Do Incompetent Politicians Breed Populist Voters? Evidence from Italian Municipalities[*]

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Abstract

Poor performance by the established political class can drive voters towards "anti-politics" and anti-establishment outsiders. Is the ineffectiveness of incumbent politicians an important driver of the recent rise of populist parties? We provide an empirical test exploiting a sharp discontinuity in the wage of local politicians as a function of population in Italian municipalities. We find that the more skilled local politicians and more effective local goverment in municipalities above the threshold cause a significant drop in voter support for the populist Five-Star Movement in regional and national elections. Support for incumbent governing parties increases instead.

Keywords: Populism, Government efficiency, Politician quality, Political agency

JEL Classification: D72, D73, H70

1 Introduction

Populism is on the rise throughout the world. A strong anti-establishment stance is one of its defining features (Mudde and Rovira Kaltwasser 2017). Populists present themselves as outsiders who are going to sweep out a discredited ruling class and bring in better government. Witness Donald Trump's mantra of "draining the swamp" in Washington, DC; or, in Italy, Beppe Grillo's insistence that the purpose of the Five-Star Movement (M5S, from the Italian *Movimento 5 Stelle*) he founded is to get rid of the "political caste" running the country. Such rhetorical appeals to political renewal ought to have greater resonance with voters the more ineffective and incompetent incumbent politicians have been. Yet, empirical evidence of such a link has so far proved elusive.

Economists have blamed the rise of populism mainly on rising economic insecurity for the middle class, which may partly reflect failures of domestic policy, but is mostly driven by worldwide macroeconomic trends (Algan et al. 2017; Colantone and Stanig 2018; Guiso et al. 2018; Piketty 2018; Pastor and Veronesi 2020; Dal Bó et al. 2021; Sartre, Daniele and Vertier 2021). Another explanation stresses cultural backlash against immigration—again partly policy-driven—but mostly against long-run cultural changes that reflect a generational shift in attitudes (Becker and Fetzer 2017; Norris and Inglehart 2019). Cultural drivers of populism also include a lack of institutional trust and civic-mindedness, which has been traced to youth exposure to political corruption but also to childhood exposure to entertainment TV (Aassve, Daniele and Le Moglie 2019; Durante, Pinotti and Tesei 2019).

In this paper, we assess empirically the direct impact of incumbent politicians' skill and effectiveness on voter support for populism. To identify a causal effect, we exploit quasi-experimental variation in the quality of municipal government in Italy, one of the advanced democracies with the strongest populist parties (Norris and Inglehart 2019).

The wage of Italian mayors and other local politicians changes sharply at specified population thresholds. In particular, at 5,000 residents the mayor's wage rises by almost a third, while the compensation of other members of the municipal cabinet almost quadruples. Before 2001 and after 2012, this threshold is free from confounding changes in other policy

rules. Using data from 1993 to 2001, Gagliarducci and Nannicini (2013) showed that the wage jump at the threshold attracts more educated and skilled politicians into local government. In turn, greater quality of politicians translates into greater government efficiency. We confirm these results for the more recent period that witnessed the nationwide rise of the populist M5S, using data for all municipal administrations elected from 2013 to 2017. The wage increase at the threshold causes a significant rise both in the share of municipal cabinet members with a college education (by about 6 percentage points, or 13% of the mean) and in local government efficiency, as reflected in measurable performance in municipal waste collection. The share of municipal waste that is recycled increases by about 4.5 percentage points (or 7% of the mean), with unchanged expenditure.

This plausibly exogenous variation in the quality of local government enables us to address our question. Does exposure to lower-quality incumbents cause voters to embrace populist parties that advocate a wholesale replacement of the political establishment? By exploiting a sharp regression discontinuity design we can effectively control for unobserved municipal characteristics, such as the voters' human or social capital.

The outcome variable we consider is the municipal vote share of the M5S in regional, national and European elections. By studying elections for higher levels of government, we can identify the impact of local politicians' quality on voters' partisan leanings, aside from their evalution of individual incumbents. By studying the success of the M5S, we can focus on the dimension of populism that motivates our analysis: anti-politics and anti-establishment rhetoric. This is a defining feature of the M5S, which has stressed its outsider status and its recruitment of non-politicians, adopting internal term limits and formally barring the candidacy of anyone who ever held or ran for elected office outside the party since its founding in 2009. Conversely, while all right-wing parties in Italy have been labeled as populist by at least some scholars, they all have a long track record in government under Silvio Berlusconi (1994–95, 2001–06, 2008–11) and sometimes an indisputable position as the regional political establishment.[1]

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[1] E.g., Forza Italia and the Northern League jointly have an unbroken hold on the regional governments of Veneto since 1994 and Lombardy since 1995.

Our results show that a plausibly exogenous improvement in the quality of local government causes a significant decline in the local vote share of the M5S. In our preferred specification, at the 5,000-resident threshold the M5S vote share falls by 2 to 3 percentage points, approximately a 10% decline in their vote share relative to its average of 25 percentage points. This finding suggests that voter support for anti-establishment populists reponds to the same forces that drive standard rational models of political agency. Just as less skilled and less effective individual incumbents are more vulnerable to challengers, so an entire political class is more vulnerable to a populist challenge when voters have been routinely disappointed by their elected representatives.

In addition to shedding new light on the determinants of voter support for populist politicians, our findings provide new evidence on the links between elections at different levels of government. A large literature on fiscal federalism has studied vertical government interactions in tax setting, public spending, and political accountability (e.g., Besley and Rosen 1998; Alesina, Angeloni and Etro 2005; Berry 2008; Boffa, Piolatto and Ponzetto 2016). Prior work has shown that alignment between local politicians and national parties matters for both the financing and the expenditure choices of municipal governments (Solé-Ollé and Sorribas-Navarro 2008; Brollo and Nannicini 2012; Gamalerio 2020). We contribute to this line of research by showing that the quality of local politicians—even in relatively small municipalities—affects higher-level elections and thus national political trends such as the rise of anti-establishment populist parties.

The remainder of the paper is organized as follows. In Section 2 we present the political and institutional environment. Section 3 describes our data and our econometric specification. In Section 4 we report our results, including robustness tests that validate our identification strategy. Section 5 concludes.

2 Political and Institutional Enviroment

2.1 Italian Politics and the Rise of the Five-Star Movement

From the fall of Fascism until the most recent general election in 2018, the Italian political landscape broadly fit the conventional pattern of competition between two rival ideological camps, despite the proliferation of minor parties favored by an electoral system dominated by proportional representation.

From 1947 to 1993, the rival blocs were led by the Christan Democrats in the political center and the Italian Communist Party on the left. At the national level, the Communists were perpetually in opposition, while the Christian Democrats assembled an unbroken series of government coalitions. These coalitions comprised different smaller parties at different times, sometimes leaning to the center-right and sometimes to the center-left. They never extended to the far right—tainted by its enduring links to Fascism—and since 1963 they always included the Italian Socialist Party, the second-largest and more moderate left-wing party. At the same time, the Communist Party ran several regional governments, almost always in a coalition with the Socialists.

This long-standing party system, which journalists have since dubbed the "First Republic," collapsed dramatically in the early 1990s. In 1991, with the fall of the Soviet Union, the Communist Party dissolved, replaced by a mainstream social-democratic party and some unreformed splinters to its left. The following year, the "Mani Pulite" judicial investigation into political bribery detonated a nationwide corruption scandal that engulfed all the parties in the government coalition, quickly leading to their demise.

After 1993, the two old blocs were replaced by two new opposing coalitions. On one side, a center-left coalition led by the main post-communist party, currently called the Democratic Party. On the other side, a center-right coalition led by Silvio Berlusconi and his party, currently called Forza Italia. Former Christian Democrats split between the two camps, while the center-right brought into its ruling coalition the far-right party, currently called Brothers of Italy. All Berlusconi governments also included the Northern League as a coalition partner. Founded in 1989 as a regionalist Northern Italian party with an agenda of decentralization,

in 1995–98 it had a brief and unsuccessful secessionist season advocating the breakup of Italy. After this short spell, it has turned into a nationalist right-wing party whose voter base, though still broader in the North, now extends to the whole country. From 1999 to 2018 it was a stable partner in Mr Berlusconi's center-right coalition.

The most notable change between the cold-war decades and this so-called "Second Republic" was that the two rival coalitions started alternating in power at the national level. Political turnover has been so regular that no incumbent government has won an Italian general election since 1992. Mr Berlusconi governed in 1994–95, followed by the center-left in 1996–2001, another Berlusconi government in 2001–06, the center-left in 2006–08, yet another Berlusconi government in 2008–11, and again the center-left in 2013–18.[2]

In the last few years, this stable two-coalition landscape has been shaken by the disruptive rise of the Five-Star Movement (M5S). The M5S started in 2005 as a grassroots movement under the leadership of the comedian and activist Beppe Grillo. In 2009 it began fielding candidates for elected office. In the 2013 general election it reaped a striking nationwide success: with 25.6% of the popular vote, it narrowly edged out the Democratic Party as the most voted party. Positioning itself as a third pole antithetical to both center-right and center-left, the M5S refused to support any coalition government. After a two-month stalemate, the Democratic Party formed instead an uneasy government coalition with Mr Berlusconi's party. The latter split before the end of the year: its leader and most of its MPs rejoined their center-right allies in opposition, while a splinter group of centrists seceded into a short-lived new party within the ruling center-left coalition.

The M5S was even more successful in the following general election, in 2018. With 32% of the vote, it roundly beat the whole outgoing center-left coalition (23%). The slowest government-formation process in postwar Italian history ensued. After almost three months of gridlock, the M5S formed a coalition government with the Northern League, picking an outsider as prime minister: Giuseppe Conte, a law professor with no prior political experience. Relations between the two coalition partners were rocky from the start. Campaigning

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[2]The series is completed by two non-partisan "technical" governments led by Lamberto Dini (1995–96) and Mario Monti (2011–13).

for the May 2019 European elections led to escalating tensions, which culminated in the breakup of the coalition in August. The M5S chose to avoid a snap election and form a new government coalition with the Democratic Party and other forces of the center-left. This coalition supported first a second government presided by Mr Conte; then, since 2021, one led by another non-partisan prime minister, former ECB president Mario Draghi.

While parliamentary arithmetic eventually forced the M5S into government coalitions with rival parties of both the right and then the left, its anti-establishment political platform has always been its main defining feature. The M5S stresses the contrast between political élites and the people, rather than ideological cleavages or differences in policy proposals. It has tried to dub the post-2018 political landscape the "Third Republic" to portray its own governments as a clean break with those of the past. It expresses disdain of all political parties, stating in its manifesto that the M5S itself "is not a political party, nor is it meant to become one in the future"—members are accordingly instructed to call the M5S a "movement" and never a party.

The founding narrative of the M5S focuses on political corruption, misuse of public funds by political parties, and the inadequacy of the electoral system. The M5S calls for binding term limits for all elected officials and a ban on people under criminal investigation (or, a fortiori, with criminal convictions) holding elected office. Two seminal M5S initiatives were the V-Day and the V2-Day, held in 2007 and 2008 respectively. These were political rallies—also officially known as "Vaffanculo Days," i.e., "Fuck-Off Days"—designed for Grillo and his supporters to meet and literally shout abuse at existing political parties and their members.

The M5S has also prominently advocated direct democracy, enabled by the internet, as a replacement for representative democracy, which it portrays as corrupt and obsolete. It uses a blog for supporters and politicians to communicate, and a proprietary online application (the Rousseau Platform) for registered members to vote on selected issues and steer the party's platform. The web platform is also used to pick some candidates for all elections through an online primary. The candidate selection process is geared towards finding ordinary people to run for office, and excluding candidates tainted by prior political experience outside the party (Mosca, Vaccari and Valeriani 2015).

Voters made no mistake about the anti-establishment message of the M5S. Post-election surveys from 2013 show that protest voting and anti-establishment attitudes have strong explanatory power in predicting support for M5S candidates (Passarelli and Tuorto 2016). Post-election surveys from 2018 likewise show that M5S voters were motivated by mistrust of political institutions—which Corbetta et al. (2018) label as "political populism." The M5S also displays many other features characteristic of populist parties, as defined for instance by Mudde and Rovira Kaltwasser (2017). E.g., content analysis of the M5S blog shows that its narrative is highly flexible and adaptable, consistent with the theory of "thin ideology" by populist parties (Manucci and Amsler 2018).

