1 Empirical specification

We exploit the following regression model:

$$LGP_{itr} = \alpha_0 + \alpha_1 Tech_{irt} + \alpha_2 Lab_{irt} + \alpha_3 Org_{irt} + \alpha_4 Ctx_{irt} + \beta X_i + \varphi_t + \varphi_r + \epsilon_{itr} \quad (1)$$

where i is the municipality, t is the calendar week when the mystery call is started, and r is the area where the municipality is located. LGP_{itr} are local government performance measures (i.e., LGP1 and LGP2). The set of factors referring to the internal organization is decomposed in three main groups of variables: $Tech_{irt}$ is a vector containing the variables describing the technological features of the local OSS service; Lab_{irt} includes the variables describing the characteristics of the workforce employed; Org_{irt} includes variables that refer to the organization practices of the public entity. Ctx_{irt} represents a set of socio-economic factors that includes variables aimed at capturing the characteristics of the social and economic environment in which the local government operates; X_i includes a set of municipal characteristics.

The technological variables ($Tech_{irt}$) are obtained from the qualitative part of the OSS survey. Specifically, we use the survey responses to build a standardized index of *ICT intensity* measuring the extent to which administrative procedures are handled using ICT tools. From the OSS survey we also construct a dummy variable indicating whether the municipality has developed its own ICT platform for managing the OSS (*In-house technology*).¹⁷ The characteristics of the workforce (Lab_{irt}) include: the share of part-time employees and the share of female employees. These variables are calculated for the whole municipality workforce since disaggregated data for OSS are not available.¹⁸ The variables that proxy for the organization characteristics of the OSS management are a variable indicating the OSS's employee degree of knowledge of the working procedures (*Knowledge of procedures*), which can be considered to proxy the degree of expertise in the organization, and a dummy indicating whether the number of employees working in the municipality is lower than the one set by the law (*Lack of employees*).¹⁹ Contextual factors (Ctx_{irt}) include proxies for the economic context (firm density and average personal taxable income), a variable indicating the level of social capital and variables indicating the spread of crime (organized crime and corruption) in the territory of the municipality. The data sources for these variables are, respectively, *InfoCamere*, the Italian National Institute for the

¹⁷Details on the construction of the variables are provided in the Appendix A.

¹⁸Our data source is an administrative database from the Italian Ministry of Economics and Finance (MEF), the so-called *Attachment to the Annual Report of the State Accounting Office* (Allegato alla Relazione Annuale della Ragioneria dello Stato) for the year 2012.

¹⁹For each municipality the law determines the theoretical number of employees planned to work in the organization. Given that it might happen that the actual number of employees is lower than the one foreseen by the law, the municipality organization might be in structural *lack of employees*.

Assessment of the Education System (INVALSI) and the law enforcement investigation System Database of the Police Forces (Sistema di Indagine, SDI) kept by the Ministry of the Interior.

The set of variables for the observable characteristics of the municipality include size, population density, a dummy indicating whether the municipality is a regional or provincial capital city and dummies indicating whether the municipality is located in a mountainous area or on the coast. The source for these data is the Italian National Institute of Statistics (ISTAT). Table 3 shows the descriptive statistics for the variables used in the analysis.

[Table 3 here]

To avoid simultaneity problems in the regressions analysis, the set of control variables is predetermined with respect to the LGP measures, as all the variables refer to the year 2012 or to previous years (i.e., before January 2013, when the mystery calls were started). We also include a set of time and territorial fixed effects to capture unobserved changes or seasonality trends during the months of the interviews, and any sort of (time-invariant) territorial unobserved heterogeneity. In particular, we add calendar week fixed effects, and days of the week fixed effects (both included in the vector φ_t), a dummy variable indicating whether the mystery call was started in the morning (*Morning*), and macro-area fixed effects (φ_r , for $r = 1 \dots 5$).²⁰ In addition to the random scheduling of the interviews (MED, 2013), controlling for whether the mystery call was started in the morning or in a specific day of the week is important for our empirical strategy. For example, interviews started on a Friday might show a systematically higher number of days to be concluded (if they are not finished on the same day) because of the proximity to the week-end days when the OSSs are closed and mystery calls were not conducted.²¹ Similarly, interviews started in the morning might have a systematically higher probability of being concluded on the same day, thus showing lower duration.

Given the nature of the data generation process and the statistical characteristics of the LGP measures, we exploit count-data models to estimate Equation 1. In particular, we implement Quasi-Maximum Likelihood Poisson regressions with robust standard errors to deal with the over-dispersion in the outcome variables.²² Additional specification tests are performed in section 4.3. Then, Equation 1 may be rewritten as follows:

$$E[LGP_{itr}] = \exp(\alpha_0 + \alpha_1 Tech_{irt} + \alpha_2 Lab_{irt} + \alpha_3 Org_{irt} + \alpha_4 Ctx_{irt} + \beta X_i + \varphi_t + \varphi_r + \epsilon_{itr}) \quad (2)$$

²⁰The interviews were conducted in working days and over a period of 6 weeks between the end of January 2013 and March 2013. We use the Italian National Institute of Statistics categorization of the territory in five macro-areas, i.e. North-West, North-East, Center, South and Islands.

²¹In the robustness section we also elaborate an alternative measure in which the count of the days is net of non-working days (i.e. Saturdays and Sundays).

²²Poisson regression models calculated with the Quasi-Maximum Likelihood approach give consistent estimates of the parameters of interest, even in case of over-dispersion (Cameron and Trivedi, 2013).

The vectors of parameters α_1 , α_2 , α_3 and α_4 indicate the importance of each input in determining local government performance (other things being equal), and can be interpreted as semi-elasticities (Cameron and Trivedi, 2013).

