

Occupy Government: Democracy and the Dynamics of Personnel Decisions and Public Finances*

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Abstract: This work investigates causes and consequences of patronage in Brazilian cities since the country's re-democratization. It uses five election cycles and compares the hiring of winning and losing party members in close elections to causally estimate patronage. Cities increase their shares of civil servants affiliated with winning political coalitions by 3 percentage points during a mayoral term, and also increase their wage shares by 4 percentage points. Overall, patronage explains slightly more than 50% of the large increase in politically affiliated public employees since re-democratization. Moreover, we find that federal transfers and lack of accountability are important determinants of patronage.

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1. Introduction

Do local democratic elections influence personnel decisions and city finances? The size and type of local public expenditures in the United States are not significantly impacted by electing a democrat or republican to the mayoral office (Ferreira and Gyourko, 2009), in part because of Tiebout (1956) sorting of voters.¹ But in places with poor accountability and low quality of governance, political parties may use the government for their own benefit. This can take different forms, ranging from general corruption related to fraud in public procurements and diversion of funds (Ferraz and Finan, 2011) to the occupation of the governmental sector via a higher degree of patronage (Folke, Hirano, and Snyder, 2011; Xu, 2018) and public workers who receive a large wage premium relative to the private sector (Finan, Olken, and Pande, 2015). These practices can significantly affect government performance since cities generally spend a high share of resources with public sector personnel, and the type and quality of public employees may directly impact the deliverance of services, such as basic education (Akhtari, Moreira and Trucco, 2022).²

In this paper, we study how democratic elections affect the employment and wages of politically connected workers, and the mechanisms behind those personnel and city finance decisions. We proceed in two steps: First, we estimate the extent of patronage practices in Brazilian cities, i.e., the hiring of civil servants politically connected with a winning political coalition, and how this occupation of local governments can have a lasting impact on the public sector; Second, we investigate key mechanisms that may explain different levels of patronage observed in local governments – federal transfers, lack of accountability, and party ideology.

Brazilian municipalities are the focus of our empirical work, where both personnel decisions and public expenditures have had striking patterns since the first presidential election with popular vote in 1990, after a 26-year military dictatorship. The government share of GDP in Brazil grew from 29% in the early 1990s to more than 40% in the late 2000s, with cities accounting for approximately half of the public sector. City expenditures on personnel almost doubled over the last two decades, increasing from 35% of local budgets in 1995 to almost 50% in 2013, the last year of our sample. The share of local labor force employed by city governments reached almost 10% in 2010, representing about 40% of all legally registered employees in the average Brazilian

¹ Hotelling (1929) and Downs (1957) argue that elections should not matter as long as politicians and their parties follow the wishes of the voters. However, political parties may matter at other levels of government (Besley and Case, 2003; Lee, Moretti, and Butler, 2004), and their influence could be the result of strategic extremism (Glaeser, Ponzetto, and Shapiro, 2005) or due to candidates that cannot credibly commit to moderation (Alesina, 1988; Besley and Coate, 1997).

² In general, governments responsible for labor-intensive services, such as education, health, safety, and city maintenance, will have the largest fraction of expenditures assigned to personnel. U.S. school districts, for example, spend more than 80% of current expenditures on wages and benefits.

city.³ At the same time, Brazilian's perceptions of the quality of public services, measured by the World Bank government effectiveness index, has dropped from 0.09 points in 2000 to -0.09 points in 2013.⁴

In order to identify the connections of each public worker with the political coalition in power, we access an annual individual-level dataset with the universe of public employees, including their names, wages, labor contract, and occupation, for almost all Brazilian municipalities from 1995 to 2013.⁵ We then merge these microdata with the universe of individuals affiliated with political parties in Brazil. Approximately 10% of the adult population in Brazil was associated with a political party in 2013, a share that has grown steadily since the re-democratization. We restrict our analysis to the civil servants which are permanent public employees and account for about 85 % of all local public workers. By focusing on civil servants we center our investigation on the effect on personal decisions of front end public employees, such as teachers and doctors, thereby insulating our analysis from the known political appointees turnover in the public sector due to elections (Boyne et al. 2010; Dull et al. 2012). With the merged data in hand, we show in Figure 1 that the share of civil servants affiliated with a political party increased from 16% in 1995 to more than 30% since 2013. Moreover, Figure 2 presents a map with the distribution of those shares in 1995 and 2013 by city, holding constant the 1995 quintile thresholds. The increase in share of affiliated workers was widespread across the country, and not just concentrated in a few cities or regions.