Other Italian political parties also share some populist traits. Every Italian party to the right of the political center has been classified as populist by at least some cross-country studies (Guiso et al. 2018). However, none comes close to the anti-establishment credentials of the M5S. E.g., the Northern League has rather developed into a radical right-wing party, riding the cultural backlash against changes in values (Verbeek and Zaslove 2015; Corbetta et al. 2018). Far from being an anti-establishment outsider, it is the main establishment party in several regions in the North (Passarelli 2013; Passarelli and Tuorto 2018). Its incumbency goes back such a long way that it was already governing some municipalities in coalition with the Christian Democrats before 1993.

2.2 MUNICIPAL GOVERNMENT IN ITALY

Italy is subdivided into a large number of mostly small municipalities: as of the 2011 census, a total of 8,092, with an average population of 7,345. Municipalities around the 5,000-resident threshold are thus remarkably representative. Approximately 70% of municipalities were below this population threshold, and almost 30% have between 3,001 and 10,000 residents. Table 1 presents the entire distribution.

The administration of each municipality (*comune*) is entrusted to a directly elected mayor (*sindaco*). Mayors serve five-year terms and are limited to two consecutive terms in office, extended to three for municipalities up to 3,000 residents. They are elected at the same time as the municipal council (*consiglio comunale*) in a single local election. In municipalities

Table 1: Size Distribution of Italian Municipalities

Population Range	Municipalities		Total Population	
	No.	%	Residents	%
Up to 1,000	1,951	24.11	1,062,284	1.79
1,001 to 3,000	2,602	32.16	4,791,028	8.06
3,001 to 5,000	1,149	14.20	4,471,018	7.52
5,001 to 10,000	1,186	14.66	8,390,615	14.12
10,001 to 15,000	480	5.93	5,853,140	9.85
15,001 to 30,000	417	5.15	8,537,223	14.36
30,001 to 50,000	166	2.05	6,341,787	10.67
50,001 to 100,000	95	1.17	6,318,226	10.63
100,001 to 250,000	34	0.42	4,877,881	8.21
250,001 to 500,000	6	0.07	1,853,133	3.12
Above 500,000	6	0.07	6,937,409	11.67
All municipalities	8,092	100.00	59,433,744	100.00

Notes: Resident population on October 9, 2011. Data from the 2011 census.

up to 15,000 residents, each mayoral candidate runs jointly with a list of candidates for the council in a first-past-the-post election.[3] The candidate who obtains a plurality of the votes is elected mayor, and the associated list automatically obtains two thirds of the seats on the council; the remainder is allocated proportionally among all other lists.[4]

The mayor appoints a municipal cabinet (*giunta comunale*), one of whose members (*assessori*) serves as deputy mayor. In municipalities up to 15,000 residents, cabinet members are normally selected among municipal councillors.[5] The municipal cabinet exercises both executive and legislative powers. Thus, its members are overwhelmingly responsible for mu-

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[3]Most small-town mayors (72% in our sample) assemble a so-called "civic list" of candidates that does not formally affiliate with a national political party. This choice reflects in some cases a non-partisan candidacy, in others the need to create a list that combines several different parties to contest a first-past-the-post election.

[4]In larger municipalities, the mayor is elected by two-round majority rule. A single mayoral candidate can be supported by several lists of candidates for the municipal council. Moreover, voters are allowed to split their ballot, voting for a mayoral candidate but an opposing list for the council. The council election deviates from proportional representation and tends to produce a majority supporting the elected mayor, but falls short of guaranteeing it.

[5]In small municipalities cabinet members must be selected from the municipal councillors, unless a two thirds majority of councillors approves a statute enabling the mayor to select external cabinet members. Conversely, in municipalities above 15,000 residents the positions of councillor and cabinet member are incompatible.

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nicipal governance, and they are the focus of accountability for their voters. The municipal council approves the municipal budget and supervises the municipal administration. It has the power to dismiss the mayor and cabinet, but only by resigning en masse and triggering an early election.[6] This is meant to be an exceptional possibility, and in practice it is very rare.

By law, municipalities provide several important public services: notably waste collection and disposal, local public transport, and a local welfare system that includes public daycares, as well as the canteens and building maintenance for public schools (though not their teaching staff). Municipalities are also responsible for urban planning, including building permits and business licences; and for local and traffic police. In addition to receiving intergovernmental transfers and levying fines for infractions and fees for services (including the waste-disposal tax), municipalities can raise revenues by setting property taxes (in a range of 0.2% to 0.6% of the land registry valuation) and a surcharge on the national income tax up to 0.8%.

Accordingly, Italian voters care about municipal government. In turn, there is evidence that local politicians in Italy behave according to the predictions of classic models of political agency: they engage in yardstick competition (Bartolini and Santolini 2012; Bordignon, Grembi and Piazza 2017); they follow an electoral budget cycle, mitigated by voter information and by party monitoring (Cioffi, Messina and Tommasino 2012; Repetto 2018); and they respond to electoral competition by shifting the tax burden towards more shrouded instruments (Bordignon, Grembi and Piazza 2017; Bracco, Porcelli and Redoano 2019).

2.3 THE 5,000-RESIDENT THRESHOLD

We identify plausibly exogenous differences in the quality of local government by exploiting a discontinuous change in mayors' compensation. Their wages are set by law as a function of municipal population, with large discrete jumps at legally specified thresholds. Following Gagliarducci and Nannicini (2013), we focus on the 5,000-resident threshold. At this thresh-

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[6]The early election then takes place at the first subsequent electoral date, most often the following spring. However, the council, mayor and cabinet are all immediately dismissed and replaced by an interim municipal administration, managed by a civil servant (*commissario*) appointed by the provincial representative of the Ministry of the Interior (*prefetto*).

old, the mayor's monthly wage rises by 29%, from €1,952 to €2,510. The wages of other members of the municipal cabinet rise even more sharply at the threshold: from €391 to €1,256 for the deputy mayor, and from €293 to €1,130 for other cabinet members.[7]

Local elections and municipal governments in Italy are subject to a wide set of rules that vary discretely as a function of population thresholds. As a consequence, estimates of the treatment effect for one policy risk being confounded by other policies that change simultaneously at the same threshold (Eggers et al. 2018). Table 2 summarizes the relevant threshold rules for the period we consider (2013–18). The main threat to our identification strategy arises from population thresholds governing the enforcement of budget rules imposed at the national level to improve the fiscal discipline of local governments.

From 1999 to 2015, Italy enforced a changing set of budget rules under the Internal Stability Pact. Its enforcement succeeded at improving budgetary discipline, but it had the downside of worsening political selection by dissuading more capable candidates (Grembi, Nannicini and Troiano 2016; Gamalerio and Trombetta 2021). From 2001 to 2012, enforcement of the Pact exempted municipalities up to 5,000 residents; from 2013 to 2015 this exemption threshold was reduced to 1,000 residents.[8] To avoid confounding, we restrict our analysis to municipal administrations elected after the exemption threshold was lowered.

Other population thresholds govern electoral rules and the size of the municipal council and cabinet. Technically, these thresholds should not pose a risk of confounding because of a crucial rule in Italian law, which so far has not received the attention it deserves. Although both budget rules and electoral rules vary discretely at specified population thresholds, such thresholds are based on two distinct measures of municipal population.

Electoral rules depend on population enumerated at the latest census date (October

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[7]The reported figures are the baseline wages, determined by DM 119/2000 as modified by L 266/2005, art. 1, cl. 54, which cut by 10% the compensation of all elected local officials. Baseline wages can be increased up to 10%, based on municipal characteristics that include the amount and composition of municipal revenues and expenditures, as well as tourism in the municipal territory. Elected officials in small municipalities can also keep their job outside the municipal government, but if they are employees and do not go on leave their municipal wage is cut by 50%.

[8]Earlier plans to reduce its exemption threshold from 5,000 to 3,000 residents were repeatedly announced, but never came to fruition. Since 2016, the Internal Stability Pact has been replaced by a simpler balanced-budget requirement, which applies to all municipalities. The Pact had also been universally applied in 1999 and 2000.

Table 2: Threshold Rules for Italian Municipalities since 2013

Population	By Current Population				By Latest Census Population	
	Mayor's Wage	Deputy Mayor's Wage	Cabinet Members' Wage	Internal Stability Pact	Mayor's Term Limit (since 2014)	Electoral Rule
Up to 1,000	€1,162	15%	10%	No	3	Single round
1,001 to 3,000	€1,301	20%	15%	Yes	3	Single round
3,001 to 5,000	€1,952	20%	15%	Yes	2	Single round
5,001 to 10,000	€2,510	50%	45%	Yes	2	Single round
10,001 to 15,000	€2,789	55%	45%	Yes	2	Single round
15,001 to 30,000	€2,789	55%	45%	Yes	2	Two rounds
30,001 to 50,000	€3,114	55%	45%	Yes	2	Two rounds
50,001 to 100,000	€3,719	75%	60%	Yes	2	Two rounds
100,001 to 250,000	€4,509	75%	60%	Yes	2	Two rounds
250,001 to 500,000	€5,206	75%	65%	Yes	2	Two rounds
Above 500,000	€7,018	75%	65%	Yes	2	Two rounds

Population	By Latest Census Population					
	Cabinet Members (since 2014)	Cabinet Members (2012-13)	Cabinet Gender Quota (since 2014)	Councillors (since 2014)	Councillors (2012-13)	Council Election Gender Quota
Up to 1,000	2	0	1	10	6	No
1,001 to 3,000	2	2	1	10	6	No
3,001 to 5,000	4	3	2	12	7	No
5,001 to 10,000	4	4	2	12	10	Yes
10,001 to 15,000	5	5	2	16	16	Yes
15,001 to 30,000	5	5	2	16	16	Yes
30,001 to 50,000	7	7	3	24	24	Yes
50,001 to 100,000	7	7	3	24	24	Yes
100,001 to 250,000	9	9	4	32	32	Yes
250,001 to 500,000	10	10	4	36	36	Yes
Above 500,000	11-12	11-12	5	40-64	40-64	Yes

Notes: Budget rules based on the number of residents measured at the beginning of the year before the budget year. Electoral rules based on the number of residents enumerated at the latest census (October 9, 2011). The mayor's wage is the baseline gross monthly wage. The deputy mayor's and other cabinet members' wages are expressed as a percentage of the mayor's. The electoral rule can be a single-round first-past-the-post system that guarantees a two-third majority of council seats for the mayor's supporters; or a two-round majoritarian system with a possibility of divided government. Term limits for mayors are reported since 2014; previously the limit was two terms for all municipalities. The enforcement of the Internal Stability Pact is reported for 2013-15; since 2016 the Pact is superseded by a balanced-budget rule for all municipalities. The number of cabinet members is the maximum number a mayor can appoint. The cabinet gender quota is reported since 2014, and represents the minimum number of municipal cabinet members (including the mayor) of either gender, computed under the assumption that the mayor appoints the maximum number of cabinet members; in 2013 a weaker quota of at least one board member of either gender applied to all municipalities. The number of councillors is the number of elected members of the municipal council, not counting the mayor. Council election gender quotas require each list of candidates for the municipal council to include no less than one third of candidates of either gender, and allow each voter to cast two preference votes so long as they are for candidates of different genders within the same list.

9, 2011). Budget rules, including those governing local politicians' wages, depend instead on population measured by the Italian statistical agency—on the basis of administrative records of births, deaths and changes in legal residence—at the beginning of the year before the budget year.[9] Needless to say, the two population measurements are highly correlated. However, a classic regression discontinuity design based on either of them fails to identify the effect of the other, which is only proxied with continuous measurement error (Davezies and Le Barbanchon 2017).[10]

Our forcing variable is population at the beginning of the election year, which determines budget rules for the first budget that elected municipal cabinets are going to enact and for the first full-year salary they are going to receive. Thus, municipal population in our sample is measured no earlier than December 31, 2012. As a result, it never precisely identifies the effects of electorals rules based on thresholds for 2011 census population. Beyond this econometric consideration, it is also reassuring that the 5,000-resident threshold is almost entirely devoid of relevance for electoral rules, as Gagliarducci and Nannicini (2013) already noted.