4.2 Results

As a first step in the analysis of the determinants, we focus on the correlations between the municipality characteristics (i.e. vector X_i) and the LGP measures. In columns (1) and (4) of Table 4 we only include the vector X_i , while in columns (2) and (5) we add the macro-area fixed effects (φ_r), and in columns (3) and (6) we also add time fixed effects (φ_t). The results do not vary across the specifications, confirming that the conditional correlations are robust to time and territorial unobserved heterogeneity: in the remainder of the analysis we will focus on the full specification including all the fixed effects.

[Table 4 here]

Comparing the two measures, LGP1 shows a slightly better performance in terms of pseudo R-squared. Moreover, the variable *Morning* is not statistically significant for LGP1, while it is for LGP2. Thus, LGP1 (i.e. the number of days) turns out to be independent of whether the mystery call was (randomly) started in the morning or in the afternoon, while LGP2 (i.e. the number of contacts) weakly decreases if the mystery call was started in the morning. For these reasons, while we always report the results obtained using as a dependent variable both LGP1 and LGP2, in the rest of the paper we will focus our comments mainly on LGP1. Focusing on columns (3) and (6), we notice that there is an increasing relation between the size of the local government and bad performance, which may also be due to the fact that the OSS Survey sample is biased to medium- and large-sized municipalities (see section 3). Besides, capital cities (both at the regional and provincial level) are associated, other things being equal, with a level of bad performance that is 50 percent higher compared with non-capital cities, according to LGP1 (column 3). This could be linked to the larger administrative burden capital cities have compared with non-capital cities, which plausibly affects the timely completion of the administrative tasks.

[Table 5 here]

Table 5 contains the results for the analysis of the internal organization determinants of local government performance. We include municipality characteristics (as in Table 4) and then add, in columns (1) and (5), the technological factors, in columns (2) and (6) the labor

inputs, and in columns (3) and (7) the organization factors. Focusing on column (1), the two technological inputs show a negative and statistically significant correlation with the LGP measures. That is, given the construction of our performance indicators, they *improve* local government performance (see section 3.1). Other things being equal, an increase by 10 p.p. of the ICT intensity index is associated with a decrease in the local government *bad* performance indicator of about 5.7 percent. For instance, forcing the worst performing local government to reach the national average level of ICT intensity index would be associated with a performance improvement of about 30 percent.²³

Correlations with the workforce indicators (share of part-time and share of female employees, columns 2 and 6) are not statistically significant, while the organization factors (columns 3 and 7) are well correlated with the local government performance. In detail, a higher degree of expertise in handling the OSS procedures (the *knowledge of procedures* variable) is associated with better performances. Other things being equal, increasing the *knowledge of procedures* index by 10 p.p. is associated with a decrease of the LGP1 measure of 7.6 percent. Thus, forcing the local government with the worst performance to reach the national average level of the *knowledge of procedures* variable, would be associated with a decrease of the *bad performance level* of about two thirds. The *lack of employees* variable shows a positive and statistically significant correlation (but only with LGP1), indicating that, other things being equal, organizations with an under-dimensioned workforce show worse performances. Finally, in columns (4) and (8), we show that the simultaneous inclusion of all the internal organization factors does not change the pattern or the signs of the correlations.

The socio-economic context in which the local government operates has been usually referred to as one of the potential determinants of efficiency in the delivery of public services (Rothstein, 2011). However, the direction of the causality is not clear and it seems plausible that the quality of local institutions both shapes and is shaped by the contextual factors in which it operates. Here, we want to verify whether selected characteristics of the social environment where the local government operates are significantly correlated with the proposed measures of performance. In particular, we focus on three main factors that are widely considered to have the potential to influence the local governments performance, notably: economic context, social capital, organized crime and corruption (see among others, Rothstein (2011), Rose-Ackerman (1999)).

²³Due to missing values in the labor inputs variables, the number of observations shrinks compared to Table 5. The results of the specifications obtained including only the technological inputs do not change when using on the full sample (available upon request).

Social capital²⁴ is intended to proxy for the unobserved quality of the local institutions. The measure of social capital that we use (i.e. the *cheating scores*) refers to statistical indicators of opportunistic behavior (on the part of students and/or teachers) in primary schools that occurred during the administration of the Italian national schools assessment tests (INVALSI National Assessment Program, 5th grade students) (Guiso et al., 2013, Paccagnella and Sestito, 2014).²⁵ We then use average crime rates of organized crime offenses²⁶ and corruption at the municipal level, derived from the SDI.²⁷ These variables can be interpreted as indicators of the presence of organized crime and widespread corruption practices at the local level. We focus on organized crime and corruption as they are the types of criminal activities which plausibly share more direct links with the efficiency of the local governments, especially in the Italian context (Daniele and Marani, 2011, Monte and Papagni, 2001).²⁸

[Table 6 here]

The results are reported in Table 6. In columns (1) and (6), we add the proxies for the economic environment (i.e. the number of firms per capita and the average personal taxable income per capita), then the measure of social capital (columns 2 and 7), finally the indicators for the presence of organized crime (columns 3 and 8) and corruption (columns 4 and 9). Only the measure of social capital shows a statistically significant correlation with the LGP1 measure. More precisely, the scarcity of social capital is positively correlated with the local governments bad performance. Conversely, the organized crime and corruption measures are not correlated; however, they both show the expected positive sign. The full specification including the complete set of internal organization and contextual factors (columns 5 and 10) still preserve all the statistically significant correlations described so far.

Overall, the results of the analysis on the determinants of the local governments performance show that better performance is associated with internal factors, such as a more intensive use of ICT tools in handling administrative procedures and with a higher level of expertise displayed

²⁴We adopt the definition of social capital found in Guiso et al. (2010), that is: ‘those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities’.

