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Old and Young Politicians

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We consider the role of a politician's age in Italian municipal governments. When the term limit is not binding, younger mayors engage in political budget cycles more often than older mayors. Thus younger politicians behave more strategically in response to electoral incentives, probably because they expect to have a longer political career and stronger career concerns. We discuss and rule out several alternative interpretations.

Introduction

When discussing whom to vote for, citizens commonly mention the age of the candidate, saying that he or she is too young (too inexperienced or too aggressive and eager) or too old (unmotivated, not energetic enough). In fact, concerns over a politician's age often extend beyond the casual worries of voters, and there are many examples of laws that limit the eligibility of candidates based on their age. Some of these laws date back at least two thousand years: the *lex Villia annalis*, established in Rome in 180 BC, set minimum ages for senatorial magistrates.[1] This law was approved shortly after Publius Cornelius Scipio Africanus moved swiftly through the *cursus honorum* (the levels of the political career in ancient Rome) and became consul at the age of 30. The main rationale for the law was that the established elite believed that the policy choices made by young political leaders were driven too much by personal ambition ('career concerns' in modern terminology) and the desire to emulate Scipio's example (Kuiper 2010).[2] Today many countries—including Australia, Austria, Brazil, Chile, Germany, Indonesia, Italy, Nigeria, Norway, the Philippines, the USA and Venezuela—impose age restrictions for holding public office. The age threshold is often greater than the minimum age to vote, and can be as high as 40 (Hong Kong, Italy and Nigeria) or 45 (the Philippines). Another issue that might become relevant in the policy debate is whether politicians should have a retirement age. A prominent Indian congressman has advocated for a retirement age for politicians on the grounds that the politicians in office are often older than the voters they represent (Pilot 2004).

Policies that place age restrictions on politicians and the concern of voters must be based on the view that the age of a policymaker matters for public policy. However, to the best of our knowledge, the effect of a politician's age on policy has been largely neglected by the literature. The exceptions are Altindag and Mocan (2015), who find, among members of the Turkish Parliament, a negative correlation between a politician's age and the probability of strategically switching parties when facing electoral uncertainty. While suggestive, the latter result does not imply that age causally affects public policies, because many omitted geographic variables are correlated with the age of the elected politicians. Additionally, Bertrand *et al.* (2015) study the effects of a bureaucrat's age in India. Younger entrants in the Administrative Service display stronger career concerns, even though, unlike politicians, their careers are decided by their superiors, not voters. Previous research has examined the effects of other politician

characteristics on policy. For instance, gender (Chattopadhyay and Duflo 2004; Gagliarducci and Paserman 2012; Brollo and Troiano 2016), religion (Meyersson 2014), tenure (Coviello and Gagliarducci 2017), salary (Gagliarducci and Nannicini 2013), education (Besley *et al*. 2011) and race (Vogl 2014) have all been shown to matter in a variety of ways for policies. In this paper we focus on age.

Younger politicians may differ from older ones for at least five reasons. One is that they have a potentially longer political career ahead of them and therefore have stronger career concerns. The second is simply that, as younger citizens, they have a longer horizon and therefore they may have an incentive to adopt more long-term policies.[3] The third and more mundane reason is that younger politicians may be more energetic and productive at work. The fourth reason is that there could be different self-selection patterns by age: because people of different ages have different opportunities in the labour market, this may affect the decision to become a politician. The fifth reason is that politicians of different ages may have different political connections—innate or accumulated doing the course of their previous work.

We use data on Italian municipalities that are in charge of a vast array of public goods, such as education, transportation and waste management. On the revenue side, Italian mayors have the power to propose changes in property tax rates and municipal income tax rates.[4]

The age of a mayor may be correlated with many city and individual characteristics. For instance, cities with more favourable attitudes towards young people may be more likely to have young mayors and would likely have different policy preferences. In order to identify our effect, we use a fixed-effects model to control for time-invariant municipal characteristics. The effect of age is identified by using changes in the mayor's age across mayoral terms within a municipality. Furthermore, we account for time-varying municipal confounders by focusing on mayoral terms following close elections.

We first find that younger mayors are more likely to be re-elected and are also more likely to move to higher levels of elected government, both provincial and regional. We verify that the re-election effect is not merely explained by the fact that younger mayors are also more likely to run again. If we take re-election as a proxy of good government, then these results may be consistent with the view that younger politicians implement better policies. Perhaps younger politicians implement policies of higher quality because they are better selected or exert more effort, and this is why they are more often re-elected. Measuring the quality of public policies is difficult, and we cannot decisively reject these hypotheses. However, capitalization models imply that better policies or better governors should be incorporated into house prices (Oates 1969; Yinger 1982). With this in mind, we test whether the age of the mayor affects house prices. We find no effect. A second possibility is that younger mayors may respond more quickly to the needs of their constituents. To test this hypothesis, we check whether the mayor's age affects the speed of public good provision.[5] We find that younger mayors are not faster in actually providing to voters the public goods that were budgeted at the beginning of the year, suggesting that this channel is unlikely to explain why younger mayors are more likely to get re-elected.

In the second part of the paper, we examine the mayor's policies implemented while in office. Younger and older mayors choose similar levels of expenditure and revenue on average during the term. However, the timing of expenditure differs by age: younger mayors are more likely to increase capital expenditure right before an upcoming election. The fact that budget cycles occur on capital expenditure is consistent with the result of Cioffi *et al*. (2012), who argue that capital expenditure is highly visible and easily targeted

to specific groups of voters.[6] Alesina and Paradisi (2017) provide evidence of political budget cycles on real estate taxes in Italian cities. Other papers dealing with cycles in Italian municipalities include Bartolini and Santolini (2009) and Bonfatti and Forni (2017). Surveys of the literature on political cycles include Alesina *et al*. (1997), Drazen (2000), Cioffi *et al*. (2012) and Alesina and Passalacqua (2017).[7] This literature shows that political budget cycles occur in some circumstances and not in others. In this context we make the novel point that political budget cycles are more likely to occur when the career concerns of politicians are stronger.

Do younger mayors have a higher probability of re-election *because* they strategically increase spending right before the election, thus fooling voters? We do find a positive correlation between the cycle in capital expenditure and re-election. This correlation is nearly significant at the 10% level when mayor controls and city and election-year effects are excluded; however, the estimate becomes less precise when either mayor controls or city and election-year effects are added to the regression, even if the size of the coefficient remains virtually unchanged. Thus these results are only suggestive.

Song *et al*. (2012) predict that the age of voters may matter for fiscal policy: young voters may have a disciplining effect on the implemented fiscal policy, because old voters do not internalize the future costs of a present loose fiscal policy. Thus, reading our results in light of theirs, young politicians would like to engage in short-term fiscal policies to be re-elected, while young voters would want to discipline them, which is an interesting contrast. As a young citizen, a young politician to some extent would prefer long-term, non-strategic policies. As an ambitious politician, he might prefer the opposite. Our results show that for the average young politician, the second effect dominates.

The paper is organized as follows. Section I describes our data and the institutional setting. Section II describes our methodology. Section III presents our results, and Section IV concludes.

I. Data and Institutional Framework

Institutional information

The Italian municipal government (*comune*) is composed of a mayor (*sindaco*), an executive committee (*giunta*) appointed by the mayor, and an elected city council (*consiglio comunale*) responsible for authorizing the annual budget proposed by the mayor. The mayor and the executive committee propose policies, such as changes in the tax rates or expenditure. Subsequently, the city council votes on the proposals. Municipalities manage around 10% of total public expenditure in Italy and are in charge of many public services, such as preschools, waste management, municipal roads and municipal public housing. Expenditures are divided into two types: capital expenditure, which relates to multi-year production factors, where amortization does take place, and current expenditure, which relates to only the current fiscal year.

In 1993, a law changed the mayoral electoral rule from party to individual ballot and introduced a two-term limit. In 2000, the duration of the mayoral term was extended from four to five years. Municipalities with more than 15,000 inhabitants adopt a runoff system to elect mayors, while a single-round system is in place in cities with a population below this threshold.[8] The number of city councillors depends on the size of the municipality.[9] We calculate the margin of victory for municipalities with runoff as the

margin of victory in the second election, while we use the margin of victory of the first (and only) election for the other municipalities.

Data and descriptive statistics

Our main database includes administrative data on municipal elections and politicians from 1998 to 2014, provided by the Italian Ministry of the Interior (*Ministero dell'Interni*). The data contain information on every municipal election and every appointed administrator in the municipal, provincial, regional and national administrations. For every election, we have data on the number of candidates, and on the vote, party affiliation and demographic information of each candidate who is appointed to any position in the administration. We complement this dataset with socioeconomic and demographic information on Italian municipalities from the Italian National Institute of Statistics (*Istituto Nazionale di Statistica*) and administrative data on financial reports from the Italian Ministry of the Interior covering the years 1998–2013. The financial reports data contain yearly information on revenues and expenditures. We also obtained access to administrative data on house prices from the Italian Land Registry Agency (*Agenzia del Territorio*) for the years 2002–11.

Table 1 presents summary statistics for the entire sample: mayor characteristics, municipality characteristics, political outcomes, public good and housing outcomes, and budget outcomes. We include in the sample all observations with non-missing data on the vote counts and ages of first- and second-place mayoral candidates. This creates a sample of around 23,000 mayoral terms, 16,000 of which have data on public finance outcomes.[10] In order to limit the potential impact of outliers, we winsorize the public finance variables at the 99% and 1% levels. The results are very similar without winsorizing those variables.

As shown in Table 1, the older candidate wins the election in around 50% of the cases. On average, Italian mayors are 49 years old and have 6.4 years of experience in elected municipal office and 0.8 years of experience in unelected municipal office at the time of election. Roughly 11% of mayors are women, and on average the mayor faces two rivals on the electoral ballot. 55% of the municipalities that we consider are in the north, 31% are in the south, and 15% are in the centre. Among all non-term-limited mayors, 45% ran for re-election, and 35% were re-elected to a second term, where the latter number refers to all non-term-limited mayors, not just those who ran for re-election. 8% of mayors were elected to the provincial administration within 10 years of their first election to the mayor office, 1% of mayors were later elected to a position in the regional administration, and 1% of mayors were later elected to a position in the national administration.

The age of a mayor may be correlated with many city and individual characteristics. For instance, cities with more favourable attitudes toward young people may be more likely to have young mayors and would likely have different policy preferences. In order to identify our effect, we use a fixed-effects model to control for time-invariant municipal characteristics. The effect of age is identified by using changes in the mayor's age across mayoral terms within a municipality.

