

POLITY SIZE AND THE CONGESTED BUDGET: EVIDENCE FROM ITALIAN MUNICIPALITIES

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Short title: **Polity Size and the Congested Budget**

Abstract

Once in office, politicians propose policies aimed at maintaining the support of their constituencies. This form of political activism increases with polity size – i.e., the number of politicians in government – but it may clash with capacity constraints, leading to a congestion effect whereby politicians’ plans are not enacted in practice. With novel data on Italian municipalities, we estimate the causal effect of polity size on a battery of planned and actual budget outcomes. We leverage a reform that introduced a new temporary population threshold where polity size changed discontinuously and estimate local treatment effects with a difference-in-discontinuities design. We document a congestion effect. Municipalities with larger polities have a larger *planned* budget which does not translate into a larger *actual* budget. The congestion effect decreases when bureaucratic capacity is high, proving how administrative capacity can be a binding constraint for politicians’ behavior.

Replication files are available in the JOP Data Archive on Dataverse (<https://dataverse.harvard.edu/dataverse/jop>). The empirical analysis has been successfully replicated by the JOP replication analyst.

Supplementary material is available in the online appendix.

Keywords: fiscal policy, bureaucratic capacity, difference-in-discontinuities design

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Many theories in political economy show how politicians have strong incentives to be active in office, with the broad aim of advancing their careers in government. Politicians might use public funds to secure re-election (Ferejohn, 1974; Mayhew, 1974), they can propose programs that benefit their districts (Weingast et al., 1981), or boost their legislative activity to signal competence to voters (Gratton et al., 2021). These different accounts of activism all imply that, as the number of elected politicians grows larger, so does the number of items on the agenda. However, the capacity of a government to enact the proposed policies is limited, and politicians' incentives may clash with binding capacity constraints.

In this short article, we provide novel empirical evidence on the interaction between polity size and bureaucratic capacity constraints for Italian municipalities. The theoretical underpinning of our analysis, which we discuss and present formally in Section A in the appendix, is centered around the following simple intuition: if the only difference between two otherwise equal municipalities is that one has a larger polity (i.e., more politicians in government), then in such a municipality there should be more projects proposed, as everyone in elected office wants to do something. Therefore, a larger polity size should result in a larger planned budget at the beginning of any fiscal year. However, the local bureaucracy might not have sufficient capacity to enact this larger planned budget, with some policies or programs remaining unfulfilled. The difference between the actual and planned budgets is likely to be greater in the presence of a larger polity size, leading to what we call a *congested budget*.

To test the congested budget effect, we leverage two unique features of municipal governments in Italy. First, Italian municipalities report both the authorized and executed budget items on their balance sheets, allowing us to capture differences between planned and actual expenditures and revenues. Second, a 2011 reform to the size of government bodies allows us to causally identify the effect of polity size from that of confounding institutional features. In fact, both the number of politicians and their wages change discontinuously across municipalities based on various population thresholds. However, in 2011, the national government passed a set of reforms which created a new discontinuity

in polity size for municipalities above and below the 5,000-inhabitant threshold. As a result, municipalities above the threshold that held elections between the summer of 2011 until April 2014 –when the reform was repealed– elected 10 councilors, and the mayor could appoint up to 4 members of the executive committee, 3 more councilors, and 1 more member of the executive committee compared to municipalities in the 3-5,000 inhabitant band. By comparing differences in budget items at the 5,000 cutoff for municipalities that held elections before, during, and after the reform allows us to causally identify the effect of polity size using a difference-in-discontinuities design.

Our findings show strong support for the congestion effect of polity size. Compared to the pre- and post-reform periods, municipalities above the 5,000 cutoff in the reform period *plan* to spend more, with expenditures increasing by more than 600 euros per capita (54% of the average in the data). The increase in spending is coupled with an equal-sized increase in planned revenues, leaving deficits unchanged –consistent with the rules on budget justification and coverage. However, the effects disappear when looking at *actual* budget outcomes –i.e., what municipalities managed to spend and collect at the end of the fiscal year. Larger polities plan to spend more but do not do so in practice. To test the bureaucratic capacity mechanism, we estimate heterogeneous effects by different levels of capacity of the local bureaucracy. We show that when bureaucratic capacity is high –measured as the share of highly educated bureaucrats– the congestion effect of polity size weakens and the gap between actual and planned budget sharply decreases.