²⁵Paccagnella and Sestito (2014) show that this measure is negatively correlated to social capital, i.e. cheating scores are indicators of the *scarcity* of (universalistic) measures of social capital in the municipality. Cheating scores range from 0 (no evidence of cheating) to 1. Similarly to Guiso et al. (2013), in our empirical analysis we use the cheating scores extracted from the national assessment test on maths, but results do not change when using the cheating scores from the Italian Language test. We exploit this measure as it is one of the few available at the municipal level. Results are robust to the use of alternative measures available at the municipal level, such as voter turnout at elections and number of non-for-profit organizations.

²⁶Articles 416 and 416bis of the Italian Penal Code distinguish between the specific offenses of organized crime and Mafia-type organized crime.

²⁷These are average crime rates per 100,000 (considering the total municipal population) over the years 2004-2011. A restricted version of the SDI is available to the Bank of Italy on the basis of a specific research agreement with the Italian Ministry of the Interior.

²⁸Correlations with classical measures of violent and property crimes do not show statistically significant results.

by OSSs employees. Conversely, the broader economic and social environment in which OSSs operate is generally not associated with the local government performance. Better performance turns out to be only (and weakly) associated with higher levels of local social capital.

4.3 Robustness checks

We test the robustness of our results by using alternative specifications for the estimation of Equation 1, and constructing alternative measures of bad and good performance from the mystery calls.

[Table 7 here]

Table 7 provides the results for a set of specification tests aimed at verifying that our results are robust to alternative (count and non-count data) specifications of Equation 1 and that our results are not driven by the Poisson specification chosen in the main analysis. To this extent, specification in columns (1) and (3) perform simple OLS regressions with robust standard errors (clustered at the regional level), while specifications in columns (2) and (4) exploit an alternative count data model (i.e. negative binomial regressions with robust standard errors). In both cases, the sign and the statistical significance of the factors considered do not depart from the baseline analysis. While LGP1 is a non-negative integer variable, i.e the typical form of count data variables (Cameron and Trivedi, 2013), LGP2 takes non-negative integer values bounded between 1 and 10. To this end, specifications in columns (5) and (6) of Table 7 perform, respectively, upper- and lower-bound truncated OLS and a lower-bound truncated negative binomial regressions for LGP2. The results do not differ (in terms of statistical significance) from the estimates of columns (5) and (10) in Table 6.

[Table 8 here]

Table 8 provides the results for a set of robustness checks in which we exploit the information on the number of days and the number of telephone contacts to construct alternative measures of performance. In particular, we re-elaborate LGP2 expressing it as the share of contacts needed to conduct the mystery call (over a maximum of 10), and we label this performance measure as LGP3. Notice that a similar construction of an inefficiency measure is provided by Chong et al. (2014). Then, we test a version of the LGP1 measure for which the day count is net of non-working days (i.e. Saturdays and Sundays). Finally, we construct three 'good performance measures' (EM), given by the inverse of the corresponding inefficiency measure, i.e. $EM_k = 1/LGP_k$ for $k = 1, 2, 3$. The results are provided in columns (2), (3) and (4): as

expected, the variables show the opposite sign with respect to the baseline analysis that was done using the LGP measures.

5 Concluding remarks

The role played by the quality of formal and informal institutions in determining the growth of both developing and developed countries has gained an increasing attention in the public debate over the last decades (Acemoglu and Robinson, 2010). This is also shown by the growing research efforts in developing national and sub-national indicators of the quality of governments (Charron et al., 2014b, LaPorta et al., 1999). In recent years, additional effort has been put in developing indicators that are not necessarily based on perceptions and opinions of stakeholders and individuals, but rather exploit objective measures that proxy for the governments performance and quality (Chong et al., 2014). The study of the determinants of these performance indicators, especially at a sub-national level, is of substantial interest for policy making, as it has the potential to highlight which are the main drivers of administrative effectiveness for the local tiers of government (Balaguer-Coll et al., 2007).

We exploit the information concerning the time and the number of contacts needed to conduct the mystery calls to construct two measures of the performance of the local governments. Our measures of performance capture the ability of the One-stop shops to quickly respond to the inquiries of entrepreneurs and thus can be considered as proxies of the capacity of the local administration to ensure a timely completion of the administrative tasks. The analysis shows that the LGP measures proposed are well correlated with existing (aggregate) measures of the governments' quality and efficiency in providing public services. The empirical analysis on the determinants of the performance of the local governments highlights that better performances are associated with internal organization factors, such as a more intensive use of ICT tools and a higher employee expertise. Conversely, socio-economic factors deriving from the local environment in which the local administration operates do not seem to play a role in determining the performance. Only the degree of social capital is found to be positively associated with the level of performance.

In the analysis of the determinants, our baseline empirical specification includes a complete set of control variables, territorial and time fixed effects aimed at capturing any observed and unobserved factor influencing the performance measures, other than through the observed factors (technology, labor and socio-economic environment). However, it is worth pointing out that the results we present cannot be given a causal interpretation. For example, even though the political cycle is captured by the time fixed effect we included, future research would also ideally

investigate the political economy determinants of our measures, such as the closeness to elections or the characteristics of the political body.

Our exercise is performed on data from an existing survey (i.e. the Survey on the functioning of the One-stop shops for doing business in Italy), which almost by accident happened to report the information necessary to build the new performance measures we propose. However, mystery calls and mystery shopping are widely used tools for the external evaluation of the services offered by private firms. Moreover, international organizations also recommend their use for monitoring and compliance reporting or to collect information to facilitate the identification of risks (OECD, 2014, World Bank, 2014). Our work suggests that this methodology can also be exploited to construct performance indicators that could complement existing alternative measures.