II. Empirical Strategy

Simply comparing the outcomes of municipalities governed by mayors of different ages would not allow us to identify our effect of interest, because many other variables, not

TABLE 1
SUMMARY STATISTICS

	Mean	S.D.	Min	Max	Obs.
Mayor					
Older candidate won	0.49	0.50	0.00	1.00	22,789
Older candidate's margin of victory	−0.28	28.01	−98.66	98.08	22,789
Age	49.12	9.93	18.64	86.31	22,789
Previously held any city office	0.80	0.40	0.00	1.00	22,789
City political experience (elected)	6.40	5.24	0.00	24.00	22,789
City political experience (unelected)	0.78	2.00	0.00	16.00	22,789
Woman	0.11	0.31	0.00	1.00	22,789
Born locally	0.47	0.50	0.00	1.00	22,789
High school degree	0.89	0.31	0.00	1.00	22,789
College degree	0.45	0.49	0.00	1.00	22,789
Centre-right party	0.08	0.26	0.00	1.00	22,789
Number of rivals on ballot	1.87	1.25	1.00	18.00	22,789
Term limit binding	0.35	0.48	0.00	1.00	22,789
Municipality					
Population (2001)	7481.38	43,095.43	33.00	2,546,804.00	22,789
Population per square km (2005)	309.41	656.51	1.00	12,624.00	22,789
Active pop./total pop. (2005)	0.41	0.06	0.16	0.60	22,789
Elderly index (2005)	1.89	1.53	0.00	35.00	22,789
Family size (2005)	2.46	0.31	1.20	4.20	22,789
Production units per capita (2005)	0.08	0.03	0.02	0.34	22,789
Employed/total pop. (2005)	0.26	0.18	0.02	3.03	22,789
Income per capita (2005 €)	13,506.76	3,056.29	5,013.00	44,949.00	22,789
Altitude (metres)	488.15	434.27	0.00	2,851.00	22,789
North	0.55	0.50	0.00	1.00	22,789
Central	0.15	0.35	0.00	1.00	22,789
South	0.31	0.46	0.00	1.00	22,789
Political outcomes					
Ran for re-election (not term-limited)	0.45	0.50	0.00	1.00	14,894
Re-elected (not term-limited)	0.35	0.48	0.00	1.00	14,894
Provincial administration after term	0.08	0.28	0.00	1.00	22,789
Regional administration after term	0.01	0.12	0.00	1.00	22,789
National administration after term	0.01	0.09	0.00	1.00	22,789
Public good and housing outcomes					
Speed of public good provision	0.77	0.07	0.56	0.90	15,937
Average house price	848.10	456.90	182.71	8893.75	9000
Budget outcomes					
Revenue per capita	719.72	503.87	180.11	3449.92	127,171
Capital expenditure per capita	78.03	152.93	0.00	1046.25	127,525
Current expenditure per capita	539.04	269.68	246.90	1914.84	127,521

Notes See Tables A1 and A2 in the Appendix for variable definitions and data sources. The outcomes 'Ran for re-election' and 'Re-election' are set to missing for mayoral terms in which the incumbent faces a binding term limit. Budget outcomes are yearly, while the other outcomes are measured on the basis of mayoral terms.

only observable but also unobservable, are correlated with the age of the mayor. The summary statistics provided in Table 2 show that many individual and municipality characteristics differ according to whether the older or younger mayoral candidate won

TABLE 2
SUMMARY STATISTICS BY WINNING CANDIDATE

	Mean by winning candidate				
	Older (1)	Younger (2)	Difference (3)	*p*-value (4)	Obs. (5)
Mayor					
Age	54.31	44.17	10.14***	0.000	22,789
Previously held any city office	0.80	0.79	0.02***	0.004	22,789
City political experience (elected)	6.84	5.98	0.86***	0.000	22,789
City political experience (unelected)	0.73	0.82	−0.09***	0.001	22,789
Woman	0.09	0.12	−0.03***	0.000	22,789
Born locally	0.54	0.40	0.14***	0.000	22,789
High school degree	0.86	0.92	−0.06***	0.000	22,789
College degree	0.41	0.48	−0.08***	0.000	22,789
Centre-right party	0.08	0.08	−0.00	0.454	22,789
Number of rivals on ballot	1.86	1.89	−0.03*	0.052	22,789
Term limit binding	0.37	0.32	0.05***	0.000	22,789
Municipality					
Population (2001)	7012.05	7929.88	−917.83	0.108	22,789
Population per square km (2005)	307.43	311.31	−3.88	0.656	22,789
Active pop./total pop. (2005)	0.41	0.41	−0.00	0.864	22,789
Elderly index (2005)	1.90	1.89	0.00	0.907	22,789
Family size (2005)	2.46	2.46	−0.00	0.997	22,789
Production units per capita (2005)	0.08	0.08	−0.00***	0.001	22,789
Employed/total pop. (2005)	0.26	0.27	−0.00**	0.036	22,789
Income per capita (2005 €)	13,447.81	13,563.09	−115.28***	0.004	22,789
Altitude (metres)	486.73	489.50	−2.77	0.631	22,789
North	0.55	0.54	0.01	0.333	22,789
Central	0.14	0.16	−0.02***	0.001	22,789
South	0.31	0.30	0.01	0.156	22,789
Political outcomes					
Ran for re-election (not term-limited)	0.41	0.48	−0.07***	0.000	14,894
Re-elected (not term-limited)	0.30	0.39	−0.09***	0.000	14,894
Provincial administration after term	0.07	0.10	−0.03***	0.000	22,789
Regional administration after term	0.01	0.02	−0.00***	0.004	22,789
National administration after term	0.01	0.01	−0.00**	0.010	22,789
Public good and housing outcomes					
Speed of public good provision	0.77	0.77	0.00	0.145	15,937
Average house price	841.22	872.11	−30.89***	0.002	8170
Budget outcomes					
Revenue per capita	675.82	683.06	−7.24***	0.008	110,183
Capital expenditure per capita	65.36	65.74	−0.38	0.634	110,417
Current expenditure per capita	516.04	518.60	−2.57*	0.086	110,413

Notes See Table 1. Columns (1) and (2) report averages in years following the victory of the older and younger mayoral candidate, respectively. Column (3) reports the difference of the averages, column (4) reports the *p*-value corresponding to the two-sided test of equality of the averages, and column (5) reports the sample size. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

the last election. For instance, older mayors have more elected political experience, less unelected political experience, and less education. Older mayors are also less likely to be women, more likely to have been born locally, and more likely to govern a lower-income municipality. Therefore we pursue a fixed-effects strategy to alleviate the aforementioned concerns, and we explain why a regression discontinuity strategy is inappropriate in our setting.

Fixed-effects model

We begin our analysis by using the model

$$Y_{mt} = \beta Age_{mt} + \boldsymbol{\delta}'\mathbf{Z}_{mt} + \eta_m + \gamma_t + \varepsilon_{mt}, \tag{1}$$

where Y is an outcome, Age is the age of the mayor as of the date of the most recent election, and $\mathbf{Z}$ is a vector of mayor characteristics. The letter m indexes municipalities, and t indexes election years. The parameters η_m and γ_t represent municipality fixed effects and election-year effects. The outcome Y_{mt} is measured over the term in office of the winner in municipality m and election year t.

The effect of age is identified using within-municipality variation in the mayor's age across mayoral terms. Our identifying assumption is that the mayor's age is exogenous to the time-varying municipality and mayor unobservables, ε_{mt}. This assumption will hold if $\mathbf{Z}_{mt}$ contains all outcome-relevant mayor characteristics correlated with age, and the municipality and election-year fixed effects absorb all unobserved municipal and temporal heterogeneity that is correlated with both outcomes and the age of the mayor. If the identification assumptions are satisfied, then β represents the expected change in Y from increasing the mayor's age by one year, holding the controls constant.

The main threat to our identifying assumption is that changes in voter preferences for public goods may be correlated with changes in the mayor's age. We address this possibility by also reporting results for the subsample of mayoral terms following elections determined by a vote margin of 5 percentage points or less. By focusing on outcomes following close elections, we isolate changes in the mayor's age due to idiosyncratic electoral outcomes rather than changes in voter preferences.

Equation (1) assumes a linear relationship between mayor age and outcomes. To test whether this is a good approximation, we also estimate the flexible equation

$$Y_{mt} = \sum_{k=1}^{8} \beta_k 1(Age_{mt} \in Bin_k) + \boldsymbol{\delta}'\mathbf{Z}_{mt} + \eta_m + \gamma_t + \varepsilon_{mt}. \tag{2}$$

Each age bin is five years long, with the exception of the (omitted) reference age bin (18–30 years) and the final bin (66+ years), both of which are aggregated to avoid very small bin sizes.

Another important parametric assumption of equation (1) is that the non-age characteristics enter the equation in a linear fashion. In Tables A14–A17 of the Appendix, we relax this assumption by using propensity-score-matching and inverse-probability-weighting estimators. To implement these estimators, we specify treatment assignment as an indicator variable equal to 1 if the older candidate won the election, and the propensity score as a logistic function of $\mathbf{Z}$. The estimators condition on individual

covariates without requiring a linear relationship between **Z** and the outcomes. The results using these estimators are very similar to the baseline results.

Dynamic panel model

To examine how political budget cycles vary according to the age of the mayor, we follow, for example, Brender and Drazen (2005), and estimate two dynamic panel models:

$$Y_{m,t} = \sum_{k=1}^{K} \phi_k Y_{m,t-k} + \beta_1 Elec_{m,t} + \beta_2 Old_{m,t} + \beta_3 Elec_{m,t} \times Old_{m,t} + \alpha_m + \gamma_t + \varepsilon_{m,t}, \quad (3)$$

$$Y_{m,t} = \sum_{k=1}^{K} \rho_k Y_{m,t-k} + \delta_1 Elec_{m,t} + \delta_2 Age_{m,t} + \delta_3 Elec_{m,t} \times Age_{m,t} + \eta_m + \zeta_t + \nu_{m,t}, \quad (4)$$

where m indexes municipalities, and t indexes calendar years. The variable $Y_{m,t}$ represents a fiscal outcome, such as capital expenditure. The variable $Elec_{m,t}$ equals 1 when t is the year prior to an election in municipality m, and 0 otherwise. The variable $Old_{m,t}$ equals 1 if the mayor of municipality m in year t was the older of the top two candidates in the most recent election, and 0 otherwise. The variable $Age_{m,t}$ is the age of the current mayor as of the date of the most recent election.

The model includes K lagged values of Y to capture the persistence of fiscal outcomes. We report results for $K = 1$ to maximize sample size; however, the estimates are very similar in magnitude and significance when $K = 2$ or $K = 3$. The model also includes municipality fixed effects and year fixed effects. We measure political budget cycles as the difference in fiscal outcomes in the year prior to an election compared to all other years of the mayor's term. The model allows both the level of spending and the size of the political budget cycle to vary according to the mayor's age. In equation (3), β_1 captures the political budget cycle under younger mayors, and $\beta_1+\beta_3$ captures the political budget cycle under older mayors. Therefore β_3 captures the difference in political budget cycles under older and younger mayors. In equation (4), $\delta_1+\delta_3 Age$ captures the political budget cycle under a mayor of age Age. Therefore δ_3 represents the marginal effect on the political budget cycle of increasing the mayor's age by one year.

There are two reasons why standard fixed-effects estimators (i.e. 'within' estimators) of equations (3) and (4) would be asymptotically biased. The first is the well-known Nickell (1981) bias due to the presence of lagged dependent variables. This bias is likely to be substantial, given that we have a short panel. To address this issue, we estimate equations (3) and (4) using system GMM, which exploits moment conditions for the equations, in both first differences and levels, identified by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998).[11] Because instrument proliferation can result from exploiting all moment conditions in system GMM, we follow the guidelines of Roodman (2009) and Bazzi and Clemens (2013) to avoid the problem of many weak instruments. Specifically, we 'collapse' the instrument matrix and use only twice-lagged instruments for y and contemporaneous instruments for the other variables.

The second potential source of bias is the mayor's age. In the full sample of municipalities, both *Old* and *Age* could be endogenous in the above equations, even after accounting for municipality fixed effects. The reason is that changes in voter preferences for spending could be correlated with either changes in the electoral performance of older or younger candidates—rendering both *Old* and *Age* endogenous—or changes in the age profile of the pool of candidates—rendering *Age* endogenous. We address this possibility by limiting the sample to municipality–years following a close election, where a 'close' election is decided by a vote margin of 5 percentage points or fewer.[12] We thus focus on time variation in *Old* and *Age* driven by arguably idiosyncratic election outcomes rather than shifts in voter preferences. We estimate equation (4) in two ways. The first treats *Age* and its interaction as strictly exogenous (conditional on the aforementioned sample selection), and the second treats *Age* and its interaction as endogenous and uses *Old* and its interaction as instruments.

Because the incentive to manipulate fiscal outcomes for electoral advantage differs depending on whether the mayor's term limit is binding, we present results separately for mayoral terms when the term limit was binding and those when it was not. In the Appendix we discuss why a regression discontinuity design would not be fully appropriate in our context.

Equation (4) assumes a linear relationship between the mayor's age and the size of the political budget cycle. To test whether this is a good approximation, we also estimate the flexible equation

$$\begin{aligned} Y_{m,t} = {} & \rho Y_{m,t-1} + \alpha Elec_{m,t} + \sum_{k=1}^{8} \beta_k 1(Age_{m,t} \in Bin_k) \\ & + \sum_{k=1}^{8} \delta_k Elec_{m,t} \times 1(Age_{m,t} \in Bin_k) + \eta_m + \zeta_t + \nu_{m,t}, \end{aligned} \tag{5}$$

which uses the same age bins as in equation (2).