With this paper, we provide the first attempt at bringing causal evidence to the prediction that a larger polity size with fixed bureaucratic capacity produces bottlenecks in the execution of each planned policy, a neglected finding in the vast literature on polity size and fiscal policy (for a review, see Freire et al., 2023). Reforms to local governance are widespread. In a five-year period, Italy experienced three changes to the polity size of municipal governments. France and the Netherlands undertook a similar reform in 2013 and 1994, respectively, and there are numerous examples of forced or voluntary mergers between municipalities with mechanical changes to polity size and bureaucratic capacity (see e.g., Tricaud, forthcoming). Our findings suggest that such reforms to key

institutional features of municipal governments should consider bureaucratic capacity as a crucial factor which moderates the effect of institutional reforms on public policies.

Institutional Context and Data. Municipal governments in Italy consist of a directly elected mayor –who appoints an executive committee– and a directly elected local council. Elections are held every five years either in the spring or in the fall. The electoral rule follows an open-list proportional system for candidates to the local council and, for municipalities below 15,000, a plurality system for the election of the mayor. The law defines the size of the local council and a cap to that of executive committees as a function of census population.¹

Municipalities are responsible for a whole range of services, from local police to housing, schooling, and infrastructure, and every decision with financial implications must have financial coverage as specified in the budget, which lists the type and source of available resources and how the government intends to spend them. Expenditures are financed by municipal revenues, including local taxes and tariffs, transfers from regional and central governments, and other economic activities (e.g., sale of real estate or dividends of publicly owned firms). The budget cycle starts with the executive committee presenting a budget proposal at the beginning of every fiscal year, outlining the revenues and expenditures *planned* for the next three years (planned budget). At the end of the fiscal year, a final budget that accounts for the *actual* expenditures and revenues incurred throughout the year is approved (actual budget). Importantly, the planned and actual budgets must be voted by the local council, which in turn has a significant influence on the fiscal decisions of the municipality.

We assembled a dataset consisting of budget data and government composition for all the municipalities in ordinary-statute regions (15 out of 20), from 1998 to 2015. We web-scraped budget data from the repository of the Ministry of the Interior and focus on three key planned and actual outcomes: expenditures, revenues, and deficit, measured as the difference between expenditures and revenues (all per capita).²

¹Precise size for each population band is reported in Table E.3 in the appendix.

²Description of data and sample is reported in Sections B and C in the appendix.

Research Design. The size of local councils and executive committees change discontinuously at seven census population thresholds, from 3,000 to 1 million inhabitants. Comparing municipalities just above and below these thresholds with a cross-sectional regression discontinuity design (RDD) is a common strategy for estimating the causal effect of polity size. However, because the wage of politicians jump discontinuously at the same population thresholds, the cross-sectional RDD does not allow to isolate the effect of more politicians from that of better-paid politicians.³

However, in the summer following the 2011 local elections, the Berlusconi IV government –in an attempt to control public expenditures and in response to the sovereign debt crisis of those years– passed a law that introduced a new threshold at 5,000 inhabitants, which remained in force until just before the 2014 local elections. This was the second time the same government altered the size of municipal government bodies. In 2009 (although effective only from the 2011 elections), another reform had already reduced the size of local councils and executive committees, although it did not affect the population threshold system. The effects of the two reforms for municipalities in the 3-10,000-inhabitant band are displayed in Figure 1. As a result of the 2009 reform, the municipalities which held elections in 2011 experienced a reduction in the size of local council by 20%, from 16 to 13, and the cap to the size of executive committees dropped from 1/3 to 1/4 of the size of local councils. This change equally affected all municipalities. The second reform of the summer 2011 reduced even further for size of government bodies of municipalities in the 3-5,000 population band (7 councilors and up to 3 members of executive committee) and in the 5-10,000 population band (10 councilors and up to 4 members of the executive committee). The change in size occurred in a staggered fashion, and municipalities renewed their government bodies in compliance with the new threshold mechanism between the spring of 2012 until the fall of 2013. Finally, the new threshold was repealed from the 2014 elections, and polity size returned to the levels of the 2009 reform.

This temporary reform allows us to compare changes in fiscal outcomes at the cutoff

³The list of policies changing at population cutoffs is reported in Section D in the appendix.

