

Gender and efficiency in the local government: evidence from Italian municipalities

Valeria Bucci, Giancarlo Ferrara, Giuliano Resce

Numero 3

06/2022

SOSE – Working Papers

La collana SOSE – WORKING PAPERS mira a favorire la divulgazione dei risultati di studi di ricerca rilevanti per le attività di SOSE, al fine di alimentare il dibattito scientifico e favorire la condivisione delle attività e aumentare la trasparenza. Tutti i lavori sono soggetti a un processo di peer review.

Nella collana SOSE – WORKING PAPERS vengono pubblicati i contributi di ricerca dello staff di SOSE (anche in collaborazione con studiosi esterni) e i lavori presentati nell'ambito di conferenze e seminari organizzati da SOSE.

Le opinioni espresse e le conclusioni tratte sono quelle degli autori e non riflettono necessariamente le opinioni di SOSE.

The SOSE - WORKING PAPERS series aims to promote the dissemination of the results of research studies relevant to SOSE's mission, in order to feed the scientific debate and facilitate the sharing of activities and increase transparency. All works are subject to a peer review process.

The SOSE - WORKING PAPERS series hosts the research contributions of the SOSE staff (also in collaboration with external scholars) and the works presented in conferences and seminars organized by SOSE.

The views expressed and conclusions drawn are those of the authors and do not necessarily reflect the views of SOSE.

Editor: Giancarlo Ferrara

Assistant editor: Valeria Bucci



Soluzioni per il Sistema Economico Spa

Via Mentore Maggini n. 48C

00143 Roma – Italy

centrostudi@sose.it

Gender and efficiency in the local government: evidence from Italian municipalities

Valeria Bucci^a, Giancarlo Ferrara^a, Giuliano Resce^b

^a*SOSE-Soluzioni per il Sistema Economico SpA, Rome, Italy*

^b*Department of Economics, University of Molise*

Abstract

This paper investigates the impact of women's political empowerment on municipalities' efficiency, considering both the mayor's gender and the share of women in the municipal council. Using a one stage stochastic frontier model with municipal fixed effects, this paper shows that higher efficiency is observed in municipalities having a female mayor and a higher presence of women in their councils.

Keywords: Gender; Female Empowerment; Public Governance; Efficiency; Italian Municipalities

JEL Classification: D61, D78, H50, H70, J88

1. Introduction

The presence of a global gender gap that prevents women from accessing to leadership positions is a persistent problem in many countries. Despite the widespread adoption of regulations aimed at favouring female empowerment, women are still under-represented in several contexts and, in particular, in

Email addresses: vbucci@sose.it (corresponding author) (Valeria Bucci), giancarlo.ferrara@gmail.com (Giancarlo Ferrara), giuliano.resce@gmail.com (Giuliano Resce)

The views expressed in the article are those of the authors and do not involve the responsibility of SOSE SpA. Although the authors alone are responsible for what is written in this paper, thanks are extended to Marco Stradiotto and all the members of Centro Studi SOSE Spa for helpful comments.

politics, where female participation is extremely limited, both at the central and the local levels (Braga and Scervini, 2017, Crotti et al., 2020).

The motivations behind the promotion of gender equality are not exclusively limited to ethics or justice but are also linked to the consideration that the presence of women in key positions could be useful for social welfare. Indeed, compared to their male counterparts, women are usually more concerned with the well-being of the people, compassionate and risk adverse, and less likely to engage in corruption (Chattopadhyay and Duflo, 2004, Hernandez-Nicolas et al., 2018).

The empirical literature has extensively explored gender considerations at the firm level, analysing whether firms' performance is associated with female leadership, while the empirical evidence at the public level is still rather limited. Only in recent years the role of gender in governance, particularly at the local level, has attracted research interest: a few studies investigate the relationship between gender and municipalities' efficiency but fail to find convincing evidence of a beneficial effect of female empowerment (Boetti et al., 2012).

This paper contributes to this literature by investigating whether municipalities' cost efficiency is related to women's presence in public governance. Our empirical analysis focuses on Italian municipalities observed during the period 2010-2016. Italian municipalities provide an interesting case study since they have experienced a significant empowerment of women in public governance in the last decade, although, according to Crotti et al. (2020), Italian municipalities are still far from achieving full gender parity of political empowerment (in 2018, Italy closed 26.7% of its gap).