III. Results

The effect of age on re-election

First we estimate the effect of the mayor's age on reappointment. We limit the sample to elections in which the incumbent mayor does not face a binding term limit. In Table 3 we present estimates of the coefficient on age in the fixed-effects model, both with and without controls for prior appointment to city office, elected city political experience, unelected city political experience, gender, high school education, college education, and whether the mayor was born in the city that he or she governs. The results in panel A are based on the full sample of mayoral terms, and the results in panel B are based on mayoral terms following close elections. In the full sample of mayoral terms, a one-year increase in age reduces the mayor's probability of running again for mayor by 0.65 percentage points, and reduces the probability of re-election to another mayoral term by 0.71 percentage points. This means that a one-standard-deviation increase in the mayor's age (10 years) reduces the probability of running again by 14%, and reduces the probability of re-election by 20% relative to their respective means. We also find that a one-year increase in age reduces the probability of being appointed in the provincial administration (within five years after

TABLE 3
THE EFFECT OF THE MAYOR'S AGE ON POLITICAL OUTCOMES

	Ran again		Re-elected		Provincial admin.		Regional admin.		National admin.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Fixed-effects estimates										
Age	−0.0057***	−0.0065***	−0.0061***	−0.0072***	−0.0016***	−0.0018***	−0.0003**	−0.0002*	−0.0001	−0.0001
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0003)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Municipalities	6813	6813	6813	6813	6813	6813	6813	6813	6813	6813
Observations	14,897	14,897	14,897	14,897	14,897	14,897	14,897	14,897	14,897	14,897
Panel B: Fixed-effects estimates, close elections										
Age	−0.0073***	−0.0091***	−0.0093***	−0.0101***	−0.0016*	−0.0014	−0.0001	−0.0002	0.0001	0.0000
	(0.0018)	(0.0019)	(0.0016)	(0.0018)	(0.0009)	(0.0011)	(0.0002)	(0.0003)	(0.0004)	(0.0003)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Municipalities	2550	2550	2550	2550	2550	2550	2550	2550	2550	2550
Observations	3108	3108	3108	3108	3108	3108	3108	3108	3108	3108

Notes See Tables A1 and A2 in the Appendix for variable definitions and data sources. In all specifications, the sample is restricted to mayoral terms in which the term limit is not binding. All regressions include municipality fixed effects and year-of-election effects. Results are reported with and without controls for prior appointment to city office, elected city political experience, unelected city political experience, gender, high school education, college education, and whether the mayor was born in the city that he or she governs. Standard errors in the fixed-effects specification are robust to heteroscedasticity and clustering at the level of municipality. Standard errors are shown in parentheses. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

the end of the political term) by about 0.17 percentage points, and reduces the probability of being appointed in the regional administration by about 0.02 percentage points. This means that a one-standard-deviation increase in the mayor's age reduces the probabilities of joining the provincial and regional administrations by 21% and 20% relative to their respective means. The effect of the mayor's age on reaching the national administration is small and statistically insignificant. In the sample of mayoral terms following close elections, the effect of age on running again and re-election is larger in absolute magnitude than the baseline estimates, and the effect of age on reaching higher levels of government is similar to the baseline estimates. Overall, the estimates seem not to be sensitive to the inclusion of controls for other mayor characteristics. Note that for the latter four outcomes we do not condition on the mayor's decision to run again, which is endogenous.

Is the lower re-election rate for older mayors entirely explained by the fact that older mayors are less likely to run for re-election? We use the dichotomous age measure, *Old*, which indicates whether the older candidate won the election. Table A14 in the Appendix shows that the probability of running for re-election is 9.1 percentage points lower for the older candidate, and the probability of being re-elected is 13.6 percentage points lower for the older candidate. The results imply that a share of the re-election effect can be explained by the (endogenous) decision to run again. Since the choice to run for re-election is endogenous and depends on the expected probability of winning, the causal effect of age on re-election conditional on running again is not easily recovered. If all mayors faced the same probability of re-election conditional on running again, which at the sample mean is 78% (the re-election rate 0.35 divided by the rate of running again 0.45), then the effect of age on running again would result in older mayors having a 7-percentage-point lower re-election probability compared to younger mayors. In fact, older mayors have a re-election probability that is 13.6 percentage points lower than that of younger mayors. Thus the effect of age on running again by itself explains roughly half of the estimated re-election effect. The second panel of Table A14 shows that the difference between the re-election effect and the effect on running again is statistically significant at the 5% level.

The baseline regression specifies a linear relationship between mayor age and outcomes. Is this a good approximation? Figure 1 plots point estimates and 95% confidence intervals for the coefficients β_k in equation (2), where β_ℓ represents the difference between average outcomes for mayors in bin ℓ and mayors in the 18–30 year bin, accounting for individual controls, municipality fixed effects and election-year effects. The effect of age on the probability of running again, being re-elected, and moving to the provincial administration, appears quite linear. The results for moving to the regional administration appear less linear, though the estimates are noisy due to the fact that this is a very rare event.

In Table 4 we report the effect of age on moving to higher office for term-limited mayors. We report results only for the full sample of second-term mayors, as there is not sufficient variation in the outcomes in the subsample of second terms following close elections. The full sample results show that age continues to have a negative effect on reaching higher office, though the results are more statistically significant and larger in absolute magnitude than the baseline results using first-term mayors.

The effect of age on average revenue and expenditure

Now we explore why younger candidates tend to be elected by looking at what they do when they are in office. We first examine the effect of the mayor's age on average revenue and expenditure over the term, both measured in euros per capita.

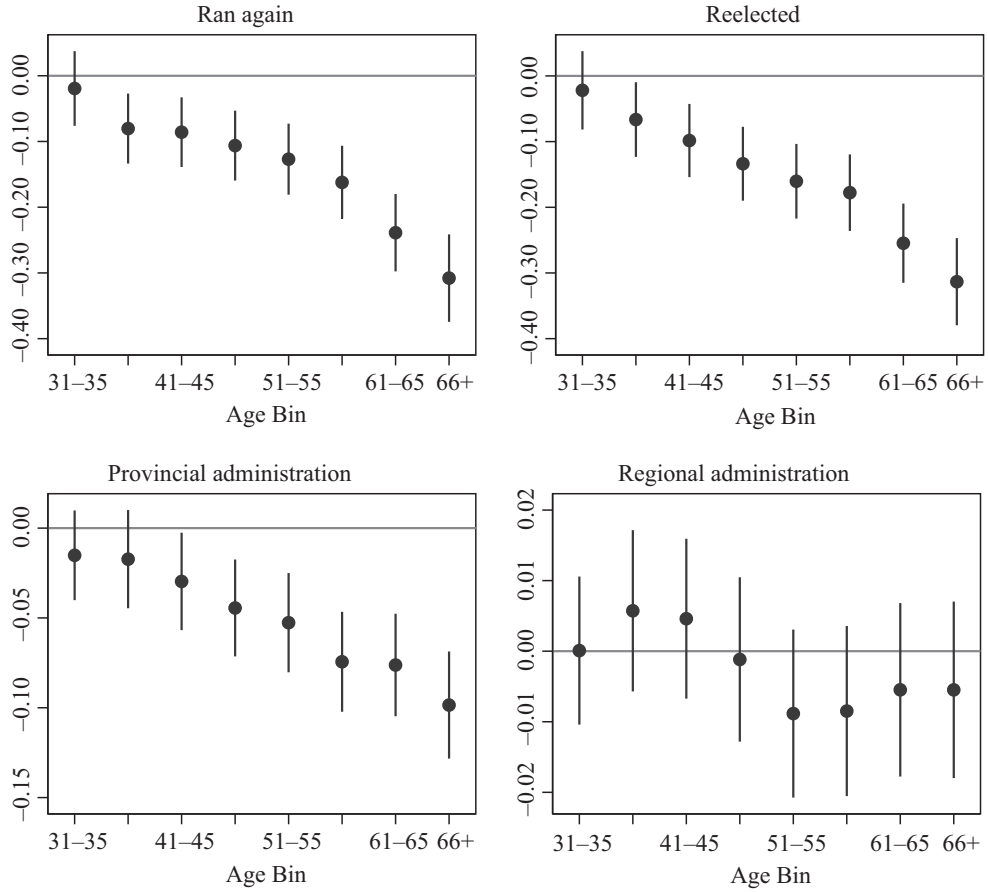

FIGURE 1. Mayor age and political outcomes. *Notes*: This figure plots point estimates and 95% confidence intervals for the coefficients β_k in the regression $Y_{mt} = \sum_{k=1}^{8} \beta_k 1(Age_{mt} \in Bin_k) + \boldsymbol{\delta}' \mathbf{Z}_{mt} + \eta_m + \gamma_t + \varepsilon_{mt}$. The (omitted) reference age category is 18–30. Each included age bin is five years long, with the exception of the final bin, which is aggregated to avoid very small bin sizes. The vector $\mathbf{Z}$ contains controls for prior appointment to city office, elected city political experience, unelected city political experience, gender, high school education, college education, and whether the mayor was born in the city that he or she governs.

TABLE 4
THE EFFECT OF THE MAYOR'S AGE ON POLITICAL OUTCOMES (BINDING TERM LIMIT, FIXED-EFFECTS ESTIMATES)

	Provincial admin.		Regional admin.		National admin.	
	(1)	(2)	(3)	(4)	(5)	(6)
Age	−0.0044***	−0.0046***	−0.0009***	−0.0011***	−0.0005**	−0.0002
	(0.0007)	(0.0007)	(0.0003)	(0.0004)	(0.0003)	(0.0003)
Controls	No	Yes	No	Yes	No	Yes
Municipalities	5533	5533	5533	5533	5533	5533
Observations	7892	7892	7892	7892	7892	7892

Notes See Table 3.

Panel A of Table 5 shows estimates of the coefficient on age in the fixed-effects model, both with and without controls for mayor characteristics, using the full sample of mayoral terms. Panel B shows the corresponding estimates based on the subsample of terms following close elections. Of the 12 point estimates presented in the table, none is significant at the 10% level. The magnitudes of the estimates are economically small. There is no evidence that the age of the mayor matters for revenue or expenditure, on average.

Figure 2 presents the estimates of equation (2) for the average public finance outcomes. According to the first two graphs, mayors in the age range of 18–30 have higher average revenue and average capital expenditure than mayors in the other age bins. Beyond the 30-year mark, however, the effect of age on these two outcomes is roughly zero—hence linear—across the age distribution. Thus for average revenue and average capital expenditure, the effect of age is non-linear only in the age range 18–35. For these outcomes, we view the linear specification as an approximation. The third graph shows that the effect of age on average current expenditure is roughly zero across the entire age distribution. The results are very similar when we remove municipality-specific linear trends from the revenue and expenditure outcomes. (See Table A5 in the Appendix for details.)

The effect of age on measures of quality of governance

A career-concerns model, in which politicians care about both citizen welfare and re-election, and have heterogeneous values of re-election, would predict that younger politicians value re-election more. In this subsection we test whether the quality of their policies is superior because they invest more effort.[13] Younger mayors may improve their chances at re-election by means of a variety of policies and their quality, which we may not observe in our dataset.

TABLE 5
THE EFFECT OF THE MAYOR'S AGE ON AVERAGE BUDGET OUTCOMES

	Average revenue		Average capital expend.		Average current expend.	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Fixed-effects estimates						
Age	0.10	0.23	−0.08	−0.03	0.16	0.22
	(0.38)	(0.41)	(0.13)	(0.13)	(0.16)	(0.18)
Controls	No	Yes	No	Yes	No	Yes
Municipalities	6584	6584	6584	6584	6584	6584
Observations	10,244	10,244	10,244	10,244	10,244	10,244
Panel B: Fixed-effects estimates, close elections						
Age	−0.65	−0.94	−0.22	−0.20	−0.36	−0.35
	(0.92)	(1.05)	(0.35)	(0.42)	(0.37)	(0.44)
Controls	No	Yes	No	Yes	No	Yes
Municipalities	1902	1902	1902	1902	1902	1902
Observations	2122	2122	2122	2122	2122	2122

Notes See Table 3.

