



The trade-off between cost efficiency and public service quality: A non-parametric frontier analysis of Italian major municipalities



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ABSTRACT

This paper presents the results of an empirical study aimed at evaluating the cost efficiency of 108 Italian major municipalities, and investigating to what extent the municipality efficiency is also associated to the effectiveness of public expenditure, and consequently to quality of services offered to citizens. The study implements Data Envelopment Analysis to calculate the efficiency score and understand if it is influenced by scale economies and determine the type of these economies. For this purpose, every municipality was modeled as a production function using 6 cost item inputs and 2 outputs. Finally, the study implemented a truncated regression equation using the bootstrapped efficiency estimate as the dependent variable, and a selection of indicators measuring the quality of public services offered in the context as the independent variables.

Results reveal that there exist important scale inefficiencies in a number of municipalities, but unexpectedly a great amount of inefficiencies are caused by decreasing returns to scale. Additionally, the study suggests that a trade-off between expenditure efficiency and effectiveness, i.e. the quality of public service, seems to exist.

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1. Introduction

In Italy, since the early 1990s, a significant reform was started in the various organizations of the public sector that were facing a continuous and increasing pressure to augment the amount of value for money delivered to citizens and businesses. Since that time, many efforts have been addressed at implementing several initiatives that would affect different typologies of service offered (i.e., health services, education, waste management, elder people care, etc.) and levels (local and central government) of the public sector, aimed at providing an easy access to more common administrative services, modernizing them, simplifying and making the administrative action of local and central government more efficient by decreasing operation costs and improving how resources are used, ensuring greater accountability and improving the quality of services delivered to users, being consequently more customer focused and responsive to the needs of stakeholders, and reducing time needed to make plans and fulfill projects (Fraschini & Osculati, 1991; Gunasekaran, 2005; Pollitt & Bouckaert, 2000; Rizzo, 1985).

Central governments that were searching for greater savings in the public expenditure amount and administrative efficiency mostly focused their strategies of change on two major areas: a) the merging of local municipalities, in the belief that the aggregation of small administrative entities would lead to public expenditure reduction and efficiency gains as a consequence of increasing economies of scale (Fox &

Gurley, 2006; Warner, 2012); b) a growing decentralization of the administrative power, the fiscal and administrative responsibilities from the central to the local government level, in order to improve efficiency by specializing public expenditure and better meeting the needs of the territory, and even stimulating competition between municipalities in the allocation of funds from the central government. In particular, literature suggests that decentralization of tasks and responsibilities to local governments improves allocative efficiency better matching public services to preferences and needs of the residents, increases the efficiency of public service provision by reducing corruption, waste, and poor governance, and enables yardstick competition between different organizations and local authorities (Azfar, Kahkonen, & Meagher, 2001; Barankay & Lockwood, 2007).

In this scenario, local governments, i.e. municipalities, have become primary players of the public sector reform action. Further, as Rondo-Brovetto and Saliterer (2007) emphasize, local communities are key elements in the organization and governance of economic growth and value creation.

As the local public sector organizations are facing an increasing pressure to improve service quality on the one side, and, in the same time, to reduce costs on the other side, performance measurement is an important element of local government modernization, while benchmarking practices have become indispensable enablers of the public sector reform providing tools to measure and compare local municipalities' performance to generate useful information to feed decision-making and learn from the higher performers (Hatry, 1999). Benchmarking may successfully support the public sector organizations in their effort to

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increase the value for money delivered to citizens, identifying performance gaps, developing and implementing action plans in order to improve performance in terms of cost efficiency and customer satisfaction (Luque-Martínez & Muñoz-Leiva, 2005; Spendolini, 1992; Tillema, 2010). Indeed, benchmarking may help the public sector organizations to set goals that reflect more their strategic mission, which are realistic and achievable, thus creating worthwhile challenges, and allowing greater efficiency and accountability, and to better understand and meet the citizen needs in the provision of services (Ammons, 2001; Arribas-Bel, Kourtiti, & Nijkamp, 2013; Bowerman, Ball, & Francis, 2001; Hatry, 2002).