To the best of our knowledge, this is the first paper providing clear evidence that women's empowerment in public governance, considering both the mayor gender and the share of women in the municipal council, significantly increases municipalities' efficiency.

2. Methods and Data

To investigate the effect of female empowerment on municipalities' governance we estimate a cost function through a stochastic frontier analysis (Kumbhakar and Lovell, 2000). In particular, following Battese and Coelli (1995), we include into the parametric stochastic frontier approach exogenous variables that may exert an influence on municipalities' performance, controlling for potential heterogeneity.

The model can be written as:

$$y = f(\mathbf{x}; \boldsymbol{\beta}) + v + u, \quad (1)$$

with

$$u = \mathbf{z}\boldsymbol{\delta} + w, \quad (2)$$

where $f(\cdot)$ defines a cost (frontier) relationship between the total cost (y) and the corresponding outputs and prices (\mathbf{x}), v is a symmetric two-sided error representing random disturbance (i.e., $v \sim iid N(0, \sigma_v^2)$), and u is a one-sided error term that represents cost inefficiency ($u > 0$, $u \sim iid N^+(0, \sigma_u^2)$). Furthermore, the inefficiency term u linearly depends on exogenous variables \mathbf{z} where w is the truncation of the $N(0, \sigma_u^2)$ distribution such that $w > -\mathbf{z}\boldsymbol{\delta}$ (Battese and Coelli, 1995).

We specify $f(\cdot)$ through a translog cost function in the following form:

$$\ln y = \ln f(\mathbf{x}, \boldsymbol{\beta}) = \beta_0 + \sum_i \beta_i x_j + \frac{1}{2} \sum_j \sum_k \beta_{jk} \ln x_j \ln x_k. \quad (3)$$

allowing production units to have rather heterogeneous technologies, a generalization of the Cobb-Douglas function. Furthermore, considering the within transformation before model estimation allows us to distinguish unobserved individual heterogeneity from inefficiency.³

We define the total cost as the sum of the current expenditures for services included in the essential functions as expected by the legislation: education, waste management, general administration, local police, urbanization and road conditions, and social care services. As outputs, we consider an indicator for each of the six services provided: number of equivalent students eligible for meals, amount of waste disposed, population, number of equivalent sanctions, number of equivalent light points and the number of equivalent assisted people. Finally, we include two price variables: the average local cost for renting offices/apartments and the average revenues declared for fiscal reasons, representing the cost of the two classical production factors (capital and labour).

³The specification adopts a stochastic frontier panel data model with municipal fixed effects adopting the within transformation allowed only if the specified model exhibits the scaling property, see for instance Wang and Ho (2010). However the model of Battese and Coelli (1995) does not exhibit the scaling property Wang and Schmidt (2002). For this reason the results are to be considered as a preliminary analysis for further investigations.

The empirical analysis is based on Italian municipalities belonging to ordinary statute regions⁴ observed during the years 2010, 2013, 2015 and 2016. Our data set was obtained by merging the institutional data concerning the features of local politicians provided by the Italian Ministry of Interior with socio-demographic and institutional information for each municipality provided by ISTAT and SOSE.

Figure 1 provides evidence of the process of female political empowerment that occurred during the period 2010-2016 in the Italian regions: the presence of women in municipal councils increased from 20% to 27%. In line with this trend, the share of Italian municipalities having a female mayor also increased from 12% to 15%.