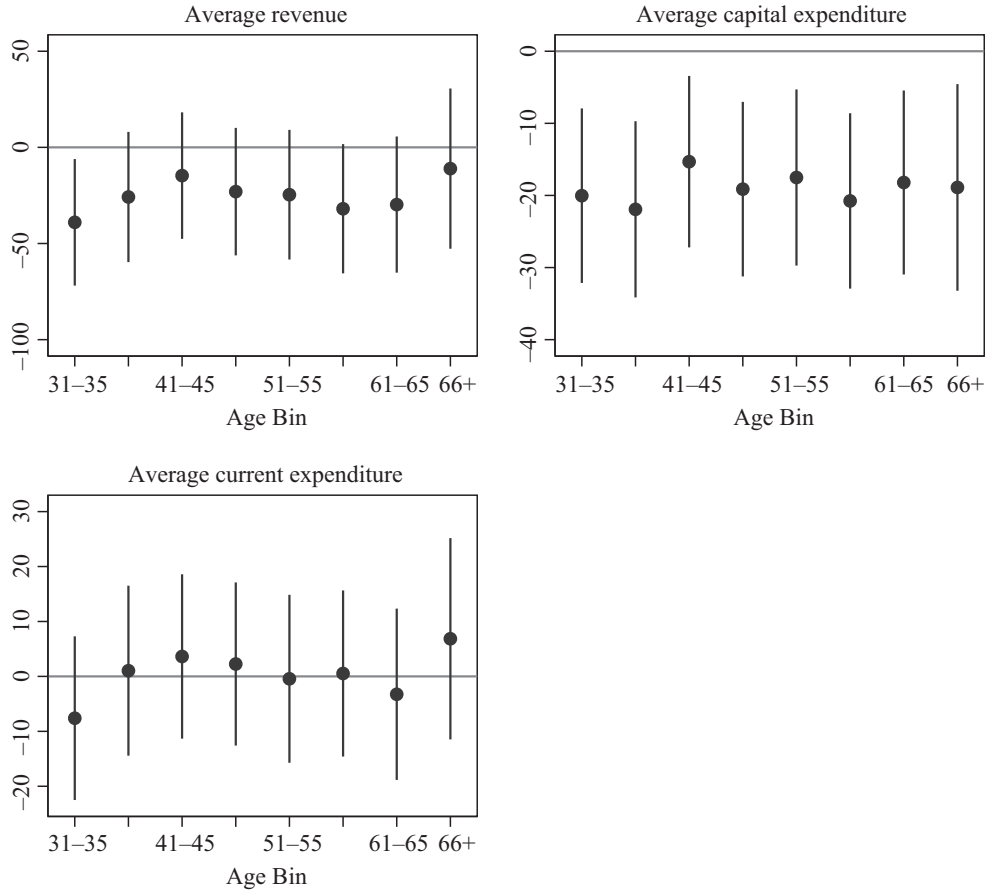

FIGURE 2. Mayor age and average public finance outcomes. *Notes*: See Figure 1.

If the capitalization model is correct (Oates 1969; Yinger 1982), then one would expect that better policies translate into higher house prices. As shown in Table 6, there is little evidence that house prices respond to the age of the mayor in office. While the mayor's age has a statistically significant, negative effect on house prices in the specification without controls using the subsample of terms following a close election, adding controls results in a dramatically reduced point estimate that becomes statistically insignificant. The results are very similar when we remove municipality-specific linear trends from the outcome. (See Table A6 in the Appendix for details.)

A second interpretation is that while younger and older mayors implement similar policies, both quantitatively and qualitatively, the younger ones are faster in responding to citizens' needs. For instance, Casaburi and Troiano (2015) find that the returns to otherwise identical tax enforcement policies are stronger for mayors who are faster in translating these policies to actual public goods. To investigate this possibility, we adopt the same measure of speed of public good provision adopted in Casaburi and Troiano (2015), and test whether this measure responds to the age of the mayor. The measure is the ratio of actually provided public goods over the public goods that were promised to voters in the provisional budget at the end of the year. The estimates in Table 6 indicate that the speed of public good provision does not depend on the age of the mayor. The

TABLE 6
THE EFFECT OF THE MAYOR'S AGE ON HOUSE PRICES AND THE SPEED OF PUBLIC GOOD PROVISION

	Average house price		Speed of public good provision	
	(1)	(2)	(3)	(4)
Panel A: Fixed-effects estimates				
Age	−0.19	−0.20	−0.000035	−0.000041
	(0.18)	(0.19)	(0.000082)	(0.000078)
Controls	No	Yes	No	Yes
Municipalities	5232	5232	6581	6581
Observations	5995	5995	10,239	10,239
Panel B: Fixed-effects estimates, close elections				
Age	−0.71	0.23	−0.000099	0.00026
	(0.44)	(0.49)	(0.00052)	(0.00032)
Controls	No	Yes	No	Yes
Municipalities	1173	1173	1902	1902
Observations	1228	1228	2123	2123

Notes See Tables A1 and A2 in the Appendix for variable definitions and data sources. In all specifications, the sample is restricted to mayoral terms in which the term limit is not binding. Results are reported with and without controls for prior appointment to city office, elected city political experience, unelected city political experience, gender, high school education, college education, and whether the mayor was born in the city that he or she governs. Standard errors in the fixed-effects specification are robust to heteroscedasticity and clustering at the level of municipality. Standard errors are shown in parentheses. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

results are very similar when we remove municipality-specific linear trends from the outcome. (See Table A6 in the Appendix for details.)

Figure 3 displays the estimates of equation (2) for the speed of public good provision and house prices. The results confirm that these outcomes are typically similar for older and younger mayors.

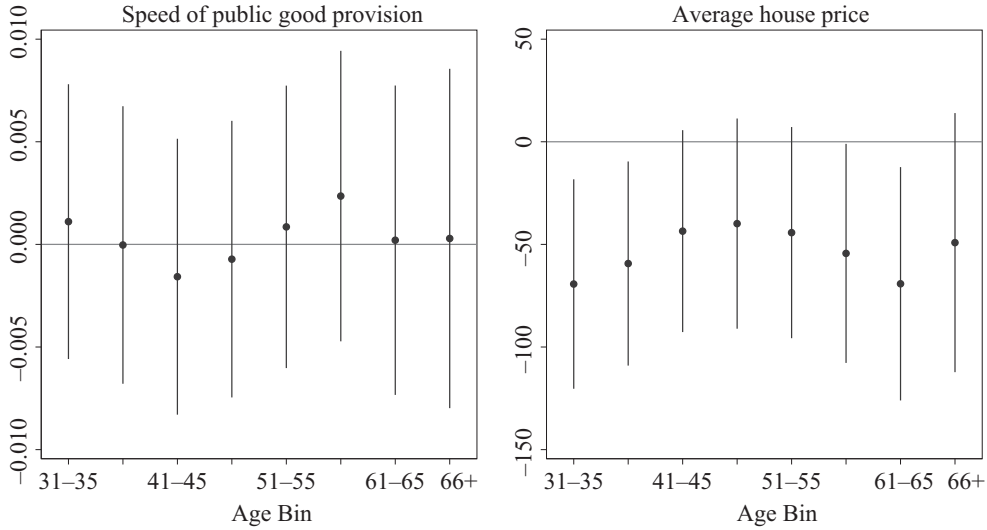

FIGURE 3. Mayor age and other municipal outcomes. *Notes*: See Figure 1.

Age and political budget cycles

Political budget cycles lower the welfare of citizens by distorting the path of fiscal policy. However, for younger politicians this social cost could be outweighed by the benefit of increasing the re-election probability, because younger politicians expect to have a long political career. If voters are gullible or rational but poorly informed about the negative consequences of budget cycles, this would in turn imply that younger voters have a higher re-election probability. We therefore test whether the mayor's age affects the timing of revenue and expenditure relative to the electoral cycle.

We do this by estimating equations (3) and (4) using system GMM. For the sake of brevity, we report estimates only for specifications that exclude controls for mayor characteristics. The results (available on request) are very similar when we add these controls.

Panel A in Table 7 presents the results for the full sample of mayoral terms, while panel B presents the results for terms following close elections. Columns (1), (4) and (7) present estimates of equation (3). Columns (2), (5) and (8) present estimates of equation (4), treating *Age* and its interaction as strictly exogenous, while in columns (3), (6) and (9), *Age* and its interaction are treated as endogenous and instrumented with *Old* and its interaction. Column (1) of panel A shows that younger mayors increase revenue by 12.54 euros per capita in the year before an election relative to other years of the mayoral term. This effect is significant at the 5% level. In contrast, older mayors increase revenue by only 5.41 euros per capita in the year before an election; however, the difference in revenue cycles for older and younger mayors is statistically insignificant. Similarly, the results in columns (2) and (3), which model a linear relationship between the mayor's age and the size of the budget cycle, show that revenue cycles are smaller for older mayors, but the marginal effect of age is statistically insignificant. The results in panel B based on terms following close elections confirm the conclusion that the mayor's age does not have a statistically significant effect on cycles in total revenue.

The specification in column (4) of Table 7 tests whether political budget cycles in capital expenditure are different for older and younger mayors. In the sample of all mayoral terms (panel A), younger mayors increase capital expenditure by 7.25 euros per capita in the year before the election, and in the sample of terms following close elections (panel B), younger mayors increase capital expenditure by 9.48 euros per capita. These two estimates are significant at the 1% and 5% levels, respectively. The corresponding estimates of capital expenditure cycles for older mayors, on the other hand, are very close to zero—28 cents per capita and −55 cents per capita. In both samples, the difference in cycles for older and younger mayors is statistically significant at the 5% level. Columns (5) and (6) test for an effect of the mayor's age on capital expenditure, using a continuous measure of age. Considering the results in both panels A and B, the point estimates suggest that political cycles in capital expenditure are smaller for older mayors, and the marginal effect of age is statistically significant at the 5% level in three out of four specifications. The results suggest that increasing the mayor's age by one year reduces the size of the cycle in capital expenditure by 0.26–0.98 euros per capita. To compare the results to the specification using a dichotomous measure of age, consider column (6) of panel B. The average age of a younger mayor who wins the election is 43 years, while the average age of an older mayor who wins the election is 55 years. Therefore the results suggest that a typical younger mayor will increase capital expenditure before the election by 9.66 euros per capita, while a typical older mayor will actually decrease capital

TABLE 7
THE EFFECT OF THE MAYOR'S AGE ON POLITICAL BUDGET CYCLES

	Revenue per capita			Capital expenditure per capita			Current expenditure per capita		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Dynamic panel estimates									
Year before election	13.71**	22.43	54.76	7.73***	16.16**	38.75***	−2.81	−10.42*	−15.99
	(5.43)	(18.68)	(36.13)	(2.13)	(7.80)	(14.97)	(1.89)	(6.18)	(13.36)
Old	0.34			0.89			0.37		
	(2.69)			(1.04)			(1.00)		
Old × Year before election	−7.31			−6.60**			2.34		
	(7.31)			(2.97)			(2.72)		
Age		−0.09	0.05		−0.05	0.10		−0.01	0.03
		(0.14)	(0.28)		(0.05)	(0.11)		(0.05)	(0.10)
Age × Year before election		−0.26	−0.93		−0.24	−0.71**		0.19	0.30
		(0.38)	(0.75)		(0.16)	(0.31)		(0.13)	(0.28)
AR(2) test *p*-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Municipalities	7064	7229	7064	7064	7229	7064	7064	7229	7064

TABLE 7
CONTINUED

	Revenue per capita			Capital expenditure per capita			Current expenditure per capita		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Observations	60,721	63,018	60,721	60,838	63,149	60,838	60,837	63,148	60,837
Panel B: Dynamic panel estimates, close elections									
Year before election	6.60	27.24	4.43	9.85**	34.22**	50.80**	−0.86	−8.95	9.05
	(10.90)	(32.86)	(62.03)	(3.83)	(14.47)	(23.07)	(3.56)	(11.02)	(23.26)
Old	−2.72			−0.26			3.78		
	(6.78)			(2.74)			(2.64)		
Old × Year before election	0.20			−9.73**			−2.08		
	(12.73)			(4.83)			(4.84)		
Age		0.01	−0.32		−0.04	−0.01		0.16	0.38
		(0.34)	(0.69)		(0.13)	(0.28)		(0.12)	(0.27)
Age × Year before election		−0.42	0.04		−0.60**	−0.94**		0.15	−0.22
		(0.63)	(1.24)		(0.28)	(0.47)		(0.21)	(0.48)
AR(2) test *p*-value	0.660	0.661	0.660	0.890	0.901	0.905	0.514	0.518	0.516
Municipalities	2470	2470	2470	2472	2472	2472	2472	2472	2472
Observations	11,464	11,464	11,464	11,481	11,481	11,481	11,481	11,481	11,481

Notes All regressions include one lag of the dependent variable, account for municipality fixed effects and year effects, and are estimated by system GMM. Both panels include observations following all mayoral elections. The results in panel A are from the sample for which the mayor is not term-limited. The results in panel B are from the sample for which the mayor is not term-limited and the most recent election was decided by a vote margin of 5 percentage points or fewer. In columns (1), (4) and (7), *Old* is an indicator for the mayor being older than the electoral opponent coming in second place. *Old* is treated as strictly exogenous. In the remaining columns, *Age* is the age of the mayor. In columns (2), (5) and (8), *Age* is treated as strictly exogenous. In columns (3), (6) and (9), *Age* and its interaction are treated as endogenous and instrumented with *Old* and its interaction. The AR(2) test *p*-value corresponds to a test of serial correlation in the error term. Standard errors, reported in parentheses, are robust to heteroscedasticity and clustering at the level of municipality. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

expenditure before the election by 2.1 euros per capita. Therefore the specifications using the dichotomous and continuous measures of age produce broadly similar results.