While shocking, this large increase in the share of public workers with political affiliation may not necessarily correspond to an increase in patronage. Political parties commanding a city are generally stronger electorally, and likely to have more sympathizers and affiliates, including public employees. In order to deal with the endogeneity, we compare the public employment of political coalitions that barely won an election with the same outcome of coalitions that barely lost – in practice comparing political coalitions with similar unobserved political power. Using five four-year municipal electoral cycles, from 1996 to 2012, including data from all party coalitions

³ A large fraction of private sector employment is still conducted under informal labor agreements. These data are from the Brazilian Institute of Geography and Statistics (IBGE) and from the Brazilian National Treasury Secretariat (STN).

⁴ Government effectiveness index captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. These data are from World Bank's worldwide governance indicators (wgi) survey.

⁵ Our data set is based on RAIS (Relação Annual de Informações Sociais), a mandatory database assembled and managed by the Brazilian Ministry of Labor, and contains information for more than 95% of all cities in Brazil. Details of the microdata are presented in Section 3.

formed in each election, we show that this regression discontinuity design (Lee, 2008) produces levels and trends of political public employment that are similar for winning and losing coalitions.

Another challenge to identification is the dynamics of several election cycles. For example, winning (losing) by a narrow margin of victory may also increase (decrease) the probability of re-election, and therefore affect the probability of “treatment” in the next election. Moreover, political coalitions in Brazil are fluid, with several changes in each city during the five election cycles. We deal with these potential changes in treatment status by implementing a dynamic regression discontinuity design developed by Cellini, Ferreira, and Rothstein (2010). We adapt this approach to our setting to estimate the short and long-term impact of electing a mayor from a given coalition under dynamic treatment assignments. These are “treatment-on-the-treated” effects that, in practice, hold constant all past election-coalition outcomes in a city. We also estimate separate effects for leading and supporting parties, a critical step given that political coalitions in Brazil have more than three supporting parties, on average.

We apply our dynamic estimator using the most comprehensive dataset of local elections, public employees, party affiliations, and public finances assembled to date. We find that the share of city wages devoted to civil servants allocated to a winning political coalition increases by 2.5 percentage points in the first year of a mayoral term, and then reaches almost 4 percentage points prior to the next election cycle. The actual share of city employees of the winning coalition increases by only 3 percentage points in a mayoral term, indicating that the positions filled by party loyalists offer higher compensation. Two-thirds of the political gains in employment and wages are concentrated in the party that leads a coalition, while one-third goes to supporting parties. The dynamic of public sector occupation also varies over the course of a mayoral term. Hiring party members who were already affiliated before the election accounts for the majority of the first-year effect, while two other categories gain relevance by the third year: newly affiliated party members (affiliated after the election) and old public employees who decide to join the winning parties.

As civil servants are tenured positions, these workers are more likely to stay in government for longer than one mayoral term - we find that such occupation of local governmental jobs last more than a decade, thereby having long-lasting effects on local public personnel. Overall, over the course of nearly two decades of democratic elections in Brazil, patronage is responsible for a 5.85 percentage change in the share of city employees with party affiliation, corresponding to 56 percent of the increase in the share of city employees with party affiliation.

What are the mechanisms behind the increasing capture of the public sector employment by political parties? First, we test if intergovernmental transfers matter for patronage, since these

soft budget constraints created by excessive transfers may potentially lead to corruption and misuse of funds (Fisman and Gatti, 2002). We use a research design based on discontinuous changes in federal transfers (FPM) to municipalities at given population thresholds to causally estimate how patronage varies with intergovernmental transfers. Municipalities that belong to a particular population bracket receive the same amount of federal and state transfers in a given year, whereas municipalities slightly above (below) the upper (lower) bound of each bracket receive, on average, 20 percent more (less) revenue. We find that FPM transfers do increase the share of total wages assigned to employees affiliated to elected parties. The patronage effect is particularly large for small cities (with population around 10,000), for which FPM transfers correspond to a large fraction of municipal revenues.