Measuring efficiency of the local public sector and identifying its determinants has been the subject of a growing literature in the last decades (Afonso, Schuknecht, & Tanzi, 2006; Gupta & Verhoeven, 2001), and has become a major topic of debate both for practitioners and policy makers in search for performance benchmarks necessary to design targets defining accountability measures useful for decision-making at higher level of government, and for citizens and scholars more interested in understanding causes of public spending increase and scarce efficiency. More recently, in Italy the dramatic urgency to reduce the amount of public expenditure at all government levels has made the concern for measuring efficiency of local governments even more pressing. However, studies that focus on local government in Italy are still scarce and fundamentally addressing the topics of the impact of fiscal decentralization and some managerial capability, i.e. the municipality budgeting capability process, or the role played by incumbent politicians accountability on efficiency (Boetti, Piacenza, & Turati, 2010; Bordignon, Cerniglia, & Revelli, 2003; Caccia & Steccolini, 2006). But, findings are mixed and questions such as whether there are scale or density effects that support superior efficiency rates are far from being answered. Moreover, there is no empirical evidence that the search for greater efficiency and the reduction of annual expenses necessary to assure financial sustainability of the municipalities are associated to quality of public services offered to citizens.

This paper adds empirical evidence on the evaluation of municipalities cost efficiency in Italy, its determinants and the relationship between cost efficiency and public expenditure effectiveness, i.e. public service quality. In particular, the study implements Data Envelopment Analysis (DEA) to calculate the efficiency score of 108 major Italian municipalities and analyzes the effects of scale economies on efficiency. Economies of scale might be important factors to take into account to explain different rates of efficiency. Furthermore, by implementing second-stage efficiency analysis, the benchmarking study investigates if municipality efficiency is also associated to public expenditure effectiveness, and consequently to quality of services offered to citizens.

This paper is divided into 5 main sections. The first introductory section has outlined the main topic of the study. The second section illustrates major literature on local government efficiency measurement and common methods and techniques adopted in the empirical analysis. The third section presents the empirical research design. The fourth section reports the outcome of the empirical analysis, while the paper ends with some brief concluding remarks.

2. Measuring efficiency of local government

2.1. Literature

The measurement of the public sector efficiency and its determinants in different contexts has been the subject of a growing literature in the last decades (Afonso, Schuknecht, & Tanzi, 2005; Afonso et al., 2006; Ganley & Cubbin, 1992; Gupta & Verhoeven, 2001; Kittelsen & Førstund, 1992; Mensah & Li, 1993; Tanzi & Schuknecht, 1997, 2000). Generally, scholars assess the public sector efficiency by relating the local or the central government expenditure as a whole or split into budget categories to an array of controllable or uncontrollable targets (Worthington & Dollery, 2000). A number of scholars conducted

cross-country analyses of different efficiency rates. For instance, Afonso et al. (2005) propose a set of public sector efficiency indicators and calculate measures for them to compare OECD countries. In a different study, scholars evaluate the public expenditure efficiency in the new member states of the European Union (Afonso et al., 2006), while measuring efficiency in developing countries was the topic of a paper by Herrera and Pang (2005).