The baseline size and heterogeneity of political cycles in capital expenditure are both larger in the sample of mayoral terms following close elections. Younger mayors with career concerns are more likely to engage in political budget cycles in more politically competitive municipalities where the stakes are higher. However, because political competition is not randomly distributed across municipalities, and could be correlated with other municipality characteristics, we cannot safely interpret this heterogeneous effect as causal.

The results in columns (7)–(9) of Table 7 indicate that there is little evidence that younger mayors engage in political cycles in current expenditure or that cycles in current expenditure vary by the mayor's age. This is consistent with Cioffi *et al*. (2012), who find that budget cycles in Italian municipalities are driven by changes in capital expenditure. This is because capital expenditure is highly visible, easily targeted to specific groups of voters, and largely exempted from balanced-budget rules. All of the political-budget-cycle results are very similar when we remove municipality-specific linear trends from the revenue and expenditure outcomes. (See Table A7 in the Appendix for details.)

Is the relationship between the mayor's age and political budget cycles non-linear? Figure 4 plots point estimates and 95% confidence intervals for the coefficients δ_k in equation (5), where δ_ℓ represents the difference between average political budget cycles for mayors in bin ℓ and mayors in the 18–30 year bin, accounting for municipality fixed effects, year effects, and the persistence of public finance outcomes. The first and third graphs show that cycles in total revenue and current expenditure are similar across different age bins. For these two outcomes, the size of the cycle for mayors aged 18–30 is statistically indistinguishable from the size of the cycle for mayors in any of the older age bins. In contrast, the second graph shows that cycles in capital expenditure are smaller for mayors aged 46–50, 61–65 or over 66 compared to mayors aged 18–30, and this difference is statistically significant. Focusing on the point estimates, we document four patterns. First, increasing mayor age from the 18–30 bin to the 31–35 bin has virtually no effect on capital expenditure cycles. Second, the marginal effect of mayor age on capital expenditure cycles is negative moving from the 31–35 bin to the 36–40 bin. Third, the marginal effect of age is roughly zero over the 36–60 age range. Finally, the marginal effect of age again becomes negative for ages 61 and greater. Though one should avoid overinterpreting these patterns in the face of substantial statistical uncertainty, they provide suggestive evidence of non-linearities in the relationship between mayor age and cycles in capital expenditure. The linear specification should therefore be interpreted as an approximation.

In Tables A8–A13 of the Appendix, we examine whether the effect of the mayor's age on political budget cycles varies according to the mayor's wage, the presence of a balanced-budget rule, or the electoral system. We exploit the fact that for Italian municipalities, these three variables are each a step function of population, changing discontinuously at different population thresholds.[14] We find that the effect of age on political budget cycles is smaller when the mayor's wage is higher, the municipality is subject to a balanced-budget rule, or the municipality uses runoff elections as opposed to single-round plurality elections.[15]

Political budget cycles and re-election

Two of our main findings are that younger mayors increase investment spending right before an election by a greater amount than older mayors, and younger mayors are more

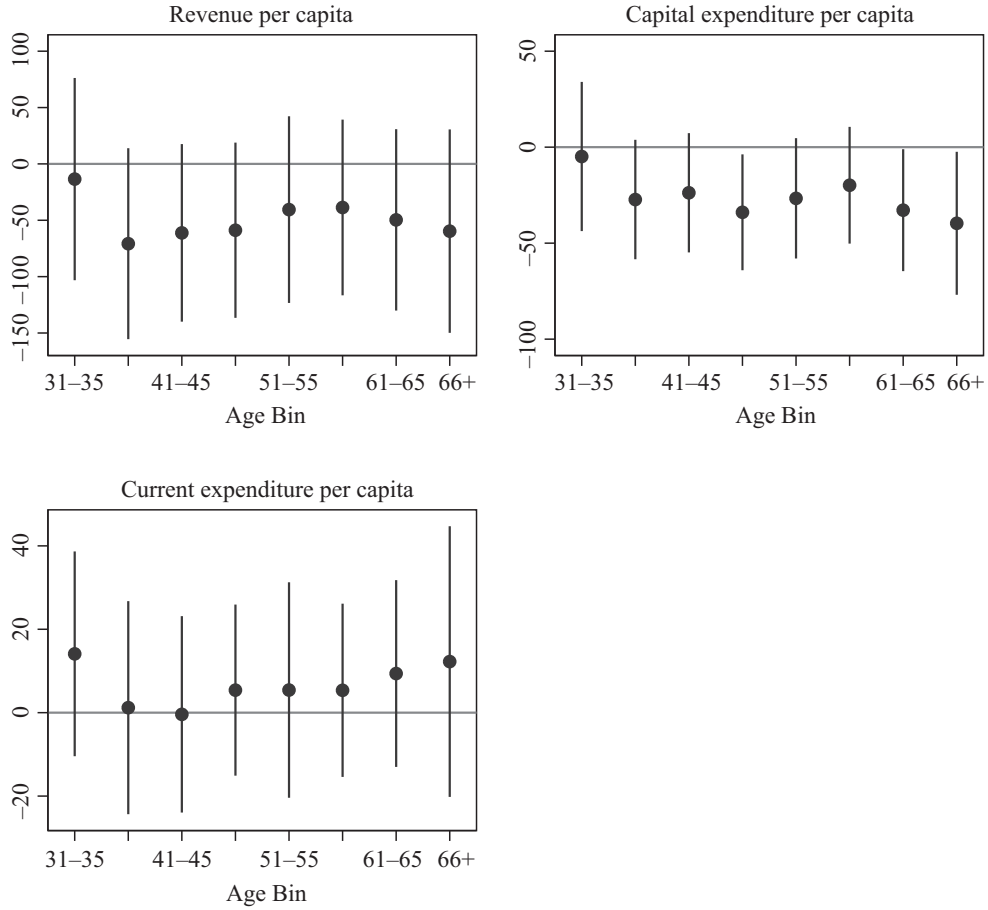

FIGURE 4. Mayor age and political budget cycles. *Notes*: This figure plots point estimates and 95% confidence intervals for the coefficients δ_k in the regression $Y_{m,t} = \rho Y_{m,t-1} + \alpha Elec_{m,t} + \sum_{k=1}^{8} \beta_k 1(Age_{m,t} \in Bin_k) + \sum_{k=1}^{8} \delta_k Elec_{m,t} \times 1(Age_{m,t} \in Bin_k) + \eta_m + \zeta_t + \nu_{m,t}$. The sample is restricted to years following 'close' elections decided by a vote margin of 5 percentage points or fewer. The (omitted) reference age category is 18–30. Each included age bin is five years long, with the exception of the final bin, which is aggregated to avoid very small bin sizes.

likely to be re-elected than older mayors. Do younger mayors have a higher probability of re-election *because* they strategically increase spending right before the election, thus fooling voters? This is a difficult question to answer because spending decisions are endogenous and may be correlated with, among many other things, expectations of re-election, which are unobservable. For instance, mayors who feel certain about their re-election may be less prone to political budget cycles, and mayors who feel electorally vulnerable may be more prone to cycles.

As shown in Table 8, in the sample of terms following close elections, there is a positive correlation between the cycle in capital expenditure and re-election. This correlation is statistically insignificant (but close to the 10% level) when mayor controls and city and election-year effects are excluded; however, it becomes less precise when either mayor controls or city and election-year effects are added to the regression. But it is reassuring that the magnitude of the coefficient, in close elections, does not change with

TABLE 8
THE CORRELATION BETWEEN POLITICAL BUDGET CYCLES AND RE-ELECTION

	Re-elected			
	(1)	(2)	(3)	(4)
Panel A: Cycles in capital expenditure				
Δ capital expenditure	0.00039	−0.000090	−0.0076	−0.010
	(0.0051)	(0.0051)	(0.0085)	(0.0084)
Mayor controls	No	Yes	No	Yes
City and election-year effects	No	No	Yes	Yes
R^2	0.000	0.022	0.074	0.092
Municipalities	6581	6581	6581	6581
Observations	10,239	10,239	10,239	10,239
Panel B: Cycles in capital expenditure, close elections				
Δ capital expenditure	0.019	0.016	0.017	0.019
	(0.012)	(0.012)	(0.035)	(0.035)
Mayor controls	No	Yes	No	Yes
City and election-year effects	No	No	Yes	Yes
R^2	0.001	0.021	0.186	0.199
Municipalities	1902	1902	1902	1902
Observations	2123	2123	2123	2123

Notes See Table 6. The equations in columns (1) and (2) are estimated by OLS, and the equations in columns (3) and (4) are estimated using municipality fixed effects and year-of-election effects. For the sake of readability, Δ capital expenditure is measured in hundreds of euros per capita.

the inclusion of the controls. While suggestive, these estimates may be biased and should not be interpreted as causal. Mayors who strategically increase spending before the election may exert more effort towards re-election in other dimensions, for instance in political speeches, media appearances, and so on. Furthermore, spending decisions may be correlated with expectations of re-election, which are unobservable.

In a previous version of this paper we have shown that the cycle in residual expenditure (the difference between the promised and the delivered expenditures) is correlated with re-election in a statistically significant way (the result is available on request). This may be consistent with the view that voters may pay more attention to the promises of politicians rather than to the implemented policies.

IV. CONCLUSION

We study the role of a politician's age in determining their policy choices. We find that younger politicians engage in political budget cycles on public investment more than older ones. This result is consistent with a career-concerns model in which younger politicians with a longer horizon in their career are more willing to engage in strategic policies to ensure re-election. Interestingly, this is more likely to occur when elections are close, and therefore even a small effect on voting behaviour could be critical. Younger politicians are more likely to be re-elected, and there is suggestive evidence of a positive correlation between re-election and political budget cycles, albeit statistically insignificant.

APPENDIX: REGRESSION DISCONTINUITY DESIGN

One concern with the fixed-effects model is that time-varying unobservables may be correlated with both the outcomes and the mayor's age. For example, a change in voter preferences may drive changes in outcomes and in the age of the winning mayoral candidate. Alternatively, the age distribution of the mayoral candidate pool may change as a result of changes in policy outcomes, if the candidate's decision to run for office as a function of current policy differs by age.