We mentioned above the two most salient changes in electoral rules: neither of them occurs at the 5,000-resident threshold. First, at 15,000 residents the election of the mayor switches from a first-past-the-post to a two-round electoral system, with an accompanying increase in the proportionality of the electoral rule for the municipal council. Second, since 2014, term limits for mayors are lengthened from two to three consecutive five-year terms for municipalities up to 3,000 residents. Empirical studies of the former threshold have confirmed the theoretical prediction that introducing a runoff election promotes moderation

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[9]The statutory definition of population applicable to electoral rules is provided by DLgs 267/2000, art. 37, cl. 4; the statutory definition applicable to budget rules is provided by DLgs 267/2000, art. 156, cl. 2. Binding interpetations by the Ministry of the Interior and the Court of Audit have consistently determined that the latter definition applies to the compensation of local officials (e.g., Court of Audit deliberation n. 7/SEZAUT/2010/QMIG). Its annual update on the basis of yearly population measurements had already been expressly provided for by DL 8/1993, art. 8-bis.

[10]This key consideration appears to have been overlooked in the literature. Eggers et al. (2018) seem to assume instead that all threshold rules in Italy depend on population at the latest census date. So do all the studies of Italian fiscal rules and politicians' wages cited in their meta-analysis (Gagliarducci and Nannicini 2013; Grembi, Nannicini and Troiano 2016; De Benedetto and De Paola 2017), as well as subsequent ones (Coviello et al. 2019; Gamalerio and Trombetta 2021).

and weakens extremism in municipal politics (Bordignon, Nannicini and Tabellini 2016). It also attracts more educated politicians and induces greater fiscal discipline (Barone and de Blasio 2013). Theory also predicts that tighter term limits should worsen screening and reduce the equilibrium competence of politicians, a prediction borne out by empirical evidence for U.S. governors (Alt, Bueno de Mesquita and Rose 2011).

Several population thresholds also govern the size of the municipal government, raising in lockstep the number of council and cabinet members. Theoretically, their number could affect local public-good provision, although empirical studies have yielded conflicting results. In Bavaria larger councils spend more (Egger and Koethenbuerger 2010); in Finland and Sweden they spend less (Pettersson-Lidbom 2012). The number of local officials in an Italian municipality does not normally change at the 5,000-resident threshold. It did so exceptionally only for municipal governments elected in 2012 and 2013, as a result of austerity measures imposed by the national government. Given the exceptional and temporary nature of this reduction in the number of local elected officials, it does not seem to pose a serious threat to our identification strategy. Accordingly, our results are robust to excluding municipal administrations elected in 2013, which account for only one tenth of our sample.

A greater challenge comes from the differential application of gender quotas in local elections. Since 2013, in municipalities above 5,000 residents each list of candidates for the municipal council must include at least one third of candidates of either gender. Moreover, voters can cast two preferences votes as long as they are for candidates of different genders. In municipalities up to 5,000 residents, instead, candidate lists are unconstrained and voters can cast a single prefefence vote. This rule successfully induced a discontinuous increase in the share of female municipal councillors (Baltrunaite et al. 2020). However, evidence from similar gender-based policies in Spain shows that greater representation of women on municipal councils does not translate into differences in fiscal policy, nor in the likelihood that women reach more powerful political positions (Bagues and Campa 2020). Our evidence below confirms their finding.

In Italy, a separate gender-equality policy applies to municipal cabinets. Since 2013, both genders are required to be represented on each municipal cabinet. Since 2014, in

municipalities above 3,000 residents each gender must be represented by at least 40% of the cabinet, rounding to the nearest integer. Recalling that the number of *assessori* exceptionally changed at the 5,000-resident threshold in 2013, but no longer since 2014, there has never been a jump in gender quotas for municipal cabinets at this threshold.

Municipal cabinets are much more important than municipal councils, especially in smaller municipalities. Thus, differences in the quality of government at the 5,000-resident threshold are most likely driven by higher wages for municipal cabinet members, rather than by greater female representation on the municipal council. Nonetheless, the latter may play a role as well. Gender quotas have the potential to induce the replacement of less qualified male candidates with more qualified female ones, although such a positive outcome does not always materialize (Baltrunaite et al. 2014; Besley et al. 2017; Bagues and Campa 2020).

If the econometric considerations outlined above did not dispel it, this potential compounding effect would not confound the identifying variation we rely upon, but rather strengthen it. Municipalities above the 5,000-resident threshold are exogenously governed by better politicians. This certainly reflects the entry of better cabinet members due to their better pay, as Gagliarducci and Nannicini (2013) found for 1993–2001 and our analysis confirms for 2013–18. It may or may not also reflect the entry of better councillors as qualified women replace mediocre men.[11] Either way, our identification strategy enables us to study whether an exogenous increase in the quality of local politicians causes a change in voter support for a populist anti-establishment party in higher-level elections.[12]

A last potential confound was initially legislated, but eventually never enforced. In theory, L 122/2010 stipulated that all municipalities up to 5,000 residents would have to join an intermunicipal union, which would take over the exercise of the "fundamental functions" of public-good provision statutorily assigned to its constituent municipalities. In pratice, the national government kept deferring the date for this requirement to become binding, until

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[11]Baltrunaite et al. (2020) do not study the effect of gender quotas on the quality of municipal councillors, but only on their gender.

[12]In principle, the 50,000-resident threshold would allow both studying an exogenous increase in the quality of politicians and attributing it with certainty to nothing but an increase in their wages. However, as Gagliarducci and Nannicini (2013) already noted, such a study is infeasible because there are too few municipalities around the 50,000-resident threshold.

in 2019 the Constitutional Court repealed the provision altogether citing the unclear cost-saving benefits that could be expected from its application.[13] In keeping with the widely anticipated nature of this perpetual deferment, our validity tests in Section 4.4 confirm that the 5,000-resident threshold does not have a significant impact on the likelihood of joining a municipal union.

Finally, five regions of Italy—the two islands of Sardinia and Sicily, and the border regions of Friuli-Venezia Giulia, Trentino-Alto Adige and Valle d'Aosta—have special statutes of autonomy that empower them to vary the rules governing local elections and local politicians' wages in their own municipalities. However, actual departures from the default national rules are modest. For the compensation of municipal cabinet members, in particular, Sardinia follows the default rules, as does Sicily since 2015. Valle d'Aosta sets its own pay scales, but these share the default discontinuity at 5,000 residents based on annual population measurement.[14] Exceptionally, Friuli-Venezia Giulia bases its discontinuity at 5,000 residents on population enumerated at the latest census, as did Sicily up to 2014; while Trentino-Alto Adige sets wages individually for each municipality.[15] Accordingly, we use 2011 census population throughout for Friuli-Venezia Giulia, and for municipal administrations elected in Sicily in 2013–14; while we exclude Trentino-Alto Adige from our analysis.

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[13]In 2015, 36.9% of municipalities in Italy were part of one of the existing 524 intermunicipal unions. The evidence shows that intermunicipal unions did not increase efficiency (Manestra, Messina and Peta 2018; Luca and Modrego 2021).

[14]In Valle d'Aosta, wages rise by 38% at the threshold: from €2,200 to €3,030 for the mayor, from €1210 to €1667 for the deputy mayor and from €880 to €1,212 for other cabinet members (LR 4/2015). This threshold rule was introduced before the 2015 elections: the first in our sample, since the region held no municipal elections in 2013 and 2014.

[15]In Friuli-Venezia Giulia wages rise by 15% at the threshold: from €2,283 to €2,626 for the mayor, from €913 to €1,050 for the deputy mayor and from €684 to €788 for other cabinet members (DGR 58/2003, cl. 25; DGR 1193/2011). In Sicily, up to 2014 wages used to rise by 28% at the threshold: from €2,221 to €2,841 for the mayor, from €1,221 to €1,562 for the deputy mayor and from €99 to €1,278 for other cabinet members (DPReg 19/2001); since 2015, the default national rules apply instead (LR 11/2015, art. 2).

3.1   Data on Municipal Government

The Statistical Office of the Ministry of the Interior provides individual-level data on all politicians holding elected office at the municipal level: mayors, other members of the municipal cabinet, and councillors. The dataset contains information about politicians' age, gender, and their self-reported educational attainment and previous occupation. Following Cattaneo et al. (2016), we restrict our analysis to the sample of municipalities with population greater than the previous cutoff and smaller than the following cutoff: i.e., between 3,001 and 10,000 residents. Table 3 presents summary statistics for all municipal cabinets elected from 2013 to 2017 in municipalities within this size class.

The typical municipal cabinet member is a middle-aged man: women account for little more than a third of the sample, while both the median and the average age are 46. Almost half of local politicians have a university (or other post-secondary) degree, confirming positive selection relative to the overall population.

We code politicians' prior occupation along five mutually exclusive categories, on the lines of Gagliarducci and Nannicini (2013). First, we consider politicians who were unemployed, retired, or otherwise out of the labor force before their election: they account for about one sixth of our sample. Half as many were business owners or business leaders (corporate executives and directors). All other occupations we subdivide into skill categories based on the share of college graduates among all office-holders nationwide reporting each occupation.[16] We define high-skill occupations as those with at least 60% college graduates: about one fourth of municipal cabinet members in our sample report such occupations.[17] We define low-skill occupations as those with no more than 20% college graduates: these occupations account for almost one fifth of observations.[18] Other occupations form our omitted category,

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[16]To classify occupations, we use the entire universe of municipal office-holders in Italy, 2013–17. Occupations in the database are not coded according to a standard occupational classification, so we cannot use a wider labor-force sample.

[17]By this definition, the most common high-skill occupations in our sample include architects, engineers, lawyers and other legal professionals, medical doctors and other healthcare professionals, managers, and high-school teachers.

[18]By this definition, the most common low-skill occupations in our sample include craftsmen, factory

Table 3: Municipalities and Municipal Cabinets, 2013–17

	Median	Average	Std. Dev.	Obs.
(a) Politicians' Characteristics				
Age	46	46.2	11.5	11,587
Female	0	0.36	0.48	11,587
University	0	0.46	0.50	11,587
Not Employed	0	0.13	0.34	11,587
Business Owner	0	0.06	0.24	11,587
High-Skill Occupation	0	0.25	0.43	11,587
Low-Skill Occupation	0	0.18	0.38	11,587
(b) Municipal Waste Collection				
Recycled Waste (share)	0.69	0.64	0.18	2,072
Waste per Resident (kg)	436	461	151	1,969
Cost per Resident (€)	125.3	139.1	64.9	1,969
Unit Cost (¢/kg)	28.3	30.8	10.2	1,969
(c) Other Municipal Characteristics				
Joblessness Rate	0.24	0.27	0.09	2,225
Immigrant Inflow (per thousand)	0.99	1.17	3.08	2,218
MP Corruption News	0.15	0.16	0.04	2,216
Intermunicipal Union	0	0.36	0.48	2,223

Notes: Data for municipal administrations elected from 2013 to 2017 in municipalities with 3,001 to 10,000 residents. Trentino-Alto Adige is excluded. Panel (a) reports characteristics of all municipal cabinet members, including mayors. Data are from the Statistical Office of the Ministry of the Interior. *Age* is measured at the beginning of each mandate (in years). All other variables are dummies. *University* measures if a politician obtained a college or other post-secondary degree. *Not Employed* includes unemployed, retired, or otherwise out of the labor force. *Business Owner* includes corporate directors and executives as well as business owners. *High-Skill Occupation* includes all other occupations with at least 60% college graduates among all municipal office holders in Italy, 2013–17, reporting them. *Low-Skill Occupation* includes all other occupations with no more than 20% college graduates among all municipal office holders in Italy, 2013–17, reporting them. Panel (b) reports data on municipal waste collection. Data are from the Cadaster of Municipal Waste administered by the Italian Institute for Environmental Protection and Research. All variables are averages over a mayoral term excluding election years. *Recycled Waste* is the ratio between recycled waste and total waste collected. *Waste per Resident* is the total amount of municipal waste collected, whether recycled or not. Costs refer to the total including capital costs as well as operating costs for recycling, for disposing non-recycled waste, and for managing overall waste collection. Panel (c) reports additional characteristics of each municipality. The *Joblessness Rate* is measured at the province level in the 2011 census. It is computed as one minus the ratio of employed to total population. *Immigrant Inflow* is the 2013–17 average net annual inflow of foreign immigrants into the municipality, reported as a share of census population. *MP Corruption News* is constructed for each House constituency by searching the "Justice" section of the online archive of Italy's main newspaper (*Corriere della Sera*) for the years 2012–18. The measure equals the share of articles mentioning an MP that also contain the keywords "investigated" (*indagato*) or "notice of investigation" (*avviso di garanzia*). It is averaged across MPs in the constituency, weighted by the total number of articles mentioning each. *Intermunicipal Union* is a binary variable denoting membership in such a union, which takes over responsibility for performing the statutory "fundamental functions" of its constituent municipalities.

comprising over a third of our sample.