Next, we examine whether accountability can limit the occupation of the public sector by winning parties. There are a number of anecdotal evidence showing that cities in Brazil rig local recruitment processes in order to favor politically connected individuals.⁶ Moreover, patronage tends to occur at higher rates in cities that are smaller, and with less media presence. But to causally test the impact of accountability we make use of random government audits of public resources (as in Ferraz and Finan, 2008, 2011; Brollo, Nannicini, Perotti and Tabellini, 2013; Avis, Ferraz and Finan, 2018; and in Chu et al., 2020). We find that cities that face a random audit from the federal government in a mayoral term, are more likely to reduce patronage practices in future mayoral terms. As a validation exercise, no effect was detected in prior mayoral terms.

Finally, we analyze a political economy channel by testing if there is heterogeneity in patronage by party ideology. There is a fair amount of heterogeneity in the dynamic treatment effect of winning an election, with some leading parties gaining more than 4 percentage points in wage shares during a mayoral term, while others barely gaining 1 percent. But such variation is not correlated with the ideology index developed by Power and Zucco (2009, 2012, 2021), which classifies Brazilian parties according to a left-centrist-right leaning scale. Instead, three of the largest patronage parties are PMDB (center), PP (right), and PT (left) which also happen to be the parties implicated in the recent corruption scandal involving the largest Brazilian company, Petrobras, ultimately leading to the impeachment of former president Dilma Rousseff in 2016.

⁶ A series of frauds involving civil service exam leaks to individuals politically aligned to the city mayors are under investigation by the Brazilian Public Prosecution Offices (Ministério Público). For instance, the 2019 prosecutor's investigation named *Apaniguados* has found proofs (intercept phone calls, testimonies, etc.) that the mayors of some Brazilian cities were fraudulently allocating civil service jobs to political allies. The mayors involved in that scheme were arrested by the Brazilian Federal Police (MPSP, Ministério Público do Estado de São Paulo, 2019. "Processo nº 2235750-84.2019.8.26.0000.").

Those mechanism results indicate that the federal government has access to important policy levers that could be potentially used to minimize the influence of patronage on local governments.

Related Literature. In addition to the public economics, political science, and development literatures described above, our work is also related to the literature on how democratic institutions shape governments and policy. Aidt and Jensen (2013) show that franchise extension can increase the size of government, while Fujiwara (2015) shows that improving the political participation of less educated voters can advance policies that benefit them. Acemoglu, Naidu, Restrepo, and Robinson (2015) found a dynamic impact of democracy on tax revenues as a fraction of GDP, potentially leading to fiscal redistribution as well. Our results empirically corroborate these views, although our mechanisms are related to federal transfers and lack of accountability.

Our paper also relates to the literature on personal benefits of political connections. While we show that individuals affiliated with a party benefit from winning an election, recent papers have examined the wealth accumulation of politicians. Using an RD design, Eggers and Hainmueller (2009) find that British Conservative Party members of Parliament (MPs) benefit financially from public office while Labour MPs do not. Querubin and Snyder (2009) examine the wealth accumulation of US politicians during 1850-80 using a RD design and find that election winners outearn losers only from 1870 to 1880. Fisman, Schulz and Vig (2014) show a much higher rate of wealth accumulation of state politicians in India. Gagliarducci and Manacorda (2020) find that family connections to politicians helps individuals to get a job in the private sector. Recently, Jiang and Zhang (2020) show that provincial leaders allocate significantly more transfers to localities governed by officials who are part of their networks.

A recent set of papers study the personnel economics of the state. These papers look, among other things, at how public servants' behavior maps into the performance of public services and how internal policies may be framed to make the best of the conflicting interests faced by officials (Finan, Olken and Pande, 2015; Cameron, de Figueiredo and Lewis, 2020). Other recent papers study the selection of public servants and how political connections shape public personnel decisions (Dal Bó et al., 2017; Dal Bó, Finan, and Rossi, 2013; Deserrano, 2019; Fang et al., 2018, Brassiolo, Estrada and Fajardo, 2020).

Two papers about patronage in Brazil are related to our independently developed research. Colonnelli, Prem and Teso (2020) conduct an investigation of the effect of becoming a campaign donor on the probability of obtaining a public-sector job. We, instead, focus on a much larger set of individuals that are affiliated to political parties, which are likely to generate stronger effects on

the overall composition of public workers. Brollo, Forquesato and Gozzi (2017) also estimate the effect of being the party in power on the employment of party members in the public sector, but only using two election cycles and a static estimator that does not account for changing in the coalitions in power over time. Moreover, we are the first paper to causally document the importance of different mechanisms that determine patronage in Brazil, and to show that patronage effects account for more than 50 percent of the increase of the share of city employees with party affiliation.