In order to address these concerns, we could use a regression discontinuity design and focus on close elections between mayoral candidates of different ages. The running variable, X, would be defined as the older candidate's margin of victory, measured in percentage points. The main intuition is that for each close election involving two candidates of different ages, whether the older candidate wins would be as good as randomly assigned. Let $D = 1$ if the older candidate wins, and $D = 0$ otherwise. Adopting the potential outcomes framework, let Y_j denote the policy outcome in the event that the winning politician is j years old, where $j \in \{1,2,\ldots,J\}$. In addition, let $A_D \in \{1, 2, \ldots, J\}$ be the age of the winning politician when the election outcome is D. The usual monotonicity condition is satisfied, because by construction $A_1 > A_0$ for all elections. Importantly, to apply this strategy, one would need to assume that $\mathbb{E}[Y_{A_D} \mid X = x]$ is continuous at $x = 0$ for $D \in \{0,1\}$. The monotonicity and continuity conditions jointly suffice to identify the causal effect of the politician's age on policy outcomes (Hahn *et al.* 2001). In practice we would estimate the equations

$$A_{mt} = \alpha + \delta D_{mt} + P(X_{mt}) + v_{mt},$$
$$Y_{mt} = \gamma + \rho A_{mt} + P(X_{mt}) + \xi_{mt},$$

using data from elections decided by a relatively narrow margin of victory.

Unfortunately, in our setting one of the assumptions required for identification is likely not satisfied: the continuity of potential outcomes. This assumption is not testable, but a way to

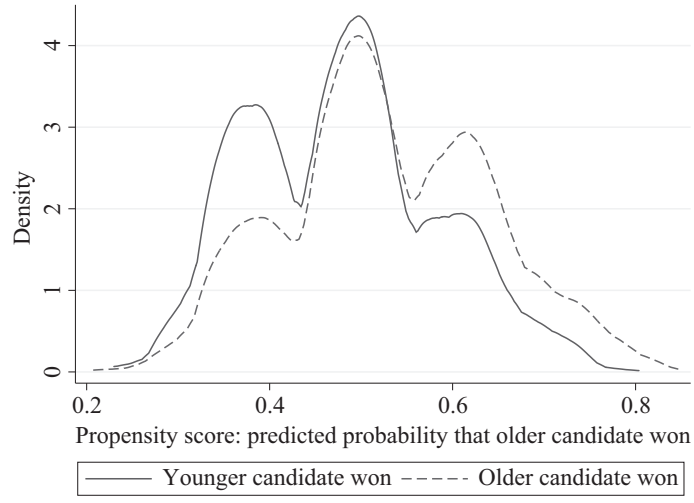

FIGURE A1. Density of estimated propensity scores. *Notes*: The graph plots the density of the estimated propensity score for elections in which the younger candidate won and elections in which the older candidate won. The propensity score for the older candidate winning is estimated using a logistic model and the following covariates: prior appointment to city office, elected city political experience, unelected city political experience, gender, high school education, college education, and born locally. Densities are estimating using the standard Epanechnikov kernel and the subsample of elections determined by a margin of victory of 2 percentage points or fewer.

provide supporting evidence is to show that a broad range of municipal and individual covariates are balanced at the threshold. While the balancedness of municipal covariates is typically satisfied in close elections, the strategy does not guarantee that individual covariates will be balanced, as noted by Brollo and Troiano (2016). In Table A4 we verify that observable municipal characteristics are indeed balanced in close elections (panel B), but we also show that many individual covariates are not balanced (panel A).

We find that older mayors who win a close election are on average 11 years older than younger mayors who win a close election. However, they differ on other dimensions as well. Older mayors have more elected political experience, are less likely to be women, are more likely to be born in the city where they become mayor, and are less educated. It should be noted that the continuity

TABLE A1
VARIABLE DESCRIPTIONS AND SOURCES

Variable	Definition and measure	Sample	Source
Age	Age of the mayor, in years	1998–2013	IMI
Marg.of victory	Margin of victory of older candidate, in percentage points	1998–2013	IMI
Prior office	Equal to 1 if mayor had prior appointment to any city office	1998–2013	IMI
Exper.(elected)	Mayor's experience in elected city political office, in years	1998–2013	IMI
Exper. (unelected)	Mayor's experience in unelected city political office, in years	1998–2013	IMI
Woman	Equal to 1 if the mayor is a woman	1998–2013	IMI
Born locally	Equal to 1 if mayor was born in the city that he or she governs	1998–2013	IMI
High school	Equal to 1 if mayor has a high-school degree	1998–2013	IMI
College	Equal to 1 if mayor has a college (bachelor's) degree	1998–2013	IMI
Centre-right	Equal to 1 if the mayor is a member of a centre-right party	1998–2013	IMI
# Rivals	Number of rival candidates	1998–2013	IMI
Term limited	Equal to 1 if mayor has a binding term limit	1998–2013	IMI
Pop.	Population	2001	Census
Pop. dens.	Population density, measured as the number of people per square kilometre	2005	SAIM
Prop. active pop.	Proportion of population that is over 15 years old and either has a job or is looking for one	2005	SAIM
Elderly	Elderly index, equal to (population over 65 years old)/(population under 14 years old)	2005	SAIM
Fam. size	Average family size	2005	SAIM
Prod. p.c.	Number of production units per capita	2005	SAIM
Employment	Proportion of population that is employed	2005	SAIM
Income p.c.	Disposable income per capita, in euros	2005	SAIM
Altitude	Altitude of the city, in metres	2001	SAIM
North	Equals 1 if municipality is in the north	2001	SAIM
Central	Equals 1 if municipality is in the centre	2001	SAIM
South	Equals 1 if municipality is in the south (includes Sicily and Sardinia)	2001	SAIM

Notes IMI stands for Italian Ministry of the Interior. SAIM stands for Statistical Atlas of Italian Municipalities. Census stands for the Italian census.

TABLE A2
FURTHER VARIABLE DESCRIPTIONS AND SOURCES

Variable	Definition and measure	Sample	Source
Ran again	Incumbent mayor decided to run for office again (non-term-limited mayors only)	1998–2013	IMI
Re-elected	Incumbent mayor was re-elected (non-term-limited mayors only)	1998–2013	IMI
Prov. admin.	Mayor held a position in provincial administration within 5 years of first mayoral mandate	1998–2014	IMI
Region. admin.	Mayor held a position in regional administration within 5 years of first mayoral term	1998–2014	IMI
Nation. admin.	Mayor held a position in national administration within 5 years of first mayoral term	1998–2014	IMI
Av. rev.	Av. total collected revenue over the years of the mayor's term (€ per capita)	1998–2013	IMI
Av. cap. exp.	Av. implemented capital expenditure over the years of the mayor's term (€ per capita)	1998–2013	IMI
Av. curr. exp.	Av. implemented current expenditure over the years of the mayor's term (€ per capita)	1998–2013	IMI
Δ Revenue	Total collected revenue in pre-election year minus average revenue in previous years of term (€ per capita)	1998–2013	IMI
Δ Cap. exp.	Implemented capital expenditure in pre-election year minus av. capital expenditure in previous years of term (€ p.c.)	1998–2013	IMI
Δ Curr. exp.	Implemented current expenditure in pre-election year minus av. current expenditure in previous years of term (€ p.c.)	1998–2013	IMI
Speed of public good provision	Av. ratio of paid to committed current expenditure over the years of the mayor's term	1998–2013	IMI
House price	Av. price of residential housing over term (€ per square metre)	2002–2011	LRA

Notes IMI stands for Italian Ministry of the Interior. SAIM stands for Statistical Atlas of Italian Municipalities. LRA stands for Italian Land Registry Agency. All budget variables exclude the election year.

TABLE A3
COVARIATE BALANCE FOLLOWING CLOSE ELECTIONS

	Older candidate won (1)	Younger candidate won (2)	Difference (3)	*p*-value (4)
Mayor				
Age	55.34	43.44	11.91***	0.000
Previously held any city office	0.66	0.63	0.03	0.245
City political experience (elected)	5.17	4.18	0.99***	0.000
City political experience (unelected)	0.62	0.70	−0.08	0.450
Woman	0.11	0.15	−0.04**	0.026
Born locally	0.52	0.39	0.13***	0.000
High school degree	0.87	0.93	−0.06***	0.000
College degree	0.43	0.56	−0.13***	0.000
Centre-right party	0.10	0.09	0.00	0.873
Number of rivals on ballot	2.05	1.93	0.12*	0.089
Municipality				
Population (2001)	6685.76	5453.53	1232.23	0.182
Population per square km (2005)	321.09	286.62	34.47	0.238
Active pop./total pop. (2005)	0.41	0.41	0.00	0.930
Elderly index (2005)	1.78	1.78	−0.00	0.965
Family size (2005)	2.50	2.50	0.01	0.594
Production units per capita (2005)	0.08	0.07	0.00*	0.072
Employed/total pop. (2005)	0.27	0.25	0.02**	0.024
Income per capita (2005 €)	13,263.34	13,217.52	45.82	0.783
Altitude (metres)	455.06	482.74	−27.68	0.230
North	0.52	0.50	0.02	0.390
Central	0.11	0.13	−0.02	0.295
South	0.36	0.37	−0.00	0.861
Observations	792	754		

Notes The sample is restricted to non-term-limited mayoral terms following an election decided by a margin of 2 percentage points or fewer. Columns (1) and (2) report averages from elections decided by a margin of victory of less than 2 percentage points. Column (3) reports the difference of the averages, and column (4) reports the *p*-value corresponding to the two-sided test of equality of the averages. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A4
DISCONTINUITIES IN MAYOR AND MUNICIPALITY CHARACTERISTICS

	Age	Prior office	Experience (elected)	Experience (unelected)	Woman	Born locally
Panel A: Mayor characteristics						
RD	11.2***	0.042**	0.98***	−0.060	−0.036***	0.15***
	(0.32)	(0.017)	(0.23)	(0.074)	(0.012)	(0.019)
Bandwidth	15.4	14.6	11.6	12.1	15.3	14.2
Observations	10,789	10,371	8537	8814	10,766	10,123
	High school	College	Centre-right	Number of rivals	Term limited	
RD	−0.069***	−0.13***	−0.0042	0.0022	0.027	
	(0.012)	(0.019)	(0.011)	(0.058)	(0.018)	
Bandwidth	12.7	13.3	14.3	9.94	10.4	
Observations	9202	9571	10,159	7511	7829	
Panel B: Municipality characteristics						
	Population	Population density	Proportion of active population	Elderly	Family size	Production p.c.
RD	−413.1	18.7	0.0013	0.057	−0.012	0.00057
	(1466.8)	(24.4)	(0.0028)	(0.054)	(0.012)	(0.0010)
Bandwidth	11.5	13.4	8.39	12.6	12.4	11.5
Observations	8487	9603	6451	9137	9027	8448
	Employment	Income p.c.	Altitude	North	Central	South
RD	0.0063	96.2	−34.2*	0.0045	0.0030	−0.0098
	(0.0086)	(149.3)	(19.5)	(0.020)	(0.013)	(0.021)
Bandwidth	9.82	8.23	9.83	12.8	13.8	11.2
Observations	7440	6348	7441	9294	9903	8313

Notes See Tables A1 and A2 for variable definitions and data sources. The table gives sharp regression discontinuity estimates using the older candidate's margin of victory as the running variable. Estimates are obtained by local linear regression using a uniform kernel and the Calonico *et al*. (2014) bandwidth selector. Heteroscedasticity-robust standard errors are in parentheses. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A5
THE EFFECT OF THE MAYOR'S AGE ON AVERAGE BUDGET OUTCOMES (MUNICIPALITY-SPECIFIC LINEAR TRENDS REMOVED)

	Average revenue		Average capital expend.		Average current expend.	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Fixed-effects estimates						
Age	4.91	10.45	−0.02	−0.11	4.55	9.51
	(8.53)	(10.92)	(0.44)	(0.54)	(7.59)	(9.57)
Controls	No	Yes	No	Yes	No	Yes
Municipalities	6581	6581	6581	6581	6581	6581
Observations	10,239	10,239	10,239	10,239	10,239	10,239
Panel B: Fixed-effects estimates, close elections						
Age	3.99	4.49	0.20	0.18	4.73	5.79
	(4.06)	(4.57)	(0.33)	(0.36)	(4.38)	(4.93)
Controls	No	Yes	No	Yes	No	Yes
Municipalities	1902	1902	1902	1902	1902	1902
Observations	2123	2123	2123	2123	2123	2123

Notes See Table 3.