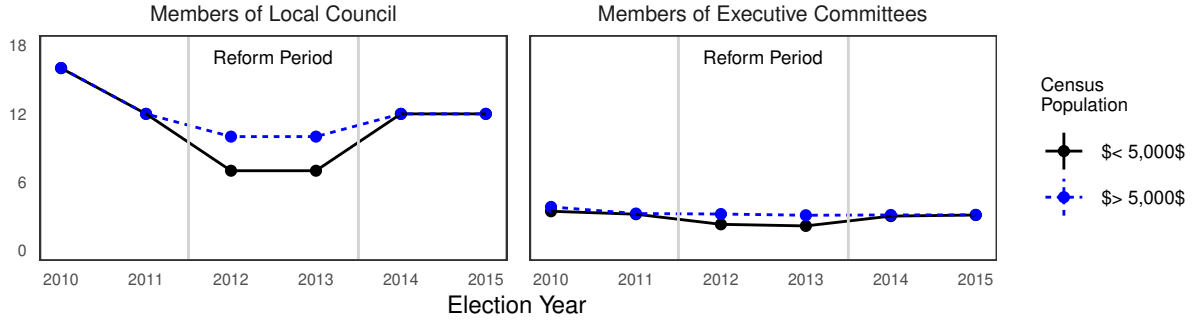


Figure 1: Average polity size for municipalities in the 3-10,000 population band.

for municipalities that held elections during three different periods: before August 2011 (pre-reform period), between August 2011 and April 2014 (reform period), and from April 2014 onward (post-reform period). The differences in the outcomes at the cutoff for the pre- and post-reform periods represent the effect of wage policies alone, whereas differences for municipalities in the reform period represent the compound effect of wage policies and larger polity size. By looking at the difference in discontinuities in the reform–pre-reform and reform–post-reform periods we can isolate the effect of polity size from the confounding effect of wage policies (Eggers et al., 2018). To ensure that the reform to the size of government bodies is the only “treatment” that changes over time at the 5,000 cutoff, we limit the analysis to the calendar years 2013-2015, for a fiscal rule aimed at controlling budgetary balances for municipalities above the same 5,000 cutoff was in place between 2001-2012. Because municipalities remain treated or untreated for the entire 5-year government term (until new elections), in the calendar years 2013-2015 there are municipalities which held elections in the three different groups.

The Difference-in-Discontinuities Estimator. Municipalities hold elections in three time periods T_t , $t = 0, 1, 2$, which represent periods before, during, and after the reform, respectively. Under the reform, in T_1 , the RD estimator identifies the effect of both wage policies W_i and the number of politicians P_i on the outcome Y_i . The compound estimand is given by $\alpha_{RD(c)} = \lim_{\epsilon \downarrow c} \mathbb{E}[Y_i | X_i = \epsilon, T_1] - \lim_{\epsilon \uparrow c} \mathbb{E}[Y_i | X_i = -\epsilon, T_1]$. Grembi et al. (2016) show that, under additional local assumptions, information on the periods without the compound treatment ($t \in \{0, 2\}$) allows to isolate the effect of P_i from that of W_i . Let δ_{RD} be the causal effect of W_i when $t \in \{0, 2\}$. To identify the causal effect of P_i , we combine both the discontinuous variation at $C_i = 5,000$ and the time variation

when T moves from 0 to 1 and then from 1 to 2. The target estimand of the difference-in-discontinuities estimator (hereafter, diff-in-disc) is $\tau_{DD(c)} = \alpha_{RD(c)} - \delta_{RD(c)}$ and it is narrower than the standard RD estimand, for it is conditional on the realization of the confounding treatment. $\tau_{DD(c)}$ is therefore the local average treatment effect of a larger polity size for municipalities that also have better-paid politicians.

Two additional assumptions compared to the standard continuity of density and potential outcomes of RD designs must hold for the diff-in-disc estimator to be unbiased. The first one is that the effect of W_i and P_i is constant over time. In other words, it requires that units just above and below the threshold would have held a parallel trend had P_i not been introduced. The second assumption is that the effect of P_i does not depend on the confounding policy W_i . One way in which this assumption would be violated is if politicians above and below the cutoff, who are paid differently, reacted differently to a change in polity size. These assumptions are indirectly tested and discussed in Section K of the appendix, where we show that the effect of wage policies is stable over time and that the 2009 reform to the size of government bodies, which equally affected all municipalities, does not have differential effects for municipalities above and below the 5,000 cutoff. Similarly, in Section J we present validity tests in support of the continuity of density and potential outcomes assumptions: we show no discontinuities for several pre-treatment covariates (e.g., location, surface, and income), no discontinuity in the density function of the running variable, and no significant effects using placebo cutoffs different from the one actually determining change in polity size.