Beyond the individual characteristics of municipal cabinet members, we measure the efficiency of municipal governments through their performance at waste management. Waste collection and disposal is one of the "fundamental functions" entrusted to Italian municipalities. It is the only one for which systematic performance measurement is available, through the Cadaster of Municipal Waste administered by the Institute for Environmental Protection and Research (ISPRA).

Italian law mandates such measurement to assess the effectiveness and efficiency of local compliance with national environmental goals.[19] The Cadaster includes cost measures from the official reporting of the institutions entrusted with municipal waste collection—whether the municipalities themselves, special-purpose associations of municipalities, or other waste-management contractors. It also provides quantity measurements collected at the municipal level by provincial and regional environmental protection agencies. Among the latter, we focus on a key performance indicator: the share of total municipal waste that is separately collected and sent to recycling facilities.[20]

Increasing the share of recycling has become a prominent policy goal on a global scale, reflecting the growing political importance of environmental concerns (Kinnaman 2006). While the average share of recycled waste in our sample is around two thirds, there is substantial heterogeneity, with a range from 0.5% (in Zapponetta, Apulia) to 93% (in Arcade, Veneto). Such variation reflects cross-municipality differences in both the design and the implementation of waste-management plans, and correlates negatively with local institutional quality more broadly (D'Amato, Mazzanti and Montini 2013; Agovino, Ferrara and Garofalo 2016; Agovino et al. 2020).

Finally, in our validity tests we check that the effect of the 5,000-resident threshold is robust to controlling for several local characteristics that plausibly affect demand for

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workers, shopkeepers, policemen and security guards, nurses, and salesemen.

[19]Despite this legal mandate, roughly 10% of Cadaster data for municipalities in our sample are missing.

[20]Our efficiency measures are averages of annual values over each mayor's term, up to the end of our sample in 2018. Following Gagliarducci and Nannicini (2013), we exclude election years because different administrations are responsible for the months before and after an election.

populism in each municipality. As a proxy for economic activity and specifically the health of the local labor market, we construct the joblessnes rate as one minus the ratio of the employed population to total population at the province level (the finest available), using data from the 2011 census. We measure exposure to immigrants by the 2013–17 average of their net annual inflows, relative to census population.[21] Furthermore, we construct a measure of corruption scandals engulfing local representatives to the national parliament by web-scraping the historical archive of Italy's leading national newspaper, the *Corriere della Sera*.

For each representative sitting in the House (*Camera dei deputati*) in the 2008–13 or 2013–18 legislatures, we count the number of newspaper articles from 2012 to 2018 that mention the MP's name, and the share of those articles that also contain two keywords denoting coverage of political corruption scandals: the term "investigated" (*indagato*) and the expression "notice of investigation" (*avviso di garanzia*), a formal notice that must be served to the subjects of a criminal investigation under Italian law. To minimize the occurrence of false positives, we restrict our searches to the "Justice" subsection of the newspaper archive. Our measure of political corruption scandals for each of the 28 multi-member House constituencies is then the average across all representatives from the constituency of the share of articles including the corruption keywords, weighted by the total number of articles to account for the differential visibility and thereby salience of different MPs from the same constituency.[22]

3.2 ELECTION DATA

Italians vote in elections at four levels of government: the municipality, the region, the national legislature and the European Parliament.[23] Ordinarily, elections at each level are

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[21] For municipalities created since 2013, the average is restricted to years after their creation. Since we need to observe immigrant stocks at the end of at least two consecutive years, the measure is missing for 7 municipalities created in 2017.

[22] Our measure is missing for nine municipalities because our searches find no articles mentioning MPs from Valle d'Aosta, either with or without our corruption keywords.

[23] Elections for a fifth level of government, the province, were held until 2011. Since then, the provincial council has instead been elected indirectly by mayors and municipal councillors.

held every five years, typically in late spring, with a staggered electoral calendar. We consider the 2014–18 electoral cycle.[24]

The electoral system for regional elections bears close resemblance to the one for municipal elections. The regional president is directly elected with a single-round first-past-the-post system, and appoints members of the regional cabinet.[25] Regional councils are elected simultaneously, with an adjusted system of proportional representation. Deviations from pure proportionality differ across regions, but all adjustments share the goal of ensuring that the regional president is supported by an absolute majority of regional councillors. Most councillors are elected on open party lists, with a ranking determined by preference votes.

National elections were held in 2018, at the end of a full five-year legislature. While presidential systems have been adopted for sub-national elections, the national government operates under a pure parliamentary system. Voters elect separately the two chambers of the legislature: the House, with 630 representatives; and the Senate, with 315 senators plus a small number of life senators appointed by the President of the Republic—currently six and historically never more than eleven.

In 2018, the electoral system was a peculiar mixture of closed-list proportional representation with a first-past-the-post add-on. For each chamber, voters cast a single ballot for a party list, but their vote had two functions. First, it determined the allocation of slightly more than 60% of the seats by party-list proportional representation—with several electoral thresholds, and with electoral districts that always coincide with the regions for electing the Senate, but for electing the House split five larger regions into two and Lombardy alone into four. Second, it also determined the election of slightly less than 40% of MPs in single-member first-past-the-post constituencies, based not on party lists, but rather on coalitions of several party lists fielding a single candidate. The system was designed to accommodate and promote the pre-electoral formation of two rival coalitions of left-wing and right-wing

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[24]During this five-year period, regional elections were held once each in every region except Basilicata, which should have voted in 2015 but called snap elections at the end of 2013 instead and thus returned to the regular election calendar in spring 2019. Our sample also excludes regional elections in Sardinia (2014) because the M5S did not contest them, and in Valle d'Aosta (2018) because ballots were centrally collected before being counted, making municipal results unavailable.

[25]In theory, the electoral system for Tuscany envisions a runoff election if no candidate achieves more than 40% of first-round votes. In practice, this has never occurred.

parties. However, both the M5S and a minor left-wing party ran alone outside of those two coalitions.

Elections to the European Parliament were held in 2014, under an open-list system of proportional representation with a 4% electoral threshold. Italy was allocated 73 out of 751 seats, and its electoral districts coincided with the five NUTS-1 statistical groups of regions.

Table 4 presents descriptive statistics for all these elections, based on official data from the Historical Election Archive of the Ministry of the Interior and complementary regional sources.[26] To avoid duplication, for national elections we consider only House ballots; and for regional elections we consider only party-list votes for the regional council.

We study election results in 2014–18 for municipalities whose mayor had been elected between 2013 and 2017 with a population between 3,001 and 10,000 residents. We also require mayors to have been elected no later than in the year preceding the higher-level election under consideration, so voters have had some experience of their adminstration. As a result, our election sample is smallest in 2014, when we consider only municipalities that had elected their mayor in 2013 (one tenth of the total). It is largest for the 2018 national election.[27]

Between 2014 and 2018, average turnout for municipalities in our sample ranges from 49% for European elections to 75% for national elections. These differences in turnout reflect long-standing variation across different levels of elections, rather than fluctuations over time. In each case, turnout is quite similar in the election we consider and the previous election for the same level of government. It is also close to the national average of 73% for the 2018 national election and 57% for the 2014 European election.

On the other hand, the average vote share of the M5S shows an upward trajectory over the period. In our sample, it starts at 21% in the 2014 European election and reaches its peak of 31% in the 2018 national election. These results mirror almost exactly its national

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[26]The results of the 2014 regional election in Abruzzo are missing (miscoded as zero) for two municipalities: Civitella del Tronto (TE) and San Benedetto dei Marsi (AQ).

[27]Nonetheless, national election results are not included for all municipalities in our sample. Eight municipalities disappeared before 2018 as a result of municipal mergers. Two held a second municipal election after their population moved out of our range. One elected in 2017 a mayor who resigned shortly thereafter.

Table 4: Election Data, 2014–18

	Median	Average	Std. Dev.	Obs.
(a) Regional Elections				
M5S	0.16	0.16	0.07	1,302
Mainstream Right	0.51	0.49	0.14	1,302
Mainstream Left	0.26	0.30	0.13	1,302
Non-M5S Fringe	0.03	0.05	0.05	1,302
Incumbent Parties	0.50	0.47	0.14	1,302
Mainstream Opposition	0.27	0.31	0.14	1,302
Non-M5S Opposition	0.32	0.36	0.14	1,302
Turnout	0.63	0.62	0.15	1,302
(b) 2018 National Election				
M5S	0.27	0.31	0.11	2,225
Mainstream Right	0.42	0.42	0.11	2,225
Mainstream Left	0.20	0.20	0.06	2,225
Non-M5S Fringe	0.06	0.06	0.02	2,225
Non-M5S Opposition	0.49	0.49	0.10	2,225
Turnout	0.77	0.75	0.06	2,225
(c) 2014 European Election				
M5S	0.20	0.21	0.06	226
Mainstream Right	0.28	0.29	0.09	226
Mainstream Left	0.39	039	0.08	226
Non-M5S Fringe	0.09	0.11	0.06	226
Turnout	0.49	0.49	0.11	226

Notes: Data for elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives. The *Mainstream Right* consists of Forza Italia, the Northern League, the Brothers of Italy and their minor coalition partners. The *Mainstream Left* consists of the Democratic Party and its minor coalition partners. The *Non-M5S Fringe* is the remainder. *Incumbent Parties* are those in the outgoing government coalition. At the regional level it always coincides with one of the mainstream coalitions. At the national level it coincides with the *Mainstream Left*. At the European level it is undefined. The *Mainstream Opposition* is the other mainstream coalition. The *Non-M5S Opposition* is the sum of the *Mainstream Opposition* and *Non-M5S Fringe*.

average vote shares in the same elections, respectively 21% and 32%.

We aggregate the vote shares of other parties according to the stable two-coalition land-scape discussed in Section 2. Accordingly, we classify as the mainstream right Forza Italia, the Northern League, the Brothers of Italy and their minor coalition partners. We classify as the mainstream left the Democratic Party and its minor coalition partners. The remainder is the non-M5S fringe, which typically consists of ideologically extreme parties. One of the two mainstream coalitions contests each election as the incumbent: in the 2018 national election, the mainstream left. Accordingly, we classify the rival coalition as the mainstream opposition. Finally, we define the non-M5S opposition as the sum of the mainstream opposition and the non-M5S fringe.[28]

Throughout our period of interest, the mainstream right reaped much greater electoral success than the mainstream left, essentially doubling the latter's vote share. In keeping with the pattern of perfect turnover discussed in Section 2, this also implies that incumbent parties performed poorly in the 2018 national election, just as they always had since 1993. However, incumbents were much less disadvantaged at the regional level, where they typically retained at least a plurality and often even an outright majority of the vote.