The rest of the paper proceeds as follows: Section 2 describes the Brazilian institutions, Section 3 discusses our empirical methods, and Section 4 describes our database. In Section 5 we present our results, in Section 6 the potential mechanisms. Section 7 concludes.

2. Brazilian Institutions

Brazil is a federal republic with a presidential system organized in three levels: federal, state and municipal. There are more than 5,500 municipalities as of 2015, and each has an executive and legislative branch. The mayor is the head of the executive branch of the municipality, and each city also has a city council.⁷ Municipalities are generally responsible for managing and delivering a large range of public goods and services to their citizens, such as childcare, early childhood and primary education, basic health services, local public transportation, local traffic safety, recreational facilities, water supply and sanitation.⁸

Each city has its own budget and the freedom to implement its own public policies and to make spending choices. Funding for the services and goods provided by municipalities comes from local taxes (e.g., property and service taxes, building permits fees), and from state and federal transfers (whose main source of revenues are sales taxes and income taxes, respectively). Transfers are the main source of funding for municipalities, accounting for 85 percent of the municipality revenue on average. A major role is played by the federal fiscal transfer scheme called *Fundo de Participação dos Municípios* (FPM). FPM is the largest program of transfers to municipalities, accounting for almost 80 percent of all types of federal transfers and for 31 percent of municipal revenues.⁹

⁷ The number of seats in each city council depends on the municipality population size. Council members are responsible for making local laws, overseeing the corresponding executive branch, and proposing and approving the annual budget.

⁸ States, on the other hand, are mainly responsible for secondary education, general safety (police and firefighters), non-basic health services, and any infrastructure project that involves multiple municipalities.

⁹ The ICMS-Parcel, is another important transfer that corresponds to 15 percent of the municipal budget, and is based on a fraction of the state sponsored value-added tax raised within the municipality. Lastly, the FUNDEF/FUNDEB

2.1 Public Sector Careers

Municipalities in Brazil independently create, manage and modify public sector careers. Each municipality has its own plan for positions, careers and wages, which establishes tasks, functions and required qualifications for every position in the municipal bureaucracy. Municipalities are also responsible for the selection and hiring of municipal workers. Those workers mainly fall into three categories: civil servants, political appointees, and temporary workers.

The largest category of public sector jobs is civil service, accounting for about 85 % of all public workers in Brazilian municipalities. The Brazilian constitution establishes that municipalities have to rely on transparent rules and requirements for the selection of civil servant public works, and that each city is responsible for the details of the implementation of those rules. In theory, each job applicant is to present academic and professional credentials and undertake a formal civil service examination, which is job-specific and consists of a combination of written and oral tests. Civil servants acquire tenure after three years of service, following which they can be fired only for reasons of misconduct after a judicial decision. Although legislation has determined that the recruitment and selection process for civil service positions should be based on candidates' merits and professional capabilities, the effective criteria for hiring civil servants are established according to local needs. This affords city mayors a margin of discretion that can potentially allow them to favor members of their parties when selecting new hires. In fact, newspaper articles often report scandals of manipulation and fraud in civil service examinations in Brazilian municipalities that aimed to favor the hiring of a certain group of candidates.¹⁰

The hiring of political appointees is limited to positions of high-level public officials (including directors, managers, supervisors, and advisors). Federal legislation gives discretion to politicians to select people for these leadership roles.¹¹ Finally, temporary public servants are hired to meet temporary and exceptional needs of public administrations, defined by politicians or high-level public officials. In such cases, no civil service exam is required and the selection

is special federal fund for expenditures in education and accounts for 10 percent of municipal revenues. It is a non-discretionary fund for daily operations of municipal public schools.

¹⁰ For instance, UOL, the largest Brazilian news portal, has reported that the Brazilian Public Prosecution Offices (Ministério Público) have been investigating frauds in local civil service examinations. Prosecutors investigations have found hard evidence of leaks of civil service exam to individuals politically aligned to the city mayors.