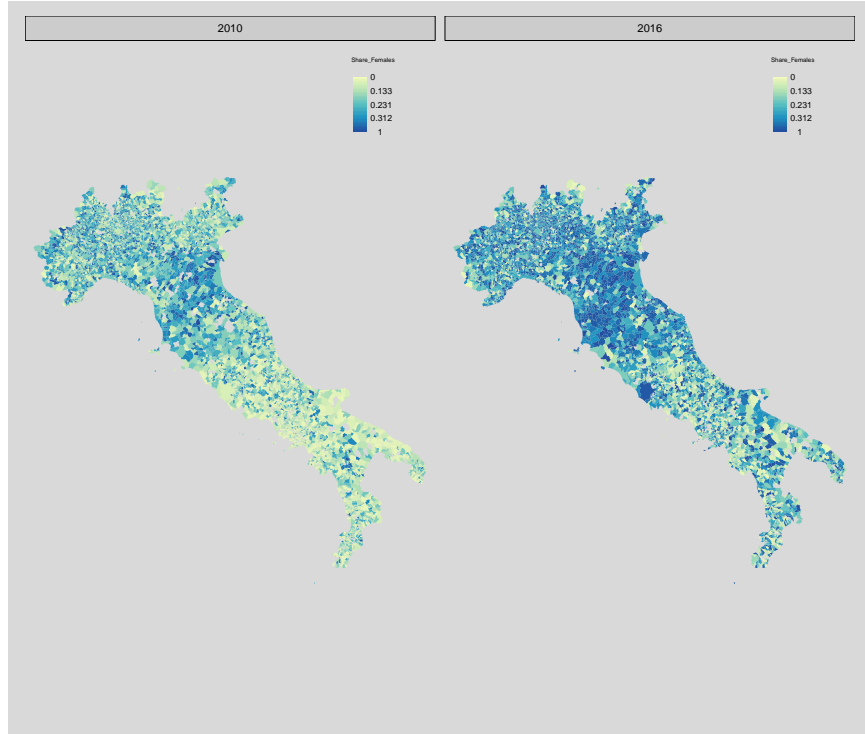
3. Results

Table 1 summarizes the findings of the empirical analysis, providing convincing evidence that female political empowerment significantly reduces municipalities' cost inefficiency.

For the sake of comparison with prior literature, we start our empirical analysis by modeling municipalities' inefficiency as a function of female political empowerment, including municipal fixed effects (Model 1). A significant negative association emerges between the gender of the mayor and inefficiency: having a female mayor favour the cost efficiency performance. This result is in line with the previous literature showing that the gender of the policy makers impacts the policies implemented, mainly because female administrators are less likely to engage in corruption than male administrators, and female policy makers invest more in infrastructures that are relevant for women's needs (Chattopadhyay and Duflo, 2004, Holman, 2014), even in year of crisis (Cabaleiro Casal and Buch Gomez, 2018, Hernandez-Nicolas et al., 2018). Furthermore, the positive effect of female empowerment on efficiency is confirmed by the findings concerning women's presence in municipal councils: increasing the presence of women in councils significantly reduces municipalities' inefficiency. Following Gagliarducci and Paserman (2012), we consider the interaction term between female mayor and the share of women

⁴Due to the unavailability of expenditure data, we focused the analysis exclusively on ordinary statute regions, thus limiting the potential bias related to the different organization, electoral rules and fiscal autonomy that such regions can self-regulate independently (Braga and Scervini, 2017).

Figure 1: Female presence in Municipal Council (Ordinary Statute Regions)



on the council, but the correlation among these effects is not statistically significant.

The positive effect of female political empowerment is confirmed after the inclusion of additional contextual variables able to explain municipalities' efficiency. In Model 2 we provide evidence of a significant negative effect of the education level of municipalities' employees and of the average age of the council members on municipalities' inefficiency. This result is in line with Alesina et al. (2019), highlighting the tendency of younger politicians to adopt strategic behaviour in the sense of increasing public spending.

Finally, we document a positive association between population density and cost efficiency, which may be explained by the evidence that higher density could partly reduce costs for providing local services, such as transportation. Furthermore, a negative association is found between efficiency and the share of the young population (3-14 years) and the number of companies. The presence of an higher number of students increases the likelihood of re-

quests for more specific and costly services related to municipal expenditure; for example, more complex and expensive local services are needed when the number of companies (i.e., economic development) in the municipality increases.