A Appendix. Variables construction

From the qualitative part of the OSS Survey we construct two indicators of the characteristics of the OSS services: the *ICT intensity* and the *Knowledge of procedures* indexes. These are standardized indicators ranging between 0 and 1, where lower values indicate worse performances.

The *ICT intensity* variable measures the extent and the level of the ICT tools used by the OSS to handle the administrative procedures needed to start a business. This index combines five main components concerning the (i) filfilling out of forms and their processing; (ii) the presence of the direct link from the ministerial web page²⁹ to the OSS website, (iii) the presence in the OSS website of the administrative fees price list, (iv) the way in which a customer can create an account and communicate with the OSS, (v) the availability of the information to start the two small businesses which were the object of the mystery call (a coffee bar and a laundry). For the components (ii) and (iii) we assign 6 points in case of presence and 0 in case of absence of the specific item (i.e. link and price list); for the components (i), (iv) and (v) we assign 6 points to the most developed type of service offered, 0 for the least developed, and 3 for the intermediate cases. The *ICT intensity* index is obtained as the average of the five components (which then are given equal weight), standardized by dividing it by the maximum theoretical value so that it ranges between 0 and 1.

The *Knowledge of procedures* variable measures the degree of correspondence between the information available on the OSS website and the information possessed by OSS employees (i.e. those collected by the interviewer during the mystery call). There is a match if the information available on the website is the same as the one offered to the interviewer by phone (i.e. there is information on the website and the respondent offers the same information), while there is not a match if a piece of information or a service is (or is not) available on the website but it is not (or it is) offered by the OSS respondent. We evaluate seven components (i.e. types of services available for submitting the inquires; services for downloading forms; services for tracking the inquires made on-line; services for submitting the inquires by e-mail (PEC); services for submitting the inquires on-line; services for on-line payments; availability of only in-site front-office services), and for each we assign 1 point if there is a match and 0 otherwise. The matching index is obtained as the average of the seven components (which are given equal weight). Descriptive statistics on the components of the two indexes are shown in Table A.2.

Finally, in the empirical analysis we use the *In-house technology* dummy variable which is assigned the value of 1 if it is an OSS-IHT type (i.e. OSS with in-house technology), and 0

²⁹The national web page for the OSS (<https://www.impresainungiorno.gov.it/>) is managed by the Ministry of Economic Development.

if it is an OSS-ECT (OSS with externally-constructed technology). It is worth to point out that some regions (notably, Tuscany, Emilia Romagna, Marche, Umbria, Valle d'Aosta and Sardinia) provide the municipalities with their own web platform for the OSS services, thus all the municipalities located in these regions have the *In-house technology* dummy variable equal to 1, while in all the other regions each municipality could choose between having its own platform or using the externally provided platform.

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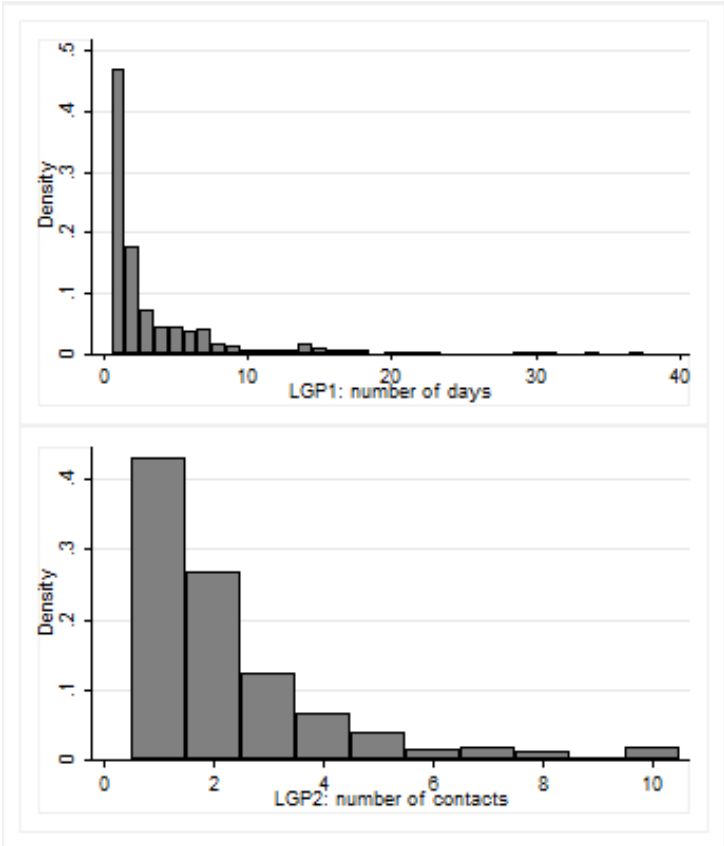
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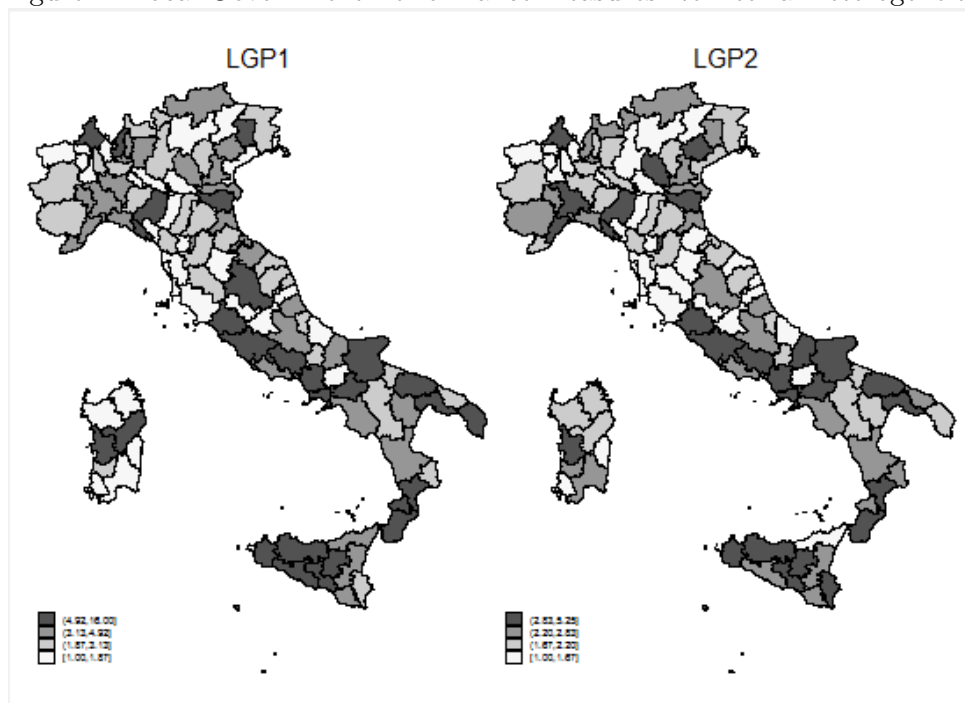
Figures