TABLE A6
THE EFFECT OF THE MAYOR'S AGE ON HOUSE PRICES AND THE SPEED OF PUBLIC GOOD PROVISION (MUNICIPALITY-SPECIFIC LINEAR TRENDS REMOVED)

	Average house price		Speed of public good provision	
	(1)	(2)	(3)	(4)
Panel A: Fixed-effects estimates				
Age	−0.19	−0.20	−0.000035	−0.000041
	(0.18)	(0.19)	(0.000082)	(0.000078)
Controls	No	Yes	No	Yes
Municipalities	5232	5232	6581	6581
Observations	5995	5995	10,239	10,239
Panel B: Fixed-effects estimates, close elections				
Age	−0.71	0.23	−0.000099	0.00026
	(0.44)	(0.49)	(0.00052)	(0.00032)
Controls	No	Yes	No	Yes
Municipalities	1173	1173	1902	1902
Observations	1228	1228	2123	2123

Notes See Table 6.

TABLE A7
THE EFFECT OF THE MAYOR'S AGE ON POLITICAL BUDGET CYCLES (MUNICIPALITY-SPECIFIC LINEAR TRENDS REMOVED)

	Revenue per capita			Capital expenditure per capita			Current expenditure per capita		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Dynamic panel estimates									
Year before election	13.68***	20.14	42.55*	7.65***	16.94**	35.24***	−0.15	−5.39	−7.80
	(3.58)	(12.55)	(24.26)	(1.94)	(7.24)	(13.46)	(1.04)	(3.45)	(7.12)
Old	2.07			1.37			−0.21		
	(1.87)			(0.87)			(0.73)		
Old × Year before election	−5.92			−6.23**			2.30		
	(4.89)			(2.73)			(1.46)		
Age		0.07	0.24		0.02	0.15		0.00	−0.01
		(0.09)	(0.19)		(0.05)	(0.09)		(0.04)	(0.08)
Age × Year before election		−0.19	−0.66		−0.25*	−0.63**		0.14*	0.18
		(0.25)	(0.50)		(0.15)	(0.28)		(0.07)	(0.15)
AR(2) test *p*-value	0.838	0.838	0.827	0.007	0.003	0.008	0.019	0.015	0.019
Municipalities	7064	7229	7064	7064	7229	7064	7064	7229	7064
Observations	60,721	63,018	60,721	60,838	63,149	60,838	60,837	63,148	60,837
Panel B: Dynamic panel estimates, close elections									
Year before election	15.64**	33.19	37.97	11.04***	35.50***	57.61***	−1.07	−8.88	−26.76
	(6.87)	(22.38)	(42.52)	(3.31)	(13.17)	(20.81)	(2.39)	(6.99)	(17.96)
Old	−0.54			2.16			−1.27		
	(4.35)			(1.72)			(2.36)		
Old × Year before election	−4.33			−10.95**			6.24*		
	(8.70)			(4.28)			(3.76)		
Age		−0.07	−0.05		0.02	0.24		−0.09	−0.13
		(0.21)	(0.44)		(0.08)	(0.17)		(0.11)	(0.24)
Age × Year before election		−0.41	−0.50		−0.62**	−1.07**		0.22	0.59
		(0.44)	(0.86)		(0.25)	(0.42)		(0.14)	(0.37)
AR(2) test *p*-value	0.315	0.369	0.314	0.738	0.735	0.753	0.050	0.052	0.051
Municipalities	2497	2497	2497	2499	2499	2499	2499	2499	2499
Observations	12,612	12,612	12,612	12,636	12,636	12,636	12,636	12,636	12,636

Notes See Table 7.

TABLE A8
MAYOR AGE, POLITICAL BUDGET CYCLES AND POPULATION THRESHOLDS FOR MAYOR WAGE (DYNAMIC PANEL ESTIMATES)

	Revenue p.c. (1)	Capital expenditure p.c. (2)	Current expenditure p.c. (3)
Yr pre	78.96***	30.67***	12.87**
	(16.92)	(6.74)	(5.93)
Yr pre × Pop. ∈ [1K,3K)	−68.02***	−23.92***	−19.08***
	(19.26)	(7.14)	(6.62)
Yr pre × Pop. ∈ [3K,5K)	−95.60***	−38.30***	−21.05***
	(20.40)	(7.42)	(7.76)
Yr pre × Pop. ∈ [5K,10K)	−86.36***	−29.37***	−20.63***
	(20.16)	(7.65)	(6.95)
Yr pre × Pop. ∈ [10K,30K)	−100.63***	−27.91***	−19.40**
	(21.02)	(7.55)	(8.65)
Yr pre × Pop. ≥ 30K	−75.45***	−33.82***	−20.15***
	(21.06)	(8.30)	(7.26)
Old	123.94***	23.95***	58.52***
	(17.75)	(5.21)	(8.67)
Old × Pop. ∈ [1K,3K)	−147.42***	−25.74***	−69.90***
	(20.72)	(5.75)	(10.06)
Old × Pop. ∈ [3K,5K)	−160.00***	−29.91***	−70.56***
	(24.35)	(6.89)	(11.61)
Old × Pop. ∈ [5K,10K)	−172.16***	−33.04***	−81.85***
	(25.57)	(7.37)	(12.31)
Old × Pop. ∈ [10K,30K)	−169.18***	−35.04***	−82.38***
	(26.24)	(7.84)	(12.64)
Old × Pop. ≥ 30K	−177.16***	−32.85***	−84.10***
	(29.55)	(8.32)	(14.73)
Old × Yr pre	−103.12***	−25.25***	−30.15***
	(23.01)	(9.66)	(8.00)
Old × Yr pre × Pop. ∈ [1K,3K)	116.82***	16.21	41.46***
	(26.29)	(10.82)	(9.16)
Old × Yr pre × Pop. ∈ [3K,5K)	134.94***	30.81***	40.57***
	(27.56)	(11.14)	(10.68)
Old × Yr pre × Pop. ∈ [5K,10K)	120.54***	27.32**	44.26***
	(26.88)	(10.77)	(9.56)
Old × Yr pre × Pop. ∈ [10K,30K)	121.69***	24.20**	40.07***
	(28.60)	(10.99)	(11.50)
Old × Yr pre × Pop. ≥ 30K	131.70***	40.76***	46.87***
	(36.07)	(15.08)	(12.10)
AR(2) test *p*-value	0.000	0.000	0.001
	7063	7063	7063
Observations	60,687	60,802	60,801

Notes All regressions include one lag of the dependent variable, account for municipality fixed effects and year effects, and are estimated by system GMM. The results are from the sample for which the mayor is not term-limited. 'Yr pre' is an indicator variable equal to 1 in the year before the election. The AR(2) test *p*-value corresponds to a test of serial correlation in the error term. Standard errors, reported in parentheses, are robust to heteroscedasticity and clustering at the level of municipality. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A9
MAYOR AGE, POLITICAL BUDGET CYCLES AND POPULATION THRESHOLDS FOR MAYOR WAGE (DYNAMIC PANEL ESTIMATES, CLOSE ELECTIONS)

	Revenue p.c. (1)	Capital expenditure p.c. (2)	Current expenditure p.c. (3)
Yr pre	127.17***	54.99***	24.43*
	(42.79)	(14.01)	(14.10)
Yr pre × Pop. ∈ [1K,3K)	−130.05***	−50.71***	−23.63
	(43.95)	(14.26)	(14.97)
Yr pre × Pop. ∈ [3K,5K)	−132.89***	−54.97***	−32.23**
	(46.94)	(14.89)	(16.29)
Yr pre × Pop. ∈ [5K,10K)	−138.78***	−57.71***	−28.14
	(51.88)	(15.18)	(19.21)
Yr pre × Pop. ∈ [10K,30K)	−166.09***	−49.45***	−37.70*
	(53.23)	(16.43)	(21.22)
Yr pre × Pop. ≥ 30K	−63.17	−45.97**	−7.64
	(60.44)	(18.32)	(21.92)
Old	96.59*	24.97**	65.58***
	(51.43)	(9.96)	(23.27)
Old × Pop. ∈ [1K,3K)	−91.28*	−22.71**	−63.68***
	(55.01)	(10.34)	(24.02)
Old × Pop. ∈ [3K,5K)	−114.15*	−28.97**	−71.63***
	(62.61)	(11.71)	(26.81)
Old × Pop. ∈ [5K,10K)	−142.99**	−35.41***	−90.35***
	(66.47)	(12.70)	(30.72)
Old × Pop. ∈ [10K,30K)	−126.00*	−37.18**	−83.76***
	(68.97)	(13.15)	(30.53)
Old × Pop. ≥ 30K	−113.35*	−31.42**	−65.82***
	(60.32)	(13.81)	(23.12)
Old × Yr pre	−191.48***	−58.89***	−63.55***
	(54.21)	(17.65)	(20.77)
Old × Yr pre × Pop. ∈ [1K,3K)	211.52***	54.55***	65.90***
	(59.23)	(19.46)	(22.25)
Old × Yr pre × Pop. ∈ [3K,5K)	209.65***	54.63***	83.13***
	(59.94)	(20.55)	(23.21)
Old × Yr pre × Pop. ∈ [5K,10K)	221.97***	66.94***	77.39***
	(62.12)	(19.40)	(25.51)
Old × Yr pre × Pop. ∈ [10K,30K)	243.65***	54.60***	87.34***
	(64.56)	(20.32)	(26.73)
Old × Yr pre × Pop. ≥ 30K	142.74*	59.77**	43.46
	(75.72)	(23.20)	(28.36)
AR(2) test *p*-value	0.196	0.449	0.243
Municipalities	2496	2498	2498
Observations	12,603	12,625	12,625

Notes All regressions include one lag of the dependent variable, account for municipality fixed effects and year effects, and are estimated by system GMM. The results are from the sample for which the mayor is not term-limited and the most recent election was decided by a vote margin of 5 percentage points or fewer. 'Yr pre' is an indicator variable equal to 1 in the year before the election. The AR(2) test *p*-value corresponds to a test of serial correlation in the error term. Standard errors, reported in parentheses, are robust to heteroscedasticity and clustering at the level of municipality. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A10
MAYOR AGE, POLITICAL BUDGET CYCLES AND THE BALANCED-BUDGET RULE (DYNAMIC PANEL ESTIMATES)

	Revenue p.c. (1)	Capital expenditure p.c. (2)	Current expenditure p.c. (3)
Yr pre	25.94***	11.09***	−0.76
	(7.39)	(2.96)	(2.62)
Yr pre × Pop. ≥ 5K	−36.05	−4.69	−6.95
	(42.22)	(7.93)	(21.01)
Yr pre × Pop. ≥ 5K × Yr ≥ 2001	0.71	−5.56	1.12
	(42.90)	(7.23)	(22.08)
Old	20.08***	5.51***	10.59***
	(4.31)	(1.58)	(2.12)
Old × Pop. ≥ 5K	−82.27***	−13.42	−50.60***
	(29.15)	(8.27)	(14.79)
Old × Pop. ≥ 5K × Yr ≥ 2001	19.55	−1.86	19.03
	(28.23)	(7.77)	(13.71)
Old × Yr pre	−19.05**	−10.97***	−2.05
	(9.67)	(4.00)	(3.54)
Old × Yr pre × Pop. ≥ 5K	−0.65	−7.87	5.99
	(66.76)	(13.90)	(34.41)
Old × Yr pre × Pop. ≥ 5K × Yr ≥ 2001	39.10	23.09*	8.58
	(67.15)	(13.38)	(35.11)
AR(2) test *p*-value	0.000	0.000	0.001
Municipalities	7063	7063	7063
Observations	60,687	60,802	60,801

Notes See Table A8.