Table 1: Stochastic frontier analysis results

	Model 1		Model 2		Model 3	
Female mayor	-0.057	***	-0.055	***	-0.054	***
	(0.017)		(0.017)		(0.016)	
Share of women in the council	-0.329	***	-0.365	***	-0.337	***
	(0.040)		(0.041)		(0.043)	
Female Mayor x Share of women	-0.220		-0.217		-0.201	
	(0.175)		(0.173)		(0.176)	
Average age of the Council			-0.006	***	-0.006	***
			(0.001)		(0.001)	
Share of employees with higher education			-0.240	***	-0.229	***
			(0.044)		(0.044)	
Population Density					-0.001	***
					(0.000)	
Share of population 3-14 years					1.181	*
					(0.646)	
Number of companies (per capita)					2.712	***
					(0.603)	
Mean efficiency	0.921		0.920		0.920	
Observation	20,560		20,560		20,560	

Note: Superscript asterisks indicate statistical significance at 0 (***), 0.01 (**), and 0.05 (*).

4. Concluding remarks

This paper evaluates the effect of female empowerment in public governance on efficiency by analysing Italian municipalities over the years 2010-2016. Women’s political empowerment is captured by the presence of a female mayor and by the share of women in the municipal council. Efficiency is estimated by means of a cost function for six essential services provided by each municipality: education, waste management, general administration, local police, urbanization and road conditions, and social care services. The econometric framework adopted to estimate the cost function and the association between female empowerment and efficiency is based on a one stage stochastic frontier analysis with municipal fixed effects.

The results show that the association between the female presence and efficiency is positive and significant, and both the presence of a female mayor

and the share of women in the council are negatively associated with the municipality's inefficiency. This evidence provides a significant contribution to the previous literature showing that the presence of women in key positions increases social welfare. From a policy perspective, this evidence provides support for policies aimed at favour female empowerment in decision-making positions, particularly in politics.

References

- Alesina, A., Cassidy, T., Troiano, U., 2019. Old and young politicians. *Economica*, 86(344), 689-727.
- Battese, G.E., Coelli, T.J., 1995. A model for technical inefficiency effects in a stochastic frontier production function for panel data. *Empirical economics*, 20(2), 325-332.
- Boetti, L., Piacenza, M., Turati, G., 2012. Decentralization and local governments' performance: how does fiscal autonomy affect spending efficiency? *FinanzArchiv: Public Finance Analysis*, 68(3), 269-302.
- Braga, M., Scervini, F., 2017. The performance of politicians: The effect of gender quotas. *European Journal of Political Economy*, 46, 1-14.
- Cabaleiro Casal, R., Buch Gomez, E., 2018. Adjustments in municipal fiscal crises. Are they different according to the gender of the mayor? *Local government studies*, 44(2), 255-274.
- Chattopadhyay, R., Duflo, E., 2004. Women ad policy makers: evidence from a randomized policy experiment in India. *Econometrica*, 72(5), 1409-1443.
- Crotti, R., Geiger, T., Ratcheva, V., Zahidi, S., 2020. The global gender gap report 2020. In *Word Economic Forum*.
- Gagliarducci, S., Paserman, M.D., 2012. Gender Interactions within Hierarchies: Evidence from the Political Arena. *The Review of Economic Studies*, 79(3):1021–1052.
- Henningsen, A., Henning, C.H., 2009. Imposing regional monotonicity on translog stochastic production frontiers with a simple three-step procedure. *Journal of Productivity Analysis*, 32(3), 217.

- Hernandez-Nicolas, C.M., Martin-Ugedo, J.F., Minguez-Vera, A., 2018. Women mayors and management of Spanish councils: an empirical analysis. *Feminist Economics*, 24(1), 168-191.
- Holman, M.R., 2014. Sex and the city: Female leaders and spending on social welfare programs in US municipalities. *Journal of Urban Affairs*, 36(4), 701-715.
- Kumbhakar, S.C., Lovell, C.A., 2000. *Stochastic frontier analysis*. Cambridge university press.
- Wang, H.J., Ho, C.W., 2010. Estimating fixed-effect panel stochastic frontier models by model transformation, *Journal of Econometrics* 157, 286-296.
- Wang, H.J., Schmidt, P., 2002. One-step and two-step estimation of the effects of exogenous variables on technical efficiency levels, *Journal of Productivity Analysis* 18, 129-144.