3.3   Identifying the Effect of the Threshold

In our regression discontinuity (RD) model, we estimate the average impact on electoral support for the M5S of a greater quality of municipal government, induced by higher wages for the mayor and municipal cabinet above the 5,000-resident threshold. This local average treatment effect (LATE) is given by the difference in the counterfactual outcomes $Y_i(T_i)$ computed at the threshold:

$$\tau = \mathbb{E}\left[Y_i(1) - Y_i(0) \,|\, X_i = \underline{x}\right], \tag{1}$$

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[28]In the 2018 national election, the mainstream right includes the Union of the Center. The mainstream left includes More Europe, Italy and Europe Together, and the People's Civic List. The non-M5S fringe includes three extreme left parties (Free and Equal, Power to the People!, and the Communist Party) and three extreme right parties (the House of [Ezra] Pound, the Family [Values] People, and Italy for Italians).

where the treatment assignment $T_i = \mathbf{1}(X_i \geq \underline{x})$ is based on municipal population X_i and the 5,000-resident threshold $\underline{x}$. The identification of this sharp RD treatment effect relies on the assumption that the conditional expectation functions $\mathbb{E}[Y_i(t)|X_i = x]$ for $t \in \{0, 1\}$ are continuous at the threshold (Hahn, Todd and van der Klaauw 2001).

Calonico et al. (2019) provide further conditions for nonparametric identification of the RD treatment effect with additional control variables (such as fixed effects) included in a vector $\mathbf{Z}_i$. We follow their approach, assuming additive separability between the running variable (i.e., population) and these covariates, and a linear specification for the latter but a fully nonparametric specification for the former.[29] Then the covariate-adjusted RD treatment effect estimator is consistent so long as there is no RD treatment effect on the covariates.[30] It is obtained through a weighted local linear regression of the form:

$$\hat{\tau} : \hat{Y}_i = \hat{\alpha} + T_i\hat{\tau} + X_i\hat{\beta}_- + T_iX_i\hat{\beta}_+ + \mathbf{Z}_i'\hat{\boldsymbol{\gamma}}. \tag{2}$$

The regression is local because it exploits only observations in a neighborhood of the threshold, i.e., with $X_i \in [\underline{x} - h, \underline{x} + h]$. We select the optimal bandwith h through the data-driven procedure of mean square error optimization. The weighting of observations is determined by the choice of kernel $K((X_i - \underline{x})/h)$. We adopt a triangular kernel function, which downweights observations linearly as a function of their distance from the threshold. While we have written Equation 2 linearly for simplicity, this approach can be used for a local polynomial estimator of arbitrary order. Without covariates, for instance, $\hat{\tau}$ estimates the RD treatment effect as the difference in the limit values at the threshold of two local polynomial fits, with identical bandwidth and kernel: one for observations below the threshold, and one for observations above the threshold.

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[29] This approach to RD covariate adjustment assumes linearity in parameters for the covariates, but otherwise allows for flexible transformations of the original covariates and admits regressors of all kinds, including discrete variables.

[30] This assumption is weaker than requiring $\mathbf{Z}_i(0)$ and $\mathbf{Z}_i(1)$ to have identical marginal distributions at the threshold, which is the usual assumption of predetermined covariates in an experimental setting.

Table 5: Local Politicians' Selection

	Age	Female	University	Not Employed	Business Owner	High-Skill Occupation	Low-Skill Occupation
Effect	-0.510	-0.026	0.055**	-0.024	0.011	0.032	-0.045**
	(0.650)	(0.015)	(0.023)	(0.021)	(0.012)	(0.023)	(0.019)
Robust p–value	.690	.160	.026	.160	.330	.280	.017
Total Obs.	11,314	11,314	11,314	11,314	11,314	11,314	11,314
Bandwidth	438	768	625	389	528	764	676
Effective Obs.	1,871	3,054	2,531	1,672	2,194	3,029	2,724
Region FE	No	No	No	No	No	No	No
Clustering	Munic.	Munic.	Munic.	Munic.	Munic.	Munic.	Munic.
Effect	-0.590	-0.039***	0.062***	-0.034*	0.019	0.029*	-0.039**
	(0.510)	(0.015)	(0.020)	(0.020)	(0.012)	(0.019)	(0.017)
Robust p–value	.430	.007	.003	.017	.130	.073	.017
Total Obs.	11,314	11,314	11,314	11,314	11,314	11,314	11,314
Bandwidth	439	442	523	382	430	646	612
Effective Obs.	1,871	1,886	2,177	1,633	1,853	2,613	2,511
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Region	Region	Region	Region	Region	Region	Region

Notes: Effect of the wage increase at the 5,000-resident threshold on the characteristics of all municipal cabinet members, including mayors. Data from the Statistical Office of the Ministry of the Interior for municipal administrations elected from 2013 to 2017 in municipalities with 3,001 to 10,000 residents. Trentino-Alto Adige is excluded. *Age* is measured at the beginning of each mandate (in years). All other variables are dummies. *University* measures if a politician obtained a college or other post-secondary degree. *Not Employed* includes unemployed, retired, or otherwise out of the labor force. *Business Owner* includes corporate directors and executives as well as business owners. *High-Skill Occupation* includes all other occupations with at least 60% college graduates among all municipal office holders in Italy, 2013–17, reporting them. *Low-Skill Occupation* includes all other occupations with no more than 20% college graduates among all municipal office holders in Italy, 2013–17, reporting them. All regression include fixed effects for a politician's position (mayor, deputy mayor, or other cabinet member). Covariate-adjusted local linear RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization. Robust standard errors corrected for clustering (in parentheses) and robust p-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

4 Results

4.1 Exogenous Changes in Municipal Government Quality

We begin our empirical analysis by confirming the exogenous change in the quality of municipal government identified by Gagliarducci and Nannicini (2013). The discontinuous increase in wages at the 5,000-resident threshold induces the entry of more qualified local politicians, which in turn induces better local government performance. Table 5 presents our RD estimates of these effects for municipalities between 3,001 and 10,000 residents that elected their municipal administration between 2013 and 2017.

The results in Table 5 are consistent with Gagliarducci and Nannicini's (2013) findings for an earlier period. Column 3 shows the significant effect of an exogenous wage increase on education levels in the municipal cabinet. The threshold increases the share of local politicians with a post-secondary education by 6 percentage points, reflecting positive selection in response to heightened pecuniary incentives.

The same heightened selection is reflected by differences in prior occupations. Better-paid municipal cabinet members are significantly less likely to come from low-skill occupations. They also appear more likely to come from high-skill occupations and less likely to be non-employed, though both effects are less precisely estimated.

Instead, the threshold has no discernible impact on mayors' average age. Moreover, in Italian as in Spanish municipalities (Bagues and Campa 2020), gender quotas for municipal councils have no spillover effect on the municipal cabinet. The share of women among its members does not jump up at the 5,000-resident threshold. On the contrary, it appears to jump down. This finding mirrors those for education and occupation. Higher wages attract candidates with higher outside earnings. Just as the skill premium implies these are the more skilled candidates, so does the gender wage gap imply they are more likely to be men than women.

Table 6 turns from proxies for the quality of local politicians to a direct measure of the efficiency of their administration. Our results confirm Gagliarducci and Nannicini's (2013) finding that more qualified local politicians cause better municipal government performance. In particular, the share of recycled waste jumps up by 4 percentage points, a magnitude that is economically as well as statistically significant. Confirming that this jump represents an efficiency gain, the threshold has no significant effect on the cost of municipal waste collection, either relative to population or relative to the amount of waste collected. In fact, the point estimates are not only insignificant but also consistently negative. Nor does waste per capita exhibit any discontinuity, as we would naturally expect since the amount of waste produced depends on residents more than on municipal administrators.

Table 6: Local Government Efficiency

	Recycled Waste (share)	Waste per Resident (kg)	Cost per Resident (€)	Unit Cost (¢/kg)
Effect	0.041	-26.0	-9.84	-0.92
	(0.036)	(20.0)	(9.47)	(2.14)
Robust p–value	.250	.180	.220	.500
Total Obs.	2,072	1,968	1,968	1,968
Bandwidth	619	772	676	772
Effective Obs.	464	523	463	523
Region FE	No	No	No	No
Clustering	Munic.	Munic.	Munic.	Munic.
Effect	0.044**	-9.8	-5.93	-0.46
	(0.020)	(18.0)	(6.36)	(0.99)
Robust p–value	.038	.420	.310	.670
Total Obs.	2,072	1,968	1,968	1,968
Bandwidth	596	568	555	707
Effective Obs.	456	397	386	480
Region FE	Yes	Yes	Yes	Yes
Clustering	Region	Region	Region	Region

Notes: Effect of the wage increase at the 5,000-resident threshold on the efficiency of municipal waste collection. Data are from the Cadaster of Municipal Waste administered by the Italian Institute for Environmental Protection and Research, for municipal administrations elected from 2013 to 2017 in municipalities with 3,001 to 10,000 residents. Trentino-Alto Adige is excluded. All variables are averages over a mayoral term excluding election years. *Recycled Waste* is the ratio between recycled waste and total waste collected. *Waste per Resident* is the total amount of municipal waste collected, whether recycled or not. Costs refer to the total including capital costs as well as operating costs for recycling, for disposing non-recycled waste, and for managing overall waste collection. Covariate-adjusted local linear RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization. Robust standard errors corrected for clustering (in parentheses) and robust p-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

4.2 Effect of Municipal Government Quality on Populism

Having confirmed that the skill and effectiveness of municipal politicians rise exogenously at the 5,000-resident threshold, we proceed to study our main outcome of interest: the effect of such an exogenous change in the quality of local politicians on voter support for the populist M5S in higher-level elections. Table 7 presents our RD estimates of these effects for regional, national and European elections held between 2014 and 2018 in municipalities whose mayor had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration.

Pooling all elections, the effects of a higher-quality municipal cabinet on voter support for the M5S are statistically significant and quantitatively sizeable. The vote share for the anti-establishment populist party falls by 2 to 3 percentage points at the 5,000-resident threshold. This finding is robust to increasing the order of the local polynomial fit (Columns 2 and 4). It remains highly significant—if anything, more precisely estimated—when we include region as well as year fixed effects (Columns 3 and 4). Analyzing each election separately, our point estimates show a quantitatively analogous effect at every level. However, our estimates are more precise for regional than national elections, which might suggest a tighter connection between the quality of municipal politicians and voter choices at the next most local electoral level.[31] Figure 1 illustrates these RD effects.

Combining our RD estimates of the effects of the 5,000-resident threshold on municipal governance (Table 5) and on election outcomes (Table 7), we can gauge approximately how much voter support for populism reacts to local government quality. The threshold causes an increase in the share of municipal cabinet members with a college degree by about 6 percentage points (0.12 standard deviations), which in turn leads to an increase in the municipal share of recycled waste by about 4 percentage points (0.22σ). Voters' experience of better governance then translates into a decrease in the M5S vote share by about 2 percentage points (0.2σ) across all elections. A linear approximation in standardized terms

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[31]We do not report separate results for the 2014 European elections. In that case, our sample would shrink by 90%, since we would be considering only municipalities that held local elections in 2013. Such a small sample lacks the power to estimate the effect of the threshold.