Figure 1: Local Government Performance measures



Notes: the histograms show the distribution of Local Government Performance measures: the number of days (LGP1, upper panel) and the number of telephone contacts (LGP2, lower panel) needed to conclude the mystery calls. **Sources:** based on OSS Survey (MED, 2013).

Figure 2: Local Government Performance measures: territorial heterogeneity



Notes: the maps show the geographical distribution at the province level of Local Government Performance measures.
Sources: based on OSS Survey (MED, 2013).

Tables

Table 1: Descriptive statistics: Local Government Performance measures

Local governments performance measures	Mean	Sd	Max	Min	N
<i>Panel A</i>					
<i>Small municipalities</i>					
LGP1: number of days	3.2	3.88	29	1	399
LGP2: number of contacts	2.26	1.81	10	1	399
<i>Medium-sized municipalities</i>					
LGP1: number of days	3.34	3.96	30	1	453
LGP2: number of contacts	2.36	1.9	10	1	453
<i>Large municipalities</i>					
LGP1: number of days	5.12	7.08	37	1	143
LGP2: number of contacts	2.6	2.07	10	1	143
<i>Panel B</i>					
<i>Regional or provincial capital city</i>					
LGP1: number of days	5.72	8.01	37	1	112
LGP2: number of contacts	2.47	2.05	10	1	112
<i>Non-capital city</i>					
LGP1: number of days	3.27	3.83	30	1	883
LGP2: number of contacts	2.34	1.87	10	1	883
<i>Panel C</i>					
<i>North</i>					
LGP1: number of days	2.99	3.8	31	1	535
LGP2: number of contacts	2.12	1.68	10	1	535
<i>Centre</i>					
LGP1: number of days	3.41	5.16	34	1	130
LGP2: number of contacts	2.11	1.94	10	1	130
<i>South</i>					
LGP1: number of days	4.5	5.24	37	1	330
LGP2: number of contacts	2.83	2.1	10	1	330
<i>Total</i>					
LGP1: number of days	3.54	4.56	37	1	995
LGP2: number of contacts	2.35	1.89	10	1	995

Notes: Local Government Performance measures are given by the number of days (LGP1) and the number of telephone contacts (LGP2) needed to acquire the information during the mystery calls. Small municipalities are defined as those with fewer than 15,000 inhabitants; medium-sized municipalities have between 15,000 and 50,000; big municipalities have more than 50,000. **Sources:** based on OSS Survey (MED, 2013).

Table 2: Correlations between Local Government Performance measures and alternative measures of local government quality and efficiency

	LGP1: number of days	LGP2: number of contacts
<i>Panel A: regional level</i>		
EQI 2013	-0.62 (0.00)	-0.71 (0.00)
DEA Efficiency Indicator	-0.19 (0.41)	-0.39 (0.09)
<i>Municipal services (register office)</i>		
Share of users who waited for less than 10 min.	-0.55 (0.01)	-0.49 (0.03)
<i>Health care services</i>		
Share of users who waited for less than 10 min.	-0.54 (0.01)	-0.54 (0.01)
<i>Postal services</i>		
Share of users who waited for less than 10 min.	-0.50 (0.03)	-0.45 (0.04)
<i>Public transport</i>		
Share of users satisfied with the quality of the service	-0.71 (0.00)	-0.72 (0.00)
N	20	20
<i>Panel B: municipal level</i>		
Doing Business: construction permit (time)	0.36 (0.27)	0.41 (0.21)
N	11	11
Municipality Inefficiency Score	-0.01 (0.87)	-0.03 (0.59)
N	279	279

Notes: the Table shows the pairwise correlations and the p-values (in parenthesis) between Local Government Performance measures (LGP1 and LGP2) and alternative measures of efficiency or inefficiency at the local level (municipal level in Panel A, and regional level in Panel B). Detailed descriptions and sources of the alternative measures are contained in Table A.1.