¹¹ Regular civil servants can also be promoted to positions of trust which are high-level public posts with similar status, earning and power of appointee positions.

process can be based on the analysis of applicants' curriculum, without other formal objective criteria.

There are many advantages of holding a public sector job in Brazil, such as the fact that government positions are formal and guarantee many benefits such as (at least) 13 monthly wages, one-month of paid vacation, a special retirement plan, and lower workload among others.

We center our analysis on the civil servants. They are mainly front-end workers in the provision of local public services, as education and basic health care. They occupy key service-oriented positions as teachers, doctors, public health professionals, and school staff among others. By restricting our analysis to civil servants, we focus on the effect of an election on personal decisions of public employees who are more likely to work on the front lines of the delivery of local public services.

2.2 Political Parties and Party Affiliation

Brazil has a multiparty political system, composed of 35 officially registered national parties as of 2015. According to TSE, 12 million Brazilians were affiliated with political parties in 2015, which corresponds to 6 percent of the Brazilian population. Parties need affiliates to be legally recognized and to provide support to their candidates in the elections. For instance, the Brazilian electoral legislation establishes that a party must have a minimum number of members, which corresponds to 0.5% of the votes casts in the previous National Election, homogenously distributed across the 26 Brazilian states.

Based on shares of total affiliates, the most important parties are the Workers' Party (PT), the Brazilian Democratic Movement Party (PMDB), the Brazilian Social Democratic Party (PSDB), and Democrat Party (DEM).¹² Other medium sized parties, like the Republican Party (PR) and the Progressive Party (PP), play significant roles in the National Congress; and others, like the Brazilian Socialist Party (PSB) and the Democratic Labor Party (PDT), have political power in strategic states.

In terms of ideology, political scientists categorize parties in Brazil in a wide range. Coppedge (1997), based on the perception of experts, classifies PT and PSB as left-wing, the PSDB and PDT as center-left, PMDB as center, PP as center-right, and PR and DEM as right-wing.

¹² They are also the parties with the longest tradition in the country, having elected numerous and important legislators, senators, and governors since the Brazilian re-democratization. PSDB won the presidency in 1994 and 1998, in a coalition in which DEM assigned the vice-president. PT was the leading party of a coalition that governed the country from 2002 until the impeachment of President Rousseff in 2016, and since 2023 when Lula become the president of the country. PMDB occupied the vice-presidency from 2006 to 2016, and then occupied the presidency after the impeachment.

Power and Zucco (2009, 2012, 2021) develop an alternative measure of party ideological position based on survey responses of federal legislators from 1990 to 2017. By this measure, there is a great dispersion across Brazilian party ideology.

All eligible voters can affiliate with a political party at any point in time.¹³ As opposed to the United States, affiliation is not determined during voting registration. Every political party has its own membership rules. Some impose registration fees and a selection process that may involve interviews and formal examinations, while other parties, especially more recently, just require an online registration. The rights and duties of affiliates are described in the statute of the party. Parties may request financial contribution from their members for internal party maintenance, provide support to party candidates in electoral campaigns, and physical presence in certain party activities. Affiliates can also vote to choose the official candidate in the upcoming elections. However, internal decisions tend to be centralized in the directories, since voting power, in general, is not the same for all members.

2.3 Municipal Elections, Candidates, and Coalitions

Municipal elections for mayors and municipal councilors happen every four years midway between the national and state level elections. Those elections take place in October, and the winner candidates take office in January of the following year to serve a four-year term. In municipalities with less than 200,000 registered voters, mayors are elected by a simple majority rule in a single-round election. In the other municipalities, mayors are elected by a simple and popular majority vote in a two-round system. Since 1998 mayors can be elected for no more than two consecutive terms; before that reelection was not allowed.

Every political candidate must be a member of a legal party in order to run for public office. The electoral rules establish that a candidate must be affiliated with a political party at least six months before the election. As municipal elections are the first electoral races for the vast majority of individuals running for a public office, a new wave of affiliates happens in the municipal election's years.