Table 7: Voter Support for Populism

|	**M5S Vote Share**				**Turnout**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Regional, National and European Elections, 2014–18						
Effect	-0.032**	-0.036**	-0.017**	-0.019**	0.001	0.006
	(0.015)	(0.016)	(0.006)	(0.008)	(0.009)	(0.007)
Robust *p*-value	.024	.030	.014	.047	.870	.510
Total Obs.	3,753	3,753	3,753	3,753	3,753	3,753
Bandwidth	528	888	562	852	881	677
Effective Obs.	716	1,186	759	1,152	1,179	899
Regional Elections, 2014–18						
Effect	-0.037**	-0.044**	-0.043**	-0.049*	0.008	0.018
	(0.019)	(0.021)	(0.022)	(0.027)	(0.022)	(0.015)
Robust *p*-value	.044	.042	.050	.070	.720	.240
Total Obs.	1,302	1,302	1,302	1,302	1,302	1,302
Bandwidth	604	897	308	537	729	848
Effective Obs.	284	414	142	251	332	397
2018 National Elections						
Effect	-0.021	-0.032	-0.020**	-0.019	0.000	-0.004
	(0.019)	(0.026)	(0.008)	(0.011)	(0.011)	(0.006)
Robust *p*-value	.210	.320	.030	.130	.830	.440
Total Obs.	2,225	2,225	2,225	2,225	2,225	2,225
Bandwidth	695	793	789	1,01	650	487
Effective Obs.	545	625	622	785	514	392
Polynomial Order	1	2	1	2	1	1
Region FE	No	No	Yes	Yes	No	Yes
Clustering	Munic.	Munic.	Region	Region	Munic.	Region

Notes: Effect of a higher quality of municipal government, induced by the wage increase at the 5,000-resident threshold, on municipality-level electoral outcomes. Data for elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives. All regression include year fixed effects. Covariate-adjusted local polynomial RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization. Robust standard errors corrected for clustering (in parentheses) and robust *p*-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

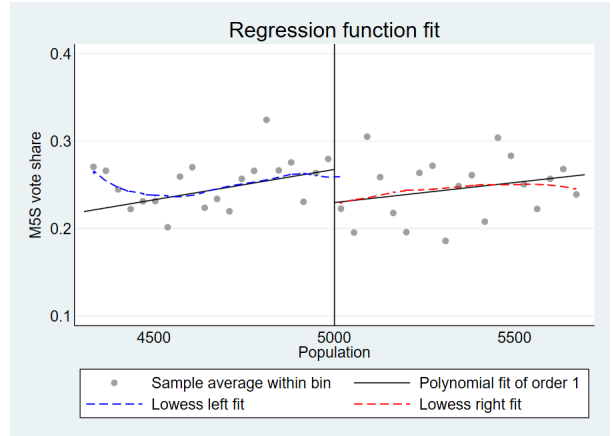Figure 1: Support for the M5S around the 5,000-Resident Threshold

(a) Regional, National and European Elections, 2014–18
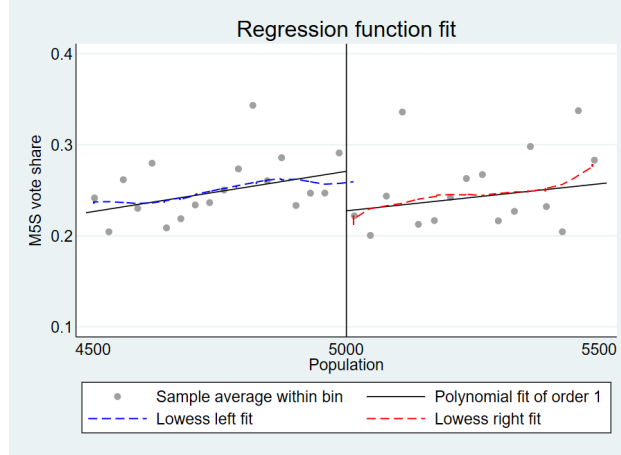
(b) Regional Elections, 2014–18
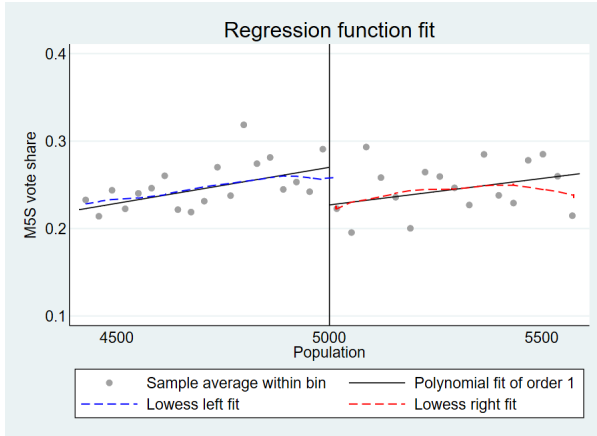
(c) 2018 National Elections

Notes: The figure shows binned scatterplots of the vote share of the M5S as a function of municipal population. Each point is the average observed value across municipalities in the corresponding bin. Local linear regression lines with optimal symmetric bandwidth. Data for regional, national and European elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives.

thus suggests that raising the quality of local government by one standard deviation would reduce voter support for the populist M5S by 10 to 15 percentage points.

Columns 5 and 6 of Table 7 investigate if the quality of local politicians also has an effect on turnout in higher-level elections. Disappointment with the political class might keep voters away from the polls. However, we find no discernible impact on turnout. This negative result is precisely consistent with Campante, Durante and Sobbrio's (2018) findings. Their empirical analysis of internet penetration shows that disaffected voters in Italy used to abstain at the beginning of the twenty-first century, but then switched to supporting the M5S after it had emerged as a populist anti-establishment option.

4.3 Effects on Other Political Parties

Table 7 and Figure 1 established that a plausibly exogenous increase in the quality of municipal government reduces support for the M5S in higher-level elections. A natural follow-up question is whether it also has a systematic effect on voter support for specific other parties. Does experiencing worse local government drive voters to cast protest votes for all fringe parties? Does it promote an anti-incumbency bias?

To answer these questions, Table 8 presents RD estimates of the effects of the 5,000-resident threshold on voter support for incumbents and for opposition parties other than the M5S. We omit the 2014 European elections, since the concept of incumbency is not clearly defined in the European Parliament. Instead, every regional election from 2014 to 2018 as well as the 2018 national election was contested by one of the main coalitions as the outgoing incumbent government. The center-left coalition was the incumbent at the national level and in ten regions in our sample (Emilia-Romagna, Friuli-Venezia Giulia, Lazio, Liguria, Marche, Molise, Puglia, Sicilia, Toscana, Umbria); the center-right coalition in the other six regions (Abruzzo, Calabria, Campania, Lombardia, Piemonte, Veneto).[32] We consider two different

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[32] The center-left coalition was also the incumbent in Basilicata, which did not hold elections in 2014–18, and in the autonomous provinces of Bolzano/Bozen and Trento, which lack a 5,000-resident threshold for politicians' compensation. The center-right coalition was also the incumbent in Sardinia, whose 2014 election the M5S did not contest, and Valle d'Aosta, which did not compute municipal vote tallies for the 2018 regional election.

definitions of the opposition: the rival mainstream coalition alone (Columns 3-4), or more broadly all the parties other than the M5S that do not belong to the incumbent coalition (Columns 5-6).

The decline in support for the M5S at the threhsold corresponds precisely to an increase in support for incumbent parties. This result is consistent with existing findings from developing countries, where official corruption and a lack of government accountability translate into an anti-incumbency bias (Klašnja 2015; Klašnja and Titiunik 2018). Likewise, we find that in Italy poor performance of the municipal government causes an anti-incumbency bias at higher levels, at least in relative terms.

On the other hand, Table 8 finds no evidence of changes in support for opposition parties other than the M5S. The anti-incumbency effect thus seems linked specifically to the rise of a populist anti-establishment party, and not to a general preference for political turnover.

We proceed to study in Table 9 whether there is any discontinuous pattern in voter support by party ideology. First, we distinguish the two mainstream coalition as left and right, rather than incumbent and challenger. Second, we separate out as a residual block the non-mainstream opposition parties other than the M5S, which tend to be ideologically extreme.

Arguably the most interesting finding is that there is no RD effect on support for fringe parties. The quality of municipal politicians drives support for the populist, anti-establishment M5S, but does not appear to drive a broader protest vote for anyone but the two mainstream coalitions. Nor does there seem to be a robust effect on support for either coalition. The RD estimates show a significant increase at the threshold of support for the center-right in regional elections. Yet this effect is completely absent in national elections, and disappears in the pooled sample. It is likely to capture no more than the effect of incumbency. While the center-left was the incumbent in a majority of regions, the center-right held the top five regions by number of municipalities: this group alone accounts for more than half of all municipalities in Italy.

All in all, our results indicate that a lower quality of local government causes an anti-incumbency bias and drives voters towards anti-establishment populism, but does not affect

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Table 8: Voter Support by Incumbency Status

Vote Shares:	Incumbent Parties		Mainstream Opposition		Non-M5S Opposition	
	(1)	(2)	(3)	(4)	(5)	(6)

Regional and National Elections, 2014–18

Effect	.010	.027***	.016	-.014	.020	-.010
	(.011)	(.006)	(.016)	(.009)	(.017)	(.010)
Robust *p*-value	.330	.000	.300	.150	.230	.390
Total Obs.	3,527	3,527	3,527	3,527	3,527	3,527
Bandwidth	616	576	574	535	582	560
Effective Obs.	779	739	738	682	744	711

Regional Elections, 2014–18

Effect	.009	.053***	.010	-.028	.017	-.031
	(.028)	(.015)	(.032)	(.020)	(.032)	(.022)
Robust *p*-value	.630	.000	.840	.180	.660	.180
Total Obs.	1,302	1,302	1,302	1,302	1,302	1,302
Bandwidth	907	438	661	465	763	527
Effective Obs.	416	206	301	216	347	245

2018 National Elections

Effect	.005	.015	.018	-.001	.020	.005
	(.011)	(.009)	(.023)	(.009)	(.022)	(.009)
Robust *p*-value	.650	.150	.360	.930	.300	.510
Total Obs.	2,225	2,225	2,225	2,205	2,225	2,225
Bandwidth	635	467	591	531	582	535
Effective Obs.	501	383	481	430	472	432
Region FE	No	Yes	No	Yes	No	Yes
Clustering	Munic.	Region	Munic.	Region	Munic.	Region

Notes: Effect of a higher quality of municipal government, induced by the wage increase at the 5,000-resident threshold, on municipality-level electoral outcomes. Data for elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives. *Incumbent Parties* are those in the outgoing government coalition: the center-left coalition nationally and in ten regions (Emilia-Romagna, Friuli-Venezia Giulia, Lazio, Liguria, Marche, Molise, Puglia, Sicilia, Toscana, Umbria); the center-right coalition in the other six regions (Abruzzo, Calabria, Campania, Lombardia, Piemonte, Veneto). The *Mainstream Opposition* is the other mainstream coalition alone. The *Non-M5S Opposition* includes all parties outside the outgoing government coalition, except the M5S. All regression include year fixed effects. Covariate-adjusted local polynomial RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization. Robust standard errors corrected for clustering (in parentheses) and robust *p*-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9: Voter Support by Party Ideology

Vote Shares:	Mainstream Right		Mainstream Left		Non-M5S Fringe	
	(1)	(2)	(3)	(4)	(5)	(6)
Regional, National and European Elections, 2014–18						
Effect	0.037*	0.016	-0.015	-0.002	0.005	0.006
	(0.023)	(0.011)	(0.013)	(0.010)	(0.005)	(0.005)
Robust *p*-value	.086	.100	.270	.750	.280	.280
Total Obs.	3,753	3,753	3,753	3,753	3,753	3,753
Bandwidth	566	392	782	418	597	571
Effective Obs.	766	538	1,034	575	816	771
Regional Elections, 2014–18						
Effect	0.072*	0.051**	-0.044	-0.020	0.008	-0.005
	(0.037)	(0.028)	(0.031)	(0.016)	(0.012)	(0.011)
Robust *p*-value	.056	.059	.170	.150	.500	.570
Total Obs.	1,302	1,302	1,302	1,302	1,302	1,302
Bandwidth	642	391	735	488	634	888
Effective Obs.	292	180	333	225	287	412
2018 National Elections						
Effect	0.018	-0.001	0.005	0.015	-0.000	0.006
	(0.023)	(0.009)	(0.011)	(0.009)	(0.005)	(0.004)
Robust *p*-value	.360	.930	.650	.150	.950	.140
Total Obs.	2,225	2,225	2,225	2,225	2,225	2,225
Bandwidth	591	531	635	467	731	559
Effective Obs.	481	430	501	383	571	450
Region FE	No	Yes	No	Yes	No	Yes
Clustering	Munic.	Region	Munic.	Region	Munic.	Region

Notes: Effect of a higher quality of municipal government, induced by the wage increase at the 5,000-resident threshold, on municipality-level electoral outcomes. Data for elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives. The *Mainstream Right* consists of Forza Italia, the Northern League, the Brothers of Italy and their minor coalition partners. The *Mainstream Left* consists of the Democratic Party and its minor coalition partners. The *Non-M5S Fringe* is the remainder. All regression include year fixed effects. Covariate-adjusted local linear RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization. Robust standard errors corrected for clustering (in parentheses) and robust *p*-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

their ideological alignment on a left-right scale. This pattern is consistent with a broadly rational reaction by voters who are disappointed by the political establishment on a valence dimension rather than an ideological one.