Table 3: Descriptive statistics: municipality characteristics and performance determinants

Variable name	Mean	Sd	Max	Min	N	Source	Years
Internal organization factors:							
<i>Technology</i>							
ICT intensity	0.52	0.21	1	0	995	OSS Survey	2013
In-house technology (dummy)	0.66	0.47	1	0	995	OSS Survey	2013
<i>Labor</i>							
Share of part-time employees	0.11	0.09	0.53	0	871	MEF	2012
Share of female employees	0.51	0.14	0.84	0.09	871	MEF	2012
<i>Organization</i>							
Knowledge of procedures	0.78	0.23	1	0	995	OSS Survey	2013
Lack of employees (dummy)	0.99	0.1	1	0	871	MEF	2012
Contextual factors:							
Firms pc	0.1	0.03	0.23	0.03	995	InfoCamere	2013
Personal Taxable Income pc	18883.13	2531.67	43772.57	13454.56	995	MEF	2011
Social capital (lack of)	0.05	0.1	0.76	0	931	INVALSI	2010
Organized crime	0.01	0.02	0.25	0	995	SDI	2004-2011
Corruption	0.78	0.23	1	0	995	SDI	2004-2011
Municipality characteristics and controls:							
On the seaside (dummy)	0.23	0.42	1	0	995	ISTAT	2012
In the mountains (dummy)	0.3	0.46	1	0	995	ISTAT	2012
Regional or provincial capital city	0.11	0.32	1	0	995	ISTAT	2012
Population density	915.17	1373.38	17834.08	13.93	995	ISTAT	2012
Morning (dummy)	0.57	0.5	1	0	995	OSS Survey	2013
Btw 5,000 and 15,000 inhab.	0.36	0.48	1	0	995	ISTAT	2012
Btw 15,000 and 30,000 inhab.	0.3	0.46	1	0	995	ISTAT	2012
Btw 30,000 and 50,000 inhab.	0.15	0.36	1	0	995	ISTAT	2012
More than 50,000 inhab.	0.14	0.35	1	0	995	ISTAT	2012

Notes: the *ICT development* variable, the *Knowledge of procedures* variable, and the *In-house technology* dummy variable are defined in Appendix A A. The *Lack of employees* dummy variable indicates whether in the municipalities there are less employees than the number of employees defined by the law; the *Social capital (lack of)* variable refers to statistical indicators (*cheating scores*) of cheating and opportunistic behaviors in primary schools that occurred during the administration of the Italian national assessment tests (INVALSI) (Guiso et al., 2013, Paccagnella and Sestito, 2014); *Organized crime* and *Corruption* are crime rates per 10,000 total population (average over the period 2004-2011); *Population density* is the ratio between the number of residents and the municipality area (squared Km); *Firms pc* is the number of per-capita registered firms in the municipality; the *Morning* dummy variable takes the value of 1 if the interview was started in the morning (0 otherwise); *Btw 5,000 and 15,000 inhab.* is a dummy variable which takes value 1 for municipalities in the population range; a similar definition occurs for the other population ranges (the excluded category are municipalities below 5,000 inhabitants). **Sources:** OSS Survey; Italian National Institute for the Assessment of the Education System (INVALSI); Italian Ministry of Economics and Finance (IMEF); Italian National Institute of Statistics (ISTAT); law enforcement system database of the police forces.

Table 4: Determinants of Local Government Performance: municipality characteristics

	<i>LGP1: number of days</i>			<i>LGP2: number of contacts</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
On the coast	0.24** (0.10)	0.15 (0.11)	0.10 (0.10)	0.14** (0.07)	0.06 (0.07)	0.03 (0.07)
In the mountains	-0.16 (0.10)	-0.18* (0.10)	-0.22** (0.09)	-0.07 (0.06)	-0.09 (0.06)	-0.10 (0.06)
Regional or provincial capital city	0.42*** (0.14)	0.47*** (0.14)	0.51*** (0.15)	-0.06 (0.09)	-0.04 (0.09)	0.04 (0.10)
Population density	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Btw 5,000 and 15,000 inhab.	0.43*** (0.15)	0.44*** (0.15)	0.48*** (0.15)	0.23** (0.11)	0.23** (0.11)	0.22** (0.11)
Btw 15,000 and 30,000 inhab.	0.33** (0.16)	0.35** (0.16)	0.53*** (0.16)	0.17 (0.11)	0.20* (0.11)	0.25** (0.11)
Btw 30,000 and 50,000 inhab.	0.49*** (0.18)	0.49*** (0.17)	0.60*** (0.17)	0.34*** (0.12)	0.35*** (0.12)	0.39*** (0.12)
More than 50,000 inhab.	0.53*** (0.18)	0.50*** (0.18)	0.47** (0.18)	0.33** (0.13)	0.33** (0.13)	0.31** (0.13)
Morning			-0.12 (0.08)			-0.12** (0.05)
Constant	0.78*** (0.15)	0.78*** (0.20)	1.01*** (0.22)	0.61*** (0.11)	0.69*** (0.14)	0.92*** (0.16)
Macro-area FE		yes	yes		yes	yes
Time FE			yes			yes
Pseudo-R2	0.04	0.06	0.10	0.01	0.02	0.03
N. Observations	995	995	995	995	995	995

Notes: QML-Poisson regressions with robust standard errors. For the definition of the control variables see Table 3; *Time FE* includes fixed effects for the week and the day of the week; *Macro-area FE* includes fixed effects for five macro-areas (North-West, North-East, Center, South, Islands). **Sources:** OSS Survey; Italian Ministry of Economics and Finance (MEF); Italian National Institute of Statistics (ISTAT).