We estimate $\tau_{DD(c)}$ with local polynomial methods, fitting linear WLS regressions separately on the observations above and below the cutoff and before, during, and after the reform. Weights are determined by the triangular kernel function based on the ratio between the distance of unit i from the cutoff C_i and the mean-squared-error minimizing bandwidth (Cattaneo et al., 2019). The RD estimates equal the difference in the intercepts at the cutoff in every time period. Subsequently, we estimate the difference in the point estimates across the three different periods.

Results. The results are displayed in Figure 2, which shows in the top panels the

RD estimates for each period and in the bottom panel the diff-in-disc estimates, estimated as the difference in the point estimates between the reform and pre-reform periods (black coefficients) and the reform and post-reform periods (blue coefficients).⁴ Consistent with the general prediction that more politicians increase the size of the agenda, municipalities above the 5,000 cutoff have larger planned fiscal outcomes. Expenditures per capita are larger by 618 and 611 euros in the reform period compared to the pre- and post-reform periods, an effect size equal to 54% of the average in the data for municipalities in the 3-10,000 population band in the same period. Revenues increase to a very similar extent (i.e., 657 and 683 euros per capita compared to the pre and post-reform period). The increased spending coupled with an equal-size increase in revenues leaves planned deficit unchanged. Having approximately four politicians more, does not lead to overspending, for larger planned expenditures do not exceed larger planned revenues.

However, municipal governments fail to realize the expanded planned budget. When looking at actual budget outcomes on the right-hand side panels, the RD estimates are very similar across the three time periods and we fail to detect the jump in the reform period we observe for planned budget outcomes. As a result, the diff-in-disc estimates shrink to zero. More politicians lead to a congested budget, with larger spending and revenues that nonetheless do not materialize.⁵

Mechanism. The congested budget is characterized by larger expenditures and revenues that fail to be implemented, reducing the government's spending and collection capacity, defined as the ratio of actual over planned expenditures and revenues. Col-

⁴RD plots and full regression tables are reported in Section G and H in the appendix.

⁵In Section I in the appendix, we show results are robust to alternative bandwidths, estimating a single equation, the selection of covariates, using alternative outcomes from the National Institute of Statistics, accounting for the government term business cycle, and limiting the analysis to municipalities which held elections before 2013, for gender quotas on candidate lists started to operate based on the same population threshold from December 2012. The results for revenues are not driven by any specific type of revenues (e.g., local taxes of financial transfers).

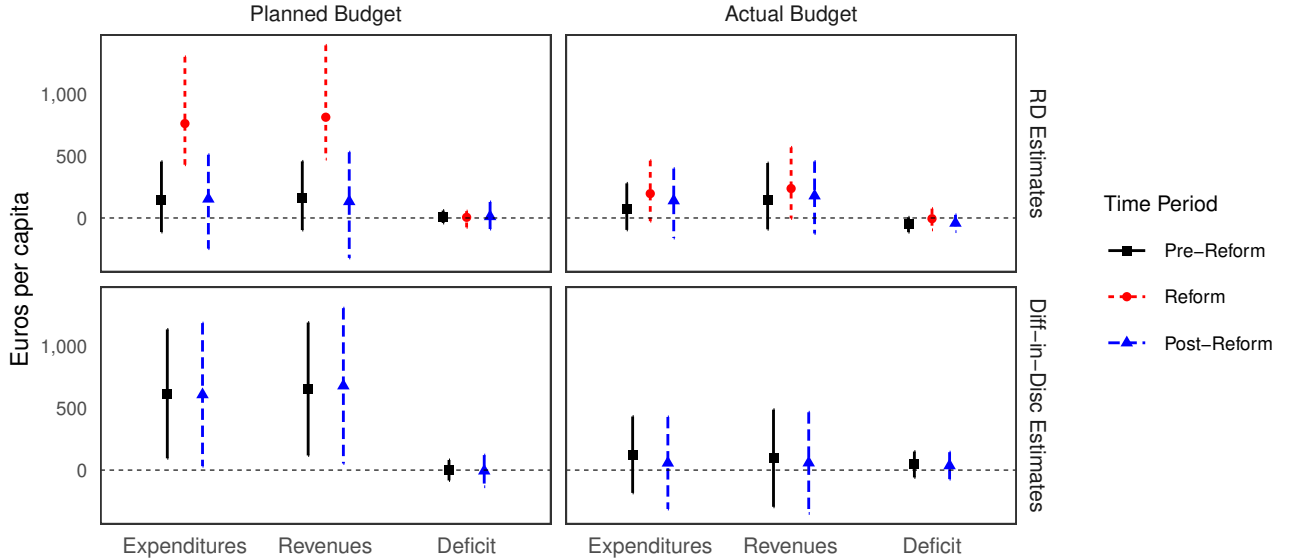


Figure 2: RD and Diff-in-Disc estimates with 95% robust confidence intervals. Covariates: population density, surface, surface at low, medium, and high hydro-geological risk, gender, level of education, and white-collar job of mayor, year and province dummies.