TABLE A11
MAYOR AGE, POLITICAL BUDGET CYCLES AND THE BALANCED-BUDGET RULE (DYNAMIC PANEL ESTIMATES, CLOSE ELECTIONS)

	Revenue p.c. (1)	Capital expenditure p.c. (2)	Current expenditure p.c. (3)
Yr pre	28.96*	16.06***	4.78
	(15.22)	(5.26)	(4.61)
Yr pre × Pop. ≥ 5K	−57.74	−5.19	−29.42
	(69.09)	(10.32)	(38.73)
Yr pre × Pop. ≥ 5K × Yr ≥ 2001	17.58	−10.72	22.09
	(66.58)	(7.78)	(38.36)
Old	20.38**	6.05*	14.80***
	(9.97)	(3.12)	(5.51)
Old × Pop. ≥ 5K	−17.00	−8.95	−32.46*
	(46.65)	(15.59)	(18.91)
Old × Pop. ≥ 5K × Yr ≥ 2001	−44.74	−8.57	−2.78
	(44.64)	(14.09)	(17.74)
Old × Yr pre	−32.46*	−18.20***	−9.41
	(18.26)	(6.48)	(6.59)
Old × Yr pre × Pop. ≥ 5K	83.56	−1.30	65.81
	(80.98)	(18.46)	(41.93)
Old × Yr pre × Pop. ≥ 5K × Yr ≥ 2001	−22.40	25.02	−46.88
	(77.97)	(16.51)	(41.47)
AR(2) test *p*-value	0.193	0.441	0.273
Municipalities	2496	2498	2498
Observations	12,603	12,625	12,625

Notes See Table A9.

TABLE A12
MAYOR AGE, POLITICAL BUDGET CYCLES AND SINGLE-ROUND VS. RUNOFF ELECTIONS (DYNAMIC PANEL ESTIMATES)

	Revenue p.c. (1)	Capital expenditure p.c. (2)	Current expenditure p.c. (3)
Yr pre	−12.95	1.74	−2.90
	(12.19)	(4.10)	(9.11)
Yr pre × Pop. ≥ 15K	19.85	7.98*	9.50
	(17.16)	(4.73)	(11.39)
Old	15.68*	3.69*	7.71
	(8.62)	(2.15)	(6.29)
Old × Pop. ≥ 15K	−20.65	−4.11	−12.81
	(13.10)	(3.06)	(9.34)
Old × Yr pre	5.99	−7.43	3.35
	(20.86)	(7.28)	(14.56)
Old × Yr pre × Pop. ≥ 15K	−31.68	−2.83	−12.99
	(27.51)	(8.67)	(20.18)
AR(2) test *p*-value	0.078	0.438	0.781
Municipalities	857	857	857
Observations	7016	7022	7022

Notes All regressions include one lag of the dependent variable, account for municipality fixed effects and year effects, and are estimated by system GMM. The results are from the sample for which the mayor is not term-limited. The sample includes only municipalities with populations between 10,000 and 29,000 in order to hold the mayor's wage constant. 'Yr pre' is an indicator variable equal to 1 in the year before the election. The AR(2) test *p*-value corresponds to a test of serial correlation in the error term. Standard errors, reported in parentheses, are robust to heteroscedasticity and clustering at the level of municipality. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A13
MAYOR AGE, POLITICAL BUDGET CYCLES AND SINGLE-ROUND VS. RUNOFF ELECTIONS (DYNAMIC PANEL ESTIMATES, CLOSE ELECTIONS)

	Revenue p.c. (1)	Capital expenditure p.c. (2)	Current expenditure p.c. (3)
Yr pre	−38.37	7.55	−19.16
	(26.40)	(8.34)	(25.41)
Yr pre × Pop. ≥ 15K	30.97	−4.13	28.43
	(32.37)	(9.87)	(25.98)
Old	15.76	3.55	0.25
	(25.63)	(5.35)	(6.95)
Old × Pop. ≥ 15K	−23.85	−6.67	−2.55
	(27.75)	(5.16)	(6.94)
Old × Yr pre	28.30	−19.01	21.72
	(35.69)	(11.63)	(28.92)
Old × Yr pre × Pop. ≥ 15K	−8.19	18.84	−16.87
	(42.64)	(13.98)	(28.26)
AR(2) test *p*-value	0.706	0.762	0.240
Municipalities	296	296	296
Observations	1341	1341	1341

Notes All regressions include one lag of the dependent variable, account for municipality fixed effects and year effects, and are estimated by system GMM. The results are from the sample for which the mayor is not term-limited and the most recent election was decided by a vote margin of 5 percentage points or fewer. The sample includes only municipalities with populations between 10,000 and 29,000 in order to hold the mayor's wage constant. 'Yr pre' is an indicator variable equal to 1 in the year before the election. The AR(2) test *p*-value corresponds to a test of serial correlation in the error term. Standard errors, reported in parentheses, are robust to heteroscedasticity and clustering at the level of municipality. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A14
THE EFFECT OF THE MAYOR'S AGE ON POLITICAL OUTCOMES (PROPENSITY-SCORE METHODS)

	Ran again		Re-elected		Provincial admin.		Regional admin.		National admin.	
	IPW	Match	IPW	Match	IPW	Match	IPW	Match	IPW	Match
Panel A: IPW and matching estimates, close elections										
ATE of Old	−0.099***	−0.110***	−0.143***	−0.154***	−0.019	−0.017	−0.001	−0.001	0.008**	0.007**
	(0.028)	(0.031)	(0.026)	(0.029)	(0.012)	(0.013)	(0.005)	(0.006)	(0.004)	(0.003)
Observations	1281	1281	1281	1281	1281	1281	1281	1281	1281	1281
Panel B: Difference of ATE on Re-elected and ATE on Ran again										
Difference	−0.044**	−0.044**								
	(0.021)	(0.022)								

Notes See Tables A1 and A2 for variable definitions and data sources. In all specifications, the sample is restricted to mayoral terms in which the term limit is not binding. Panel A reports semiparametric estimates of the average treatment effect (ATE) of the older candidate winning the election, using the subsample of elections determined by a margin of victory of 2 percentage points or fewer. For each outcome, the first column reports the inverse-probability-weighted regression-adjustment estimate (IPW), and the second column reports the propensity-score matching estimate (Match). Both estimates utilize a propensity score estimated using a logistic model and the following covariates: prior appointment to city office, elected city political experience, unelected city political experience, gender, high school education, college education, and born locally. Heteroscedasticity-robust standard errors for the propensity-score matching estimates account for the first-stage estimation of the propensity score and are calculated according to Abadie and Imbens (2016). Panel B reports the difference of the average treatment effects on Re-elected and Ran again, with standard errors based on 100 bootstrap repetitions. Standard errors are in parentheses. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A15
THE EFFECT OF THE MAYOR'S AGE ON AVERAGE BUDGET OUTCOMES (PROPENSITY-SCORE METHODS, IPW AND MATCHING ESTIMATES, CLOSE ELECTIONS)

	Average revenue		Average capital expend.		Average current expend.	
	IPW	Match	IPW	Match	IPW	Match
ATE of Old	12.53	2.93	−2.21	−3.63	13.44	12.05
	(26.79)	(27.37)	(5.82)	(5.81)	(13.57)	(14.20)
Observations	859	859	859	859	859	859

Notes See Tables A1 and A2 for variable definitions and data sources. In all specifications, the sample is restricted to mayoral terms in which the term limit is not binding. The table reports semiparametric estimates of the average treatment effect (ATE) of the older candidate winning the election, using the subsample of elections determined by a margin of victory of 2 percentage points or fewer. For each outcome, the first column reports the inverse-probability-weighted regression-adjustment estimate (IPW), and the second column reports the propensity-score matching estimate (Match). Both estimates utilize a propensity score estimated using a logistic model and the following covariates: prior appointment to city office, elected city political experience, unelected city political experience, gender, high school education, college education, and born locally. Heteroscedasticity-robust standard errors for the propensity-score matching estimates account for the first-stage estimation of the propensity score and are calculated according to Abadie and Imbens (2016). Standard errors are in parentheses. *, **, *** indicate $p < 0.10$, $p < 0.05$, $p < 0.01$, respectively.

TABLE A16
THE EFFECT OF THE MAYOR'S AGE ON HOUSE PRICES AND THE SPEED OF PUBLIC GOOD PROVISION (PROPENSITY-SCORE METHODS, IPW AND MATCHING ESTIMATES, CLOSE ELECTIONS)

	Average house price		Speed of public good provision	
	IPW	Match	IPW	Match
ATE of Old	57.3	68.7	−0.0015	−0.0019
	(38.6)	(45.5)	(0.0047)	(0.0049)
Observations	514	514	859	859

Notes See Table A15.

TABLE A17
THE EFFECT OF THE MAYOR'S AGE ON POLITICAL BUDGET OUTCOMES (PROPENSITY-SCORE METHODS, IPW AND MATCHING ESTIMATES, CLOSE ELECTIONS)

	Δ Revenue		Δ Capital expend.		Δ Current expend.	
	IPW	Match	IPW	Match	IPW	Match
ATE of Old	3.82	0.18	−11.41**	−15.65**	1.15	−1.86
	(14.92)	(16.23)	(5.75)	(6.13)	(4.21)	(4.41)
Observations	859	859	859	859	859	859

Notes See Table A15.

assumption is not satisfied in this setting because age in our case is a 'compounded treatment' (age being inherently correlated with other potential treatments at the individual level). In contrast, all of the municipal characteristics are balanced in close elections, including population, geography, income and demographic structure. The unbalancedness of individual covariates implies that we cannot apply a standard regression discontinuity design in this setting. In a previous version of this

paper we showed that our results are robust if we implement a regression discontinuity combined with a matching strategy, to alleviate the concerns of unbalancedness, and following Keele and Titiunik (2015); those results are available on request.

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NOTES

1. Under that law, the *consulship* could be held from age 42, the *praetorship* from age 39, and the *curule aedileship* from age 36 (Kuiper 2010).
2. For instance, Cicero stated: 'For it is in old men that reason and good judgment are found, and had it not been for old men no state would have existed at all' (Falconer 1923).
3. See Bisin *et al*. (2015), Prato (2018) and Alesina and Passarelli (2015) for theoretical models on the effects of discount rates and time horizons on policies.
4. Factors that have been shown to matter for urban public finance include decentralization (Besley and Coate 2003), ethnic composition (Alesina *et al*. 2004) and geographical distribution (Ades and Glaeser 1995).
5. Casaburi and Troiano (2015) show that the political returns of implementing tax enforcement policies are higher for mayors who are faster in providing public goods.
6. Repetto (2017) finds that a 2008 reform requiring all Italian municipalities to disclose their balance sheets before elections significantly reduced budget cycles in capital expenditure. Consistent with this result, we find that the effect of the mayor's age on capital expenditure cycles is strong prior to 2008 but non-existent after the reform. (These results are available on request.)
7. The formalization of political business cycle models was pioneered by Nordhaus (1975), and subsequently developed by Rogoff and Sibert (1988) and Rogoff (1990).
8. Bordignon *et al*. (2016) study the effect of the electoral rules on policies, finding that under runoff elections, the number of political candidates is larger, but the influence of extremist voters on equilibrium policy is smaller.
9. The electoral rule for city councillors also depends on the size of the municipality: in cities with fewer than 15,000 inhabitants, two-thirds of the seats are assigned to councillors in the mayoral coalition, while the rest of the seats are assigned proportionally to the vote shares. In cities with more than 15,000 inhabitants, if the winning mayor's coalition wins at least 60% of the vote in the first round, then every seat of the city council is assigned according to the proportional rule. If the winning mayor's coalition wins less than 60% but more than 40% of the votes in the first round, then they are granted 60% of the seats, and the remaining seats are assigned proportionally.
10. To be precise, we have data on election outcomes and mayor characteristics for 22,789 out of 25,950 elections (88%) held during the sample period.
11. Results obtained by difference GMM, which relies on weaker assumptions by exploiting the moment conditions of only Arellano and Bond (1991), are very similar in terms of magnitude and statistical significance.
12. The results are similar using much smaller or larger vote-margin thresholds, such as 2 or 10.
13. See Persson and Tabellini (2000) for a discussion of the career-concerns model.
14. The mayor's wage increases at the following population thresholds: 1000, 3000, 5000, 10,000, 30,000, and several higher thresholds that are relevant to only a tiny fraction of municipalities. (See Gagliarducci and Nannicini (2013) for details.) A balanced-budget rule was introduced in 1999 and relaxed in 2001 only for municipalities with populations below 5000. (See Grembi *et al*. (2016) for details.) Municipalities with populations below 15,000 elect the mayor according to a single-round plurality system, while municipalities with populations of 15,000 or greater elect the mayor according to a runoff system. (See Bordignon *et al*. (2016) for details.)
15. The evidence is only suggestive because the size of the municipalities could influence the effect of age on political budget cycles through many channels besides the wage, balanced-budget rule or electoral system.

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