4.4 VALIDITY TESTS

Our estimates of RD treatment effects rely crucially on two testable identifying assumptions. First, the distribution of municipal population needs to be balanced around the 5,000-resident threshold. Second, municipalities around the threshold should be similar in observables, other than because of the effect of the higher compensation, and thus higher competence and efficiency, of their municipal administration. This section tests formally the validity of both assumptions.

Continuity of the running variable around the threshold is the key identifying assumption for the RD treatment effect estimator. This assumption is particularly delicate in the context of political institutions, where office-holders may have both the incentives and the power to manipulate the variable and obtain their preferred treatment status (Eggers et al. 2018). We assess the threat of such manipulative sorting in Figure 2, which plots the histogram of municipal population and a McCrary (2008) test of discontinuity in density, implemented by local polynomial density estimation methods (Cattaneo, Jansson and Ma 2020). The test confirms that municipal cabinets were unable or unwilling to manipulate resident population in their municipality in order to sort around the 5,000-resident threshold—the same negative result Gagliarducci and Nannicini (2013) found for legal population.

Further evidence against manipulation comes from covariate balance around the threshold. Table 10 and Figure 3 present the results of such balance tests. We focus on three covariates that can capture other drivers of populist voting: weakness of the local labor market; arrivals of immigrants in the municipality; and corruption scandals concerning the local MPs. In addition, we test that there is no discontinuity at the threshold in the likelihood that municipalities join an intermunicipal union to pool public-service provision, despite frus-

Figure 2: Municipal Population around the 5,000-Resident Threshold

(a) Histogram   (b) McCrary Test
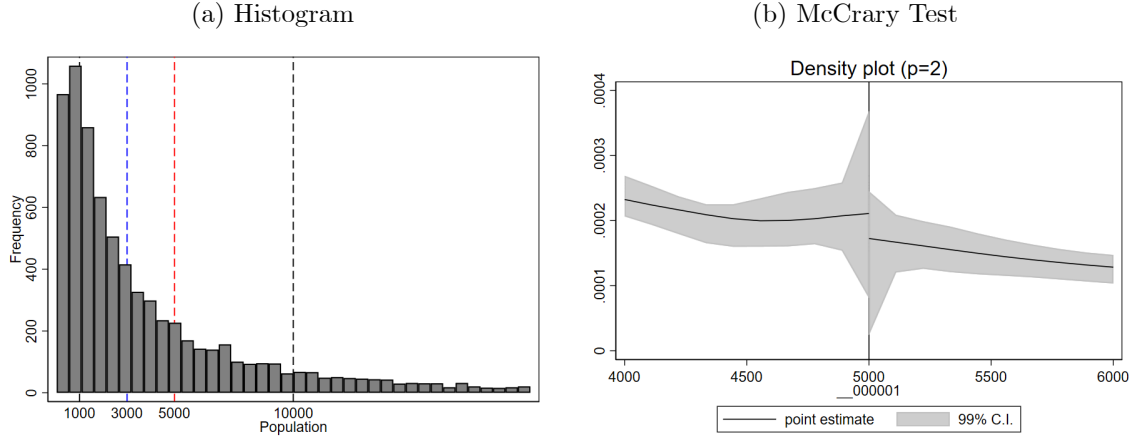
Notes: (a) Distribution of municipalities by population around the 5,000-resident threshold. Data for municipalities with 3,001 to 10,000 residents that elected their mayor between 2013 and 2017. Trentino-Alto Adige is excluded. (b) Discontinuty in density test based on a local quadratic density estimator (Cattaneo, Jansson and Ma 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization.

trated legislative attempts to mandate one.[33] The joblessness rate (at the provincial level) is predetermined because it is measured at the 2011 census. Instead, immigrant inflow (at the municipal level), parliamentary corruption scandals (at the House constituency level), and membership of intermunicipal unions should be interpreted as placebo outcomes.

It seems unlikely that MPs' corruption, or its reporting in the national press, could react to the quality of local government in specific small towns in their constituency. Instead, we cannot rule out theoretically a connection between mayors' competence and their propensity to join an intermunicipal union. Despite this theoretical caveat, our empirical findings confirm that all four covariates display no discontinuity at the 5,000-resident threshold.

Table 11 provides a further robustness check by adding these covariates to the baseline specifiction in Table 7, panel (a). As expected from covariate balance, our estimates of a 3 percentage-point drop in support for the M5S at the 5,000 resident threshold proves robust to these controls. At the same time, the controls themselves all predict an increase in anti-establishment voting, as shown in Table A.1. Needless to say, these intuitive correlations cannot be taken as evidence of causal relationships. However, they are consistent with prior

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[33] As explained in Section 2.3, a 2010 statute originally set a deadline for municipalities below the threshold to join such unions—but the deadline was perpetually deferred, and eventually ruled unconstitutional in 2019.

Table 10: Covariate Balance

	Joblessness Rate	Immigrant Inflow	MP Corruption News	Intermunicipal Union
Effect	0.002	0.570	-0.590	-0.180*
	(0.022)	(0.450)	(0.022)	(0.088)
Robust p-value	.820	.260	.350	.053
Total Obs.	2,209	2,209	2,209	2,209
Bandwidth	507	849	538	720
Effective Obs.	407	674	468	556
Region FE	No	No	No	No
Clustering	Munic.	Munic.	Munic.	Munic.
Effect	0.013	0.490	-0.071	-0.120
	(0.009)	(0.360)	(0.170)	(0.078)
Robust p-value	.200	.210	.810	.160
Total Obs.	2,209	2,209	2,209	2,209
Bandwidth	595	678	451	676
Effective Obs.	480	532	371	531
Region FE	Yes	Yes	Yes	Yes
Clustering	Region	Region	Region	Region

Notes: Effect of the wage increase at the 5,000-resident threshold on predetermined variables and placebo outcomes. Data for municipalities with 3,001 to 10,000 residents that elected their mayor between and 2017. The *Joblessness Rate* is measured at the province level in the 2011 census. It is computed as one minus the ratio of employed to total population. *Immigrant Inflow* is the 2013–17 average net annual inflow of foreign immigrants into the municipality, reported as a share of census population. *MP Corruption News* is constructed for each House constituency by searching the "Justice" section of the online archive of Italy's main newspaper (*Corriere della Sera*) for the years 2012–18. The measure equals the share of articles mentioning an MP that also contain the keywords "investigated" (*indagato*) or "notice of investigation" (*avviso di garanzia*). It is averaged across MPs in the constituency, weighted by the total number of articles mentioning each. *Intermunicipal Union* is a binary variable denoting membership in such a union, which takes over responsibility for performing the statutory "fundamental functions" of its constituent municipalities. Covariate-adjusted local linear RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization. Robust standard errors corrected for clustering (in parentheses) and robust p-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

Figure 3: Covariates around the 5,000-Resident Threshold

(a) Joblessness Rate

(b) Immigrant Inflow

(c) MP Corruption News

(d) Intermunicipal Union
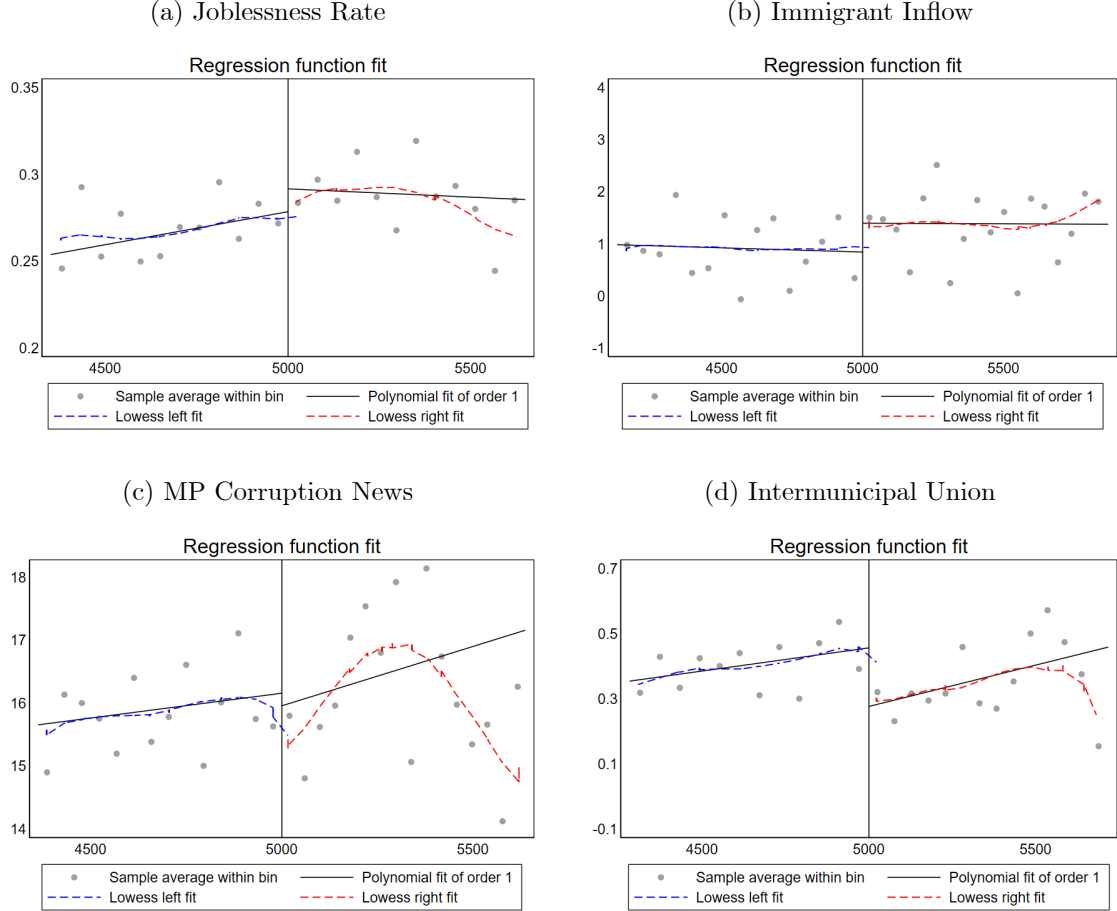
Notes: The figure shows binned scatterplots of predetermined variables and placebo outcomes as a function of municipal population. Each point is the average observed value across municipalities in the corresponding bin. Local linear regression lines with optimal symmetric bandwidth. Data for municipalities with 3,001 to 10,000 residents that elected their mayor between and 2017. The *Joblessness Rate* is measured at the province level in the 2011 census. It is computed as one minus the ratio of employed to total population. *Immigrant Inflow* is the 2013–17 average net annual inflow of foreign immigrants into the municipality, reported as a share of census population. *MP Corruption News* is constructed for each House constituency by searching the "Justice" section of the online archive of Italy's main newspaper (*Corriere della Sera*) for the years 2012–18. The measure equals the share of articles mentioning an MP that also contain the keywords "investigated" (*indagato*) or "notice of investigation" (*avviso di garanzia*). It is averaged across MPs in the constituency, weighted by the total number of articles mentioning each. *Intermunicipal Union* is a binary variable denoting membership in such a union, which takes over responsibility for performing the statutory "fundamental functions" of its constituent municipalities..

evidence that labor-market weakness fuels populism (e.g., Algan et al. 2017; Guiso et al. 2018) and immigration fuels political extremism (e.g., Becker and Fetzer 2017; Halla, Wagner and Zweimüller 2017). Focusing on within-region variation alone makes the controls insignificant. Instead, the identified effect of the threshold remains significant and quantiatively close to the 2 percentage-point drop found in Table 7.