Table 5: Determinants of Local Government Performance: internal organization factors

	<i>LGP1: number of days</i>				<i>LGP2: number of contacts</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ICT intensity	-0.57** (0.25)			-0.70*** (0.25)	-0.31** (0.15)			-0.42*** (0.15)
In-house technology	-0.26** (0.11)			-0.21** (0.10)	-0.28*** (0.07)			-0.25*** (0.06)
Share of part-time employees		0.49 (0.41)		0.50 (0.40)		0.33 (0.25)		0.38 (0.25)
Share of female employees		-0.10 (0.45)		0.14 (0.44)		-0.02 (0.30)		0.18 (0.29)
Knowledge of procedures			-0.76*** (0.19)	-0.79*** (0.19)			-0.70*** (0.12)	-0.69*** (0.12)
Lack of employees			0.45** (0.18)	0.40** (0.20)			0.08 (0.15)	0.05 (0.17)
Constant	1.49*** (0.31)	0.90*** (0.29)	1.06*** (0.33)	1.53*** (0.40)	1.38*** (0.21)	0.92*** (0.20)	1.37*** (0.25)	1.70*** (0.28)
Municipality charact.	yes	yes	yes	yes	yes	yes	yes	yes
Time FE, macro-area FE	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo-R2	0.11	0.10	0.12	0.13	0.04	0.03	0.05	0.06
N.Observations	871	871	871	871	871	871	871	871

Notes: QML-Poisson regressions with robust standard errors. For the definition of the control variables see Table 3; *Time FE* includes fixed effects for the week, the day of the week and the *Morning* dummy; *Macro-area FE* includes fixed effects for five macro-areas (North-West, North-East, Center, South, Islands). **Sources:** OSS Survey; Italian Ministry of Economics and Finance (MEF); Italian National Institute of Statistics (ISTAT).

Table 6: Determinants of Local Government Performance: contextual factors

	<i>LGP1: number of days</i>				<i>LGP2: number of contacts</i>					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Firms pc	-1.35 (1.88)				-1.17 (1.79)	0.14 (1.24)				0.22 (1.17)
Personal Taxable Income pc	0.00 (0.00)				0.00 (0.00)	0.00 (0.00)				0.00 (0.00)
Social capital (lack of)		1.16*** (0.39)			1.10*** (0.36)		0.37 (0.28)			0.27 (0.28)
Organized crime			0.94 (1.50)		0.46 (1.47)			0.42 (1.08)		0.23 (1.13)
Corruption				0.46 (0.95)	0.28 (0.93)				0.20 (0.74)	0.16 (0.69)
ICT intensity					-0.72*** (0.25)					-0.49*** (0.16)
In-house technology					-0.21** (0.11)					-0.25*** (0.07)
Share of part-time employees					0.52 (0.40)					0.36 (0.25)
Share of female employees					0.15 (0.44)					0.19 (0.29)
Knowledge of procedures					-0.78*** (0.20)					-0.71*** (0.12)
Lack of employees					0.53*** (0.20)					0.08 (0.18)
Constant	0.70 (0.60)	0.86*** (0.27)	0.96*** (0.28)	0.95*** (0.28)	0.89 (0.73)	0.82** (0.40)	0.97*** (0.20)	1.00*** (0.20)	1.00*** (0.20)	1.49*** (0.46)
Municipality charact.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Time FE, macro-area FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo-R2	0.11	0.11	0.11	0.11	0.14	0.03	0.03	0.03	0.03	0.06
N.Observations	822	822	822	822	822	822	822	822	822	822

Notes: QML-Poisson regressions with robust standard errors. For the definition of the control variables see Table 3; *Time FE* includes fixed effects for the week, the day of the week and the *Morning* dummy; *Macro-area FE* includes fixed effects for five macro-areas (North-West, North-East, Center, South, Islands). **Sources:** OSS Survey; Italian Ministry of Economics and Finance (MEF); Italian National Institute of Statistics (ISTAT); SDI (Ministry of the Interior); INVALSI.

Table 7: Robustness checks: alternative specifications

	<i>LGP1: number of days</i>		<i>LGP2: number of contacts</i>			
	(1)	(2)	(3)	(4)	(5)	(6)
ICT intensity	-2.54*	-0.63***	-1.13**	-0.48***	-3.24**	-0.84***
	(1.23)	(0.23)	(0.47)	(0.15)	(1.64)	(0.31)
In-house technology	-0.72*	-0.24**	-0.60***	-0.25***	-1.65***	-0.48***
	(0.40)	(0.10)	(0.13)	(0.07)	(0.50)	(0.13)
Share of part-time employees	1.74	0.60	0.96	0.37	2.27	0.70
	(1.65)	(0.41)	(0.77)	(0.26)	(1.73)	(0.45)
Share of female employees	0.60	0.08	0.31	0.19	1.33	0.44
	(1.47)	(0.43)	(0.69)	(0.29)	(2.04)	(0.50)
Knowledge of procedures	-3.07***	-0.69***	-1.90***	-0.69***	-4.56***	-1.03***
	(0.99)	(0.16)	(0.43)	(0.12)	(1.45)	(0.22)
Lack of employees	1.40**	0.52***	0.19	0.08	0.49	0.14
	(0.52)	(0.20)	(0.33)	(0.18)	(1.02)	(0.28)
Firms pc	-5.84	-1.16	0.14	0.23	1.78	0.75
	(6.68)	(1.70)	(3.24)	(1.16)	(8.04)	(2.23)
Personal Taxable Income pc	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Social capital (lack of)	5.44	1.19***	0.82	0.30	1.68	0.66
	(3.36)	(0.41)	(0.95)	(0.28)	(2.06)	(0.60)
Organized crime	3.73	-0.47	1.09	0.18	1.30	-0.55
	(5.67)	(1.49)	(2.85)	(1.13)	(7.22)	(2.09)
Corruption	1.56	-0.09	0.43	0.12	1.14	-0.05
	(4.76)	(0.94)	(1.97)	(0.68)	(4.96)	(1.19)
Constant	1.02	1.15*	2.78*	1.47***	4.12	1.25
	(3.54)	(0.60)	(1.42)	(0.46)	(3.01)	(0.80)
Municipality charact.	yes	yes	yes	yes	yes	yes
Time and macro-area FE	yes	yes	yes	yes	yes	yes
N.Observations	822	822	822	822	822	822
Adj. R sq.	0.13	0.05	0.12	0.05		

Notes: specification in columns (1) and (3) perform OLS regression with robust standard errors clustered at the regional level; specification in columns (2) and (4) perform negative binomial regression with robust standard errors; specification in columns (5) and (6) perform truncated OLS and negative binomial regressions, respectively, for LGP2. For the definition of the control variables see Table 3; *Time FE* include week fixed effects, days of the week fixed effects, and the *Morning* dummy; *Macro-area FE* include five macro-are (North-West, North-East, Center, South, Islands) fixed effects. **Sources:** OSS Survey; Italian Ministry of Economics and Finance (MEF); Italian National Institute of Statistics (ISTAT); SDI (Ministry of the Interior); INVALSI.