lection and spending capacity deficit may be the product of capacity constraints, with bureaucracies unable to execute the larger planned budget.⁶ To test whether there is empirical support for this mechanism, we replicate the main analysis on two separate samples of municipalities whose levels of bureaucratic capacity are above or below the median in the data. Consistent with an established literature which measures the quality of local officials in terms of human capital (e.g., Galasso and Nannicini, 2011), we proxy bureaucratic capacity with the share of bureaucrats with a university degree and the size of the bureaucracy (i.e., number of bureaucrats), capturing both qualitative and quantitative aspects of capacity. For these tests, the outcome variables are the ratio of actual over planned expenditures –i.e., spending capacity– and the ratio of actual over planned revenues –i.e., collection capacity. These measures are obtained directly from the National Institute of Statistics.⁷

We produce difference-in-discontinuities estimates in the two samples and we compute the difference for municipalities above and below the median value of both bureau-

⁶The effect is not driven by the quality of politicians above the cutoff (see Table I.18 in the appendix).

⁷The results are similar if building the outcomes from budget data (see Section H2).

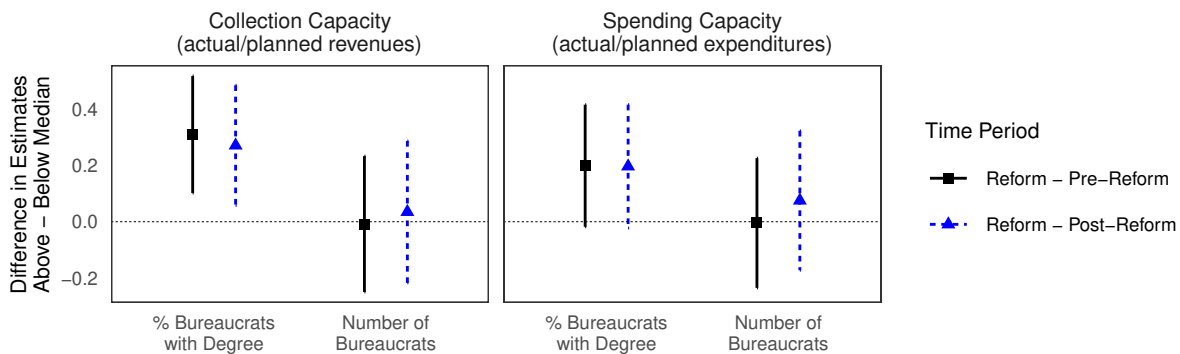


Figure 3: Difference in diff-in-disc estimates with 95% robust confidence intervals estimated for units above and below the median value of the capacity indicators reported on the horizontal axis. Same covariates reported in Figure 2.

cratic capacity variables, which we display in Figure 3. Spending and collection capacity increase respectively by 30 and 20 percentage points in municipalities with a larger share of bureaucrats with a university degree (although the estimates for spending capacity are less precise and statistically significant only at 90%). Conversely, the size of the bureaucracy does not alter spending and collection capacity, suggesting capacity deficits are more driven by the quality rather than the quantity of bureaucrats. These findings, though not causally identified, are consistent with our prediction that one determinant of the congested budget is an overburdened bureaucracy which limits the ability of politicians to turn their expanded agenda into actual policy.

Discussion. We provided new evidence of a clash between politicians’ incentives and the existence of a binding bureaucratic capacity constraint. Our findings have two main implications for local policy-making. First, while national governments generally focus on institutional reforms such as changes to polity size or municipal mergers, we showed that politicians’ agenda will still inevitably rest on the capacity of local bureaucracies. These findings therefore shed light on a dimension of local governance often neglected by reformers, namely the ability and resources of local employees to execute politicians’ plans. Although the evidence is limited to the Italian case, this implication is applicable to a more general set of cases where the actions of directly elected offices depend on the implementation capacity of bureaucratic bodies. Second, and we believe this is interesting avenue for future research, the congested budget can trigger the selection of “bad” policies: politicians’ choice over which items in the planned budget to be executed might be driven

by short-termism, where long-term investments and less electorally appealing policies give way to short-term policies whose benefits and electoral returns quickly materialize.

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