But given that all political parties are relatively small, candidates heavily rely on political alliances in order to increase their electoral chances. Political coalitions are legally and independently formed a few months before each election in each city. These political coalitions provide many benefits to a candidate during the electoral campaign, such as the backing of a larger

¹³ The electoral legislation requires all parties to submit twice a year (April and October) an up to date list all of their members to the Superior Electoral Court (TSE). Superior Electoral Court (TSE) actively tracks party affiliation of all voters, cancelling the oldest membership if a voter is affiliated with more than one party.

number of sympathizers and donors, and more public resources for the electoral campaign in the form of free radio and TV air time.¹⁴ They also may help the elected candidates during the mayoral term, although at that point political parties are free to change their alliances.

3. Empirical Framework

Suppose that a political party p runs for the mayoral office in city c and receives vote share v_{pc} . Let $b_{pc} = 1(v_{pc} > v_{p'c})$ be an indicator for the party receiving more votes than any of the other parties running for office, and therefore winning the election. Initially ignoring the dynamics of multiple election cycles and the possibility of forming coalitions, we can write a short-term outcome y_{pc} (wages received by local public employees that belong to a political party, for example) as:

$$y_{pc} = b_{pc}\theta + u_{pc}, \quad (1)$$

where θ is the causal effect of winning an election and u_{pc} represents all other determinants of y_{pc} . However, winning an election may be correlated with other characteristics that influence outcomes, so $E[u_{pc}b_{pc}] \neq 0$. In our case, an important unobserved determinant of outcomes is the political power of certain parties and coalitions. The standard regression discontinuity strategy to deal with this issue, as pointed out by Lee (2008), is that as long as there is some unpredictable random component of the vote, a narrowly-decided election approximates a randomized experiment. The causal effect of winning an election can be identified by comparing personnel outcomes for parties that barely won an election (the "treatment group") with other parties that barely lost (the "control group").¹⁵ Assuming that $E[u_{pc}|v_{pc}]$, the conditional expectation of the unobserved determinants of y given the realized vote share, is continuous, we can approximate it by a polynomial function of order g with coefficients $\gamma_u, F_g(v_{pc}, \gamma_u)$. Under this assumption we can rewrite (1) as:

¹⁴ Brazilian electoral legislation establishes that during the 45 days prior of the municipal elections, parties are authorized to broadcast political agenda of their mayor and municipal councilor candidates on the radio and on the television. All parties together are entitled to 70 minutes a day in insertions. 90 percent of that time is distributed in proportion to the number of representatives that the parties have in the Federal Congress. The remaining 10 percent is distributed equally. In case there is an alliance between parties in the majority elections, it will be considered the sum of the federal deputies affiliated to the six largest parties of the coalition. In the case of coalitions for proportional (council) elections, the radio and TV time will be the result of the sum of the number of representatives of all parties.

¹⁵ We include all parties in our estimates, as there is a large number of third and fourth place candidates with meaningful vote shares. See Anagol and Fujiwara (2016) for the importance of the runner-up effect. Our online appendix shows the histogram for each vote share for the 1st, 2nd, and 3rd place candidates.

$$y_{pc} = b_{pc}\theta + F_g(v_{pc}, \gamma_u) + \varepsilon_{pc}, \quad (2)$$

where ε_{pc} is asymptotically uncorrelated with v_{pc} (and therefore with b_{pc}), and a regression of realized outcomes on the winning indicator, controlling for a flexible polynomial in the vote share, thus consistently estimates θ .

We now extend the setup to allow for multiple elections in the same city, closely following the dynamic regression discontinuity framework developed in Cellini, Ferreira, and Rothstein (2010). Redefine b_{pct} to equal one if party p in city c wins the election and holds the mayoral office during the calendar years t associated with a mayoral term, and zero otherwise (i.e., if the party did not run for mayor in that electoral cycle or if the party ran and lost the election). We can then write outcomes in any year t as a function of the full history of mayoral elections in a city:

$$y_{pct} = \sum_{\tau=1}^{\tau=\bar{\tau}} b_{pc,t-\tau} \theta_{\tau} + u_{pct}, \quad (3)$$

which estimates the causal effect of winning an election in $t - \tau$ on outcomes in year t , with $\bar{\tau}$ as the maximum number of relative years since an election allowed by the data. The causal parameter θ_{τ} is commonly known as the effect of the "treatment on the treated", or TOT, since equation (3) explicitly controls for all other election outcomes. An OLS estimate of (3) would yield biased estimates of the TOT effects, so we again appeal to the assumption that winning an election is as good as randomly assigned conditional on a smooth function of the measured vote share. To bring the RD methodology to the "structural" equation (3), we augment each of the lagged election outcome indicators $b_{pc,t-\tau}$ with a polynomial in the vote share, $F_g(v_{pc,t-\tau}, \gamma_{\tau})$. Both the $b_{pc,t-\tau}$ coefficient and the polynomial coefficients are allowed to vary freely with τ , where τ is number of years after and election (for $\tau > 0$).¹⁶ We also add fixed effects for each party, city, and calendar year, such that we can write (3) as follows:

$$y_{pct} = \sum_{\tau=1}^{\tau=\bar{\tau}} [b_{pc,t-\tau} \theta_{\tau} + F_g(v_{pc,t-\tau}, \gamma_{\tau})] + \pi_p + \kappa_c + \lambda_t + \varepsilon_{pct}. \quad (4)$$

With the inclusion of controls for the election and vote share history in (3), the θ_{τ} coefficients are identified from the contrast between parties in cities where an election in $t - \tau$

¹⁶ We also run some specifications that allow for $\tau \leq 0$ in order to test for pre-trends.

was narrowly won and those where the election was narrowly lost but the sequence of prior and subsequent elections and votes is similar. This has the advantage, for example, of not confounding the effects of winning an election with winning or losing other election cycles, which is key to understanding the long-term impact of party control on city personnel decisions.

So far, we have ignored the possibility of forming coalitions across parties in order to run for the mayoral office, which is a common feature of the Brazilian political system. In order to capture the impact of coalitions, we first assign vote shares to all parties in a coalition. Precisely, we replace $b_{pc,t-\tau}$ in equation (4) for two other dummies $b_{pc,t-\tau}^l$ and $b_{pc,t-\tau}^s$, which are, respectively, indicators for whether the party is a leading or supporting party of a winning candidate. Second, we add two other terms to equation (4), $l_{pc,t-\tau}$ and $s_{pc,t-\tau}$, which are dummies that represent, respectively, the parties are leading or supporting parties of mayoral candidate. Our final estimating equation becomes:

$$y_{pct} = \sum_{\tau=1}^{\tau=\bar{\tau}} [b_{pc,t-\tau}^l \theta_{\tau} + b_{pc,t-\tau}^s \varphi_{\tau} + l_{pc,t-\tau} \alpha_{\tau} + s_{pc,t-\tau} \beta_{\tau} + F_g(v_{pc,t-\tau}, \gamma_{\tau}) + l_{pc,t-\tau} F_g(v_{pc,t-\tau}, \delta_{\tau})] + \pi_p + \kappa_c + \lambda_t + \varepsilon_{pct}. \quad (5)$$

We estimate this equation using a conventional panel of outcomes by party and city over calendar years. Standard errors are clustered by city. We label θ_{τ} and φ_{τ} the patronage effects from leading and supporting parties of the winning coalitions.

A caveat with the empirical model above is that θ_{τ} and φ_{τ} could be overestimated because of a mechanical effect in which the losing party leaves office (giving up the leadership of the main departments, for example) and the new party in power just replaces the main leadership positions. We first deal with this issue by exploiting our microdata: we know whether an employee is a political appointee in a leadership position or if the employee is a civil servant providing a direct service to the population. By only focusing on civil servants we can restrict the analysis to positions that suffer less from the mechanical effect. Second, we decompose the total effect into employees that were employed (or not) by the city in the year prior to the election, as that allows us to compare how much of the total effect is due to replacement of old positions vs new hires. Additionally, we interact those dummies with a dummy for belonging to a party in the year prior to the election. This interaction aims to decompose the effects and to capture other potential mechanisms, such as employees switching parties or becoming affiliated for the first time because of an election outcome.

Equation 5 assumes that all winning parties behave similarly once in power. If there is heterogeneity in θ across parties, our estimator identifies the average of θ_p among parties with close elections (Imbens and Angrist, 1994). But we further interact $b_{pc,t-\tau}^l$, $b_{pc,t-\tau}^s$, $l_{pc,t-\tau}$ and $s_{pc,t-\tau}$ with dummies for each of the Brazilian parties, in order to test if parties adopt different personnel decisions while in office.¹⁷ We also interact the variables $b_{pc,t-\tau}^l$, $b_{pc,t-\tau}^s$, $l_{pc,t-\tau}$ and $s_{pc,t-\tau}$ with measures of federal transfer, city size, accountability, party size, and party ideology in order to understand some of the mechanisms driving the patronage effects.