Table 8: Robustness checks: alternative measures

	(1)	(2)	(3)	(4)	(5)
ICT intensity	-0.49*** (0.16)	-0.94*** (0.34)	0.25** (0.10)	0.20** (0.09)	0.20** (0.09)
In-house technology	-0.25*** (0.07)	-0.30** (0.15)	0.09* (0.06)	0.10** (0.05)	0.10** (0.05)
Share of part-time employees	0.36 (0.25)	0.65 (0.54)	-0.45* (0.24)	-0.34* (0.20)	-0.34* (0.20)
Share of female employees	0.19 (0.29)	0.19 (0.61)	-0.20 (0.21)	-0.21 (0.19)	-0.21 (0.19)
Knowledge of procedures	-0.71*** (0.12)	-1.05*** (0.25)	0.48*** (0.10)	0.45*** (0.08)	0.45*** (0.08)
Lack of employees	0.08 (0.18)	0.89** (0.37)	-0.07 (0.11)	0.03 (0.14)	0.03 (0.14)
Firms pc	0.22 (1.17)	-0.91 (2.48)	0.00 (0.86)	-0.09 (0.77)	-0.09 (0.77)
Personal Taxable Income pc	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Social capital (lack of)	0.27 (0.28)	1.36*** (0.43)	-0.74** (0.34)	-0.30 (0.28)	-0.30 (0.28)
Organized crime	0.23 (1.13)	0.33 (2.11)	0.07 (0.80)	0.04 (0.75)	0.04 (0.75)
Corruption	0.16 (0.69)	0.19 (1.29)	-0.18 (0.50)	-0.13 (0.44)	-0.13 (0.44)
Constant	-0.81* (0.46)	-0.31 (1.04)	-1.04*** (0.27)	-1.23*** (0.30)	1.07*** (0.30)
Municipality charact.	yes	yes	yes	yes	yes
Time and macro-area FE	yes	yes	yes	yes	yes
Pseudo-R2	0.02	0.17	0.02	0.02	0.05
N.Observations	822	823	822	822	822

Notes: QML-Poisson regressions with robust standard errors. The dependent variable in column (1) is the share of contacts needed to conduct the mystery call (over a maximum of 10) (i.e. LGP3); the dependent variable in column (2) is LGP1 net of non-working days (i.e. Sundays and Saturdays); the dependent variable in column (3) is the inverse of LGP1; the dependent variable in column (4) is the inverse of LGP2; the dependent variable in column (5) is the inverse of LGP3. For the definition of the control variables see Table 3; *Time FE* include week fixed effects, days of the week fixed effects, and the *Morning* dummy; *Macro-area FE* include five macro-are (North-West, North-East, Center, South, Islands) fixed effects. **Sources:** OSS Survey; Italian Ministry of Economics and Finance (MEF); Italian National Institute of Statistics (ISTAT); SDI (Ministry of the Interior); INVALSI.

Table A.1: Alternative performance measures of local government: definition and sources

Indicators	Definition	Source
<i>Regional level</i>		
EQI 2013	The European Quality of Government Index (EQI) is a standardized measure capturing the quality of government of European regions	Charron et al. (2014a)
DEA Efficiency Indicator	Efficiency indicator calculated using a Data Envelope Analysis	Giordano and Tommasino (2013)
Municipal services (General Register Office)	Share of users who waited for less than 10 minutes	ISTAT (2012)
Health care services	or for more than 20 minutes	Multipurpose survey on households: aspects of daily life
Postal services	Share of users sufficiently satisfied with the service quality	
Public transport		
<i>Municipal level</i>		
Municipality Inefficiency Score	Inefficiency scores calculated using a stochastic frontier model on a sample of 1458 Italian municipalities (i.e. about 18 percent of the total)	Barone and Mocetti (2011)
Doing Business: construction permit	It records all procedures required for an entrepreneur in the construction industry to build a warehouse and indicates the median duration that local experts believe is necessary to complete a procedure in practice.	Doing Business Subnational (World Bank)

Table A.2: Components of the qualitative indexes from the OSS Survey: descriptive statistics

Components	Mean	Sd	Max	Min	N
<i>ICT intensity</i>					
File compilation	4.23	1.9	6	0	995
Link from the ministerial web page	3.08	2.33	6	0	995
Administrative fees price list	1.24	2.43	6	0	995
Customer account	3.37	2.63	6	0	995
Information to start a coffee bar and a laundry	3.65	2.09	6	0	995
<i>Knowledge of procedures</i>					
Services available for submitting the inquires	0.76	0.42	1	0	995
Services for downloading formats	0.75	0.43	1	0	995
Services for tracking the inquires on line	0.68	0.46	1	0	995
Services for submitting the inquires by e-mail (PEC)	0.72	0.45	1	0	995
Services for submitting the inquires on line	0.76	0.43	1	0	995
Services for on line payments	0.95	0.21	1	0	995
Availability of in-site only front-office services	0.84	0.36	1	0	995

Sources: based on OSS Survey.