A large amount of empirical investigations relate to measuring efficiency in the context of local governments (Athanasopoulos & Triantis, 1998; Charnes, Cooper, & Li, 1989; Cook, Roll, & Kazakov, 1990; De Borger & Kerstens, 1996, 2000; Grosskopf & Yaisawarnng, 1990; Hayes and Chang, 1990; Hoxby, 1999, 2000; Tang, 1997; Vanden Eeckhaut, Tulkens, & Jamar, 1993). While cross-country aggregated efficiency analyses can be very useful to compare performance in several countries in the same time, because the institutional setting, culture, political environment, and economy are typical of each country, efficiency analyses for every country provide more insightful information to scholars and policy-makers (Mandl, Dierx, & Ilzkovitz, 2008). In general, research on efficiency of local municipalities and local government services provision may be grouped into three main streams. The studies that are aimed at assessing an overall municipal efficiency score belong to the first stream (Cuadrado-Ballesteros, García-Sánchez, & Prado-Lorenzo, 2013). In this stream, scholars have conducted empirical investigations on the public sector performance in several countries, such as Australia (Dollery, Byrnes, & Crase, 2008; Worthington & Dollery, 2001, 2008), Belgium (Geys, & Moesen, 2009a; De Borger & Kerstens, 1996; De Borger, Kerstens, Moesen, & Vanneste, 1994; Rogge & De Jaeger, 2012; Vanden Eeckhaut et al., 1993), Brazil (Sampaio de Sousa & Stošić, 2005; Sampaio de Sousa, Cribari-Neto, & Stošić, 2005), China (Charnes et al., 1989), Czech Republic (Št'astná and Gregor, 2011), Denmark (Dijkgraaf, Gradus, & Melenberg, 2003), Finland (Loikkanen & Susiluoto, 2005), France (Taïrou, 2000), Germany (Kalb, 2010a; Kalb, Geys, & Heinemann, 2012), Greece (Athanasopoulos & Triantis, 1998), Ireland (Reeves & Barrow, 2000), Italy (Boetti et al., 2010; Giordano & Tommasino, 2011), Japan (Nijkamp & Suzuki, 2009; Tanaka, 2006), Norway (Kalseth & Rattsø, 1998; Revelli & Tovmo, 2007), Portugal (Afonso & Fernandes, 2006, 2008), Spain (Balaguer-Coll & Prior-Jimenez, 2009; Benito, Bastida, & Garcia, 2008; Bosch, Pedraja, & Suarez-Pandiello, 2000; García-Sánchez, 2006, 2007; Pina & Torres, 1992, 2001; Prieto & Zofio, 2001), Sweden (Ohlsson, 2003), The Netherlands (Dijkgraaf & Gradus, 2003), Swiss (Barankay and Lockwood, 2007), Taiwan (Huang, Pan, & Kao, 2011), Turkey (Kutlar, Bakirci, & Yüksel, 2012), USA (Brueckner, 1979; Grossman, Mavros, & Wassmer, 1999).

The second stream includes empirical research conducted to evaluate the efficiency relative to the provision of specific services by municipalities (De Borger et al., 1994; Kalseth, & Rattsø, 1995; Rongen, 1995), such as solid waste and sewage disposal (Burgat & Jeanrenaud, 1994; García-Sánchez, 2008; Sarkis & Dijkshoorn, 2007; Woodard, Harder, Bench, & Philip, 2001; Worthington & Dollery, 2001), water management (Byrnes, Crase, Dollery, & Villano, 2010; Gupta, Kumarb, & Sarangic, 2012; Io Storto, 2013; Picazo, González, & Sáez, 2009), urban public transportation (Boame, 2004; Fazioli, Filippini, & Prioni, 1993; García-Sánchez, 2009a; Walter & Cullmann, 2008; Pina & Torres, 2001), local police force (Carrington, Puthuchear, Rose, & Yaisawarnng, 1997; Davis & Hayes, 1993; Diez-Ticio & Mancebon, 2002; García-Sánchez, 2009b; Parks, 1983; Vershelde & Rogge, 2012), public health services (Bates & Santerre, 2013; Nakayama, 2004), public libraries (De Witte & Geys, 2011), fire protection (Ahlbrandt, 1973; Bouckaert, 1992; Cuenca, 1994; Kristensen, 1983).

Studies that belong to the final stream focus on the efficiency of one single or more functional areas of the municipalities, such as general administration (Kalseth & Rattsø, 1995) and local government planning and regulatory function (Worthington & Dollery, 2000). Generally, research efforts are mainly addressed to the identification of major determinants of local government efficiency. In particular, scholars

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