As a final validity check, Table 12 presents placebo tests that replicate our main result from Table 7 for irrelevant cutoffs above and below the true 5,000-resident threshold. Following Cattaneo, Idrobo and Titiunik (2019), we perform these tests separately for treated and untreated observations, to rule out contamination from the actual treatment effect. If the regression function is truly continuous for a given treatment status, this placebo design guarantees by construction that the treatment effect is zero at every artificial threshold. Reassuringly, all point estimates of RD treatment effects at placebo thresholds are below our true estimate, and all their p-values are above .05. Figure 4 presents these results graphically.

5 CONCLUSION

We have shown that an exogenous increase in the skill and effectiveness of local politicians', induced by a discontinuous increase in their compensation, reduces voter support for anti-establishment populists in elections for higher levels of government. This finding, identified through a sharp RD design, suggests that demand for populism is partly motivated by the same disappointment with incumbents that drives turnover in classic rational models of political agency.

The magnitude of our estimated treatment effect, relative to the overall electoral success of populist parties like the M5S in Italy, confirms that populism has many other drivers, such as economic insecurity, resistance to cultural and demographic change, or a desire for descriptive representation (e.g., Becker and Fetzer 2017; Colantone and Stanig 2018; Norris and Inglehart 2019; Dal Bó et al. 2021). On the other hand, it also shows that improvements in the performance of traditional politicians—even in local government alone—have a remarkable potential to dampen the systemic rise of populist outsiders.

Table 11: Robustness to Covariates

	M5S Vote Share			
Effect	-0.031**	-0.038***	-0.027**	-0.032***
	(0.012)	(0.014)	(0.013)	(0.012)
Robust p-value	.014	.008	.036	.010
Total Obs.	3,753	3,744	3,744	3,735
Bandwidth	651	506	583	663
Effective Obs.	860	680	787	879
Covariates	Joblessness Rate	Immigrant Inflow	MP Corruption News	All Three Covariates
Region FE	No	No	No	No
Clustering	Municipality	Municipality	Municipality	Municipality
Effect	-0.017**	-0.017**	-0.017**	-0.017**
	(0.007)	(0.006)	(0.007)	(0.007)
Robust p-value	.027	.013	.019	.031
Total Obs.	3,753	3,744	3,744	3,735
Bandwidth	511	562	546	506
Effective Obs.	687	758	736	677
Covariates	Joblessness Rate	Immigrant Inflow	MP Corruption News	All Three Covariates
Region FE	Yes	Yes	Yes	Yes
Clustering	Region	Region	Region	Region

Notes: Effect of a higher quality of municipal government, induced by the wage increase at the 5,000-resident threshold, on municipality-level electoral outcomes, controlling for covariates. Pooled data for regional, national and European elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives. The *Joblessness Rate* is measured at the province level in the 2011 census. It is computed as one minus the ratio of employed to total population. *Immigrant Inflow* is the 2013–17 average net annual inflow of foreign immigrants into the municipality, reported as a share of census population. *MP Corruption News* is constructed for each House constituency by searching the "Justice" section of the online archive of Italy's main newspaper (*Corriere della Sera*) for the years 2012–18. The measure equals the share of articles mentioning an MP that also contain the keywords "investigated" (*indagato*) or "notice of investigation" (*avviso di garanzia*). It is averaged across MPs in the constituency, weighted by the total number of articles mentioning each. *Intermunicipal Union* is a binary variable denoting membership in such a union, which takes over responsibility for performing the statutory "fundamental functions" of its constituent municipalities. All regression include year fixed effects. Covariate-adjusted local polynomial RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwidth chosen by mean square error optimization. Robust standard errors corrected for clustering (in parentheses) and robust p-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 12: Continuity at Placebo Thresholds

Threshold	Effect	Robust Std. Error	Robust *p*-value	Total Obs.	Bandwidth	Effective Obs.
4,100 Residents	-0.027	(0.021)	.200	3,753	285	466
4,250 Residents	-0.000	(0.013)	.910	3,753	566	909
4,400 Residents	-0.002	(0.018)	.940	3,753	435	644
4,550 Residents	0.005	(0.017)	.840	3,753	639	950
4,700 Residents	0.029*	(0.014)	.055	3,753	654	936
4,850 Residents	-0.002	(0.016)	.780	3,753	519	714
5,000 Residents	-0.032**	(0.015)	.024	3,753	528	716
5,150 Residents	-0.009	(0.015)	.440	3,753	752	978
5,300 Residents	-0.006	(0.013)	.680	3,753	982	1,190
5,450 Residents	0.016	(0.017)	.250	3,753	600	711
5,600 Residents	0.019	(0.016)	.160	3,753	554	599
5,750 Residents	-0.021	(0.013)	.210	3,753	906	994
5,900 Residents	-0.025*	(0.013)	.090	3,753	859	876

Notes: Effect on municipality-level electoral outcomes of the true 5,000-resident threshold and of surrounding placebo thresholds. Pooled data for regional, national and European elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives. All regression include year fixed effects. Covariate-adjusted local linear RD treatment effect estimator (Calonico et al. 2019) with triangular kernel and optimal bandwith chosen by mean square error optimization. Sample restricted to municipalities between 3,001 and 5,000 residents for placebo thresholds below 5,000, and between 5,001 and 10,000 residents for placebo thresholds above 5,000. Robust standard errors clustering by municipality (in parentheses) and robust *p*-values estimated following Calonico et al. (2019). * Significant at 10%; ** significant at 5%; *** significant at 1%.

Figure 4: Changes in Support for the M5S at True and Placebo Thresholds
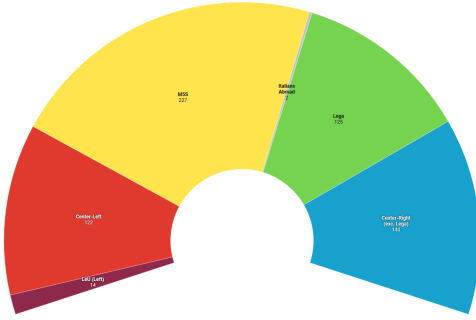
Consider the 2018 Italian national elections, which marked the zenith of electoral success for the M5S. As we discussed in Section 2, the right-wing coalition won a plurality of votes and of seats in both chambers; but the M5S held the balance of power and had an indispensable role in government formation. A counterfactual simulation proves that a uniform nationwide decline in its vote share by 6.5 percentage points, reallocated proportionally across its rivals constituency by constituency, would have sufficed to shut the M5S out of government. It would have remained the single party with the most votes and seats—more than the entire center-left coalition. However, as the simulation results in Figure 5 show, deviations from pure proportional representation imply that a loss of one fifth of its voters would have cost the M5S more than one fourth of its seats. The center-right coalition would have gained enough to enjoy a governing majority. Hence, Italy would have continued in the same tradition of turnover between center-left and center-right that had characterized its national politics since 1994.

Our analysis suggests that such a radical change in the political landscape might have resulted from surprisingly attainable improvements in the quality of government. Our RD treatment effect raises the probability that a municipal cabinet member has a college education by 6 percentage points. It also causes a decline in the M5S vote share by 2 percentage points. The typical municipal cabinet in our sample has five members. A rough linear extrapolation then implies that the rise of the M5S to a decisive position on the national political scene might have been effectively defused by the kind of governance improvement that follows from a single additional college graduate on every municipal cabinet. Or, in terms of outputs instead of inputs, by the kind of improvement in local government efficiency that translates, as far as waste collection is concerned, into an increase in recycling by about 10 percentage points.

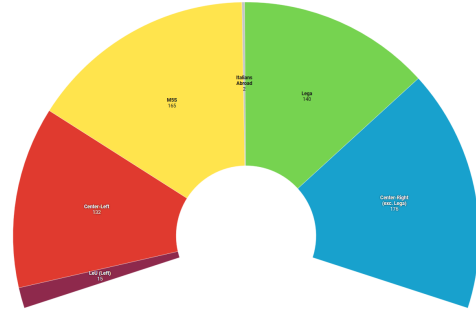Figure 5: Counterfactual Outcomes of the 2018 National Elections
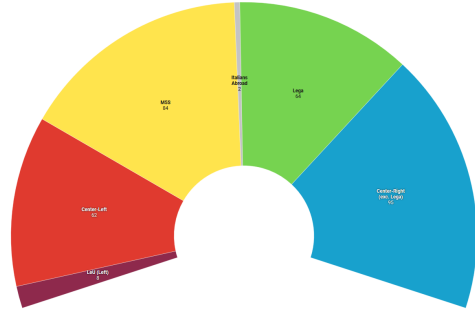
(a) 2018 House Election Outcomes

(b) 2018 Senate Election Outcomes
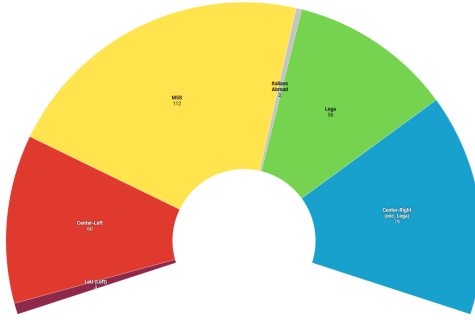
(c) Counterfactual House: -6.5% M5S

(d) Counterfactual Senate: -6.5% M5S

Notes: The top row depicts the breakdown of seats in the Italian Parliament after the 2018 national elections. The bottom row depicts a counterfactual simulated by lowering the M5S vote share by 6.5 percentage points everywhere, and reallocating its votes proportionally among all other parties constituency by constituency. LeU (in purple) denotes the left-wing party Free and Equal. The center-left coalition (in red) includes the Democratic Party (PD) and four minor allies (More Europe, Together, People's Civic List, South Tyrolean People's Party). M5S (in yellow) denotes the Five-Star Movement. Italians Abroad (in grey) denotes two non-partisan representatives of Italians in South America. Lega (in green) denotes the Northern League, which ran as part of the center-right coalition but then split from it to form a short-lived alternative ruling coalition with the M5S. The remainder of the center-right coalition (in blue) includes Forza Italia and two allies (Brothers of Italy, Us with Italy).

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Table A.1: Correlation between Outcome and Covariates

	M5S Vote Share			
Joblessness Rate	.670***			.610***
	(.034)			(.033)
Immigrant Inflow		6.84***		3.97***
		(0.56)		(0.56)
MP Corruption News			.670***	.250***
			(.046)	(.046)
Observations	3,753	3,744	3,744	3,735
Region FE	No	No	No	No
Clustering	Munic.	Munic.	Munic.	Munic.
Joblessness Rate	-.100			-.090
	(.084)			(.077)
Immigrant Inflow		1.12		0.95
		(1.23)		(1.17)
MP Corruption News			.300**	.250**
			(.110)	(.099)
Observations	3,753	3,744	3,744	3,735
Region FE	Yes	Yes	Yes	Yes
Clustering	Region	Region	Region	Region

Notes: Correlation between electoral outcomes and covariates at the municipality leve. Pooled data for regional, national and European elections held between 2014 and 2018 in municipalities whose administration had been elected with a population between 3,001 and 10,000 residents, no earlier than 2013 and no later than the year before the election under consideration. Trentino-Alto Adige is excluded. Regional elections are missing for Basilicata because they were not held in the sample period, for Sardinia (2014) because the M5S did not contest them, and for Valle d'Aosta (2018) because votes were not tallied by municipality. Regional election vote shares refer to provincial party lists for the regional council. National election vote shares refer to ballots for the House of Representatives. The *Joblessness Rate* is measured at the province level in the 2011 census. It is computed as one minus the ratio of employed to total population. *Immigrant Inflow* is the 2013–17 average net annual inflow of foreign immigrants into the municipality, reported as a share of census population. *MP Corruption News* is constructed for each House constituency by searching the "Justice" section of the online archive of Italy's main newspaper (*Corriere della Sera*) for the years 2012–18. The measure equals the share of articles mentioning an MP that also contain the keywords "investigated" (*indagato*) or "notice of investigation" (*avviso di garanzia*). It is averaged across MPs in the constituency, weighted by the total number of articles mentioning each. *Intermunicipal Union* is a binary variable denoting membership in such a union, which takes over responsibility for performing the statutory "fundamental functions" of its constituent municipalities. All regression include year fixed effects. Robust standard errors corrected for clustering (in parentheses). * Significant at 10%; ** significant at 5%; *** significant at 1%.