4. Data

4.1 Public Employees

We use a comprehensive longitudinal matched employer-employee administrative data set which takes the form of an annual census of all formal workers in Brazil (Menezes-Filho et al., 2008). RAIS (Relação Anual de Informações Sociais) is a mandatory database assembled and managed by the Brazilian Ministry of Labor every year since 1976. It includes individual information on earnings, occupations and other aspects of the job (tenure, weekly working hours, features of the employment contract), current and past employers, along with their identification numbers, locations and industries. It is widely recognized as a high-quality Census of the Brazilian formal labor market (Dix-Carneiro, 2014; Dix-Carneiro and Kovak, 2017).¹⁸ Apart from the informal sector workers, RAIS covers almost all public and private sector jobs, except for very few categories of workers (a subset of self-employed individuals and elected politicians) which are not required to report information to the Ministry of Labor.¹⁹

The data consist of job entries identified by worker identification number (PIS), worker full name, and firm-plant taxpayer identification number (CNPJ). These identifiers are unique and

¹⁷ In our final estimations of the party-level effects, we interact $b_{pc,t-\tau}^l$, $b_{pc,t-\tau}^s$, $l_{pc,t-\tau}$ and $s_{pc,t-\tau}$ with party dummies. However, we do not interact the polynomial in the vote share, $F_g(\cdot)$, with those dummies. Implicitly we are assuming that the relationship between the outcome and the running variable is the same for all parties. We have also estimated the party-level effects by interacting the polynomial in the vote share, $F_g(\cdot)$, with party dummies, and the results are very similar to our final estimation of party-level effects without that interaction.

¹⁸ RAIS is the main tool used by the government to enable the payment of the "abono salarial" to eligible workers. "Abono salarial" is a government program that pays one additional minimum wage at the end of the year to workers whose average monthly wage was below two times the minimum wage, and whose job information was correctly declared in RAIS - among other minor requirements. For this reason, workers have an incentive to be counted in RAIS since they want to be eligible to receive the government benefits they are entitled. Given that employers (private and public organizations) are subject to severe fines if they do not regularly submit to the Ministry of Labor the information about their workers, employers also have incentives to precisely provide workers information in RAIS.

¹⁹ Because RAIS is a census of the Brazilian formal labor market only, we cannot follow individuals that always have been working for the informal sector. We also lose track of workers who do not hold a job in the formal sector in a given year, but we can keep tracking them once they return to a job in the formal sector.

do not change over time. This allows us to track individual over time and across formal employers. Additionally, RAIS comprises a set of variables which are particularly important for our investigation: individual specific data on occupation and employment contract details. In RAIS, every worker is assigned an occupation specific to his/her current performing job, which is categorized according to the CBO (Classificação Brasileira de Ocupações). Based on the performing job of each public employee, we can establish if he/she is working in administrative tasks, or in the final delivery of public goods/services. Additionally, we can identify which sector of public administration a public employee was assigned to work for: education, health, public works, sanitation, security, transportation and others. These occupational categories also allow us to classify workers according to the hierarchy level of their occupations in public administrations and firms (for instance, directors/managers vs. other employees). RAIS employment contract detail data contain for every worker information on reasons for hiring/firing, dates of employment, type of work contract (regular, temporary, short-term, apprenticeship), and, most importantly, information on how a worker was hired by the public sector—as a permanent civil servant, an appointee or a temporary worker. Based on the RAIS employer-employee data, Panel A in Table 1 presents descriptive statistics by city-year from 1995 to 2013 for the 5,412 municipalities used in our sample.

4.2 Party Affiliation

The party affiliation data contain individual-level information on all party members in Brazil. It was obtained from the Superior Electoral Tribunal (TSE) which actively tracks party affiliation of all registered voters in the country through an electronic platform named FiliaWeb.²⁰ TSE keeps records of all past and current members of every party, and updates FiliaWeb twice a year (in April and October) based on the information about new and removed party members provided by every party. For each party, the affiliation data contain the full name of all party members, voter registration number, the municipality where each member registered, the date when every member affiliated with a party, and the date when an individual voter cancels its party affiliation (if applicable). Based on this information, we can identify every party member at any point in time. Based on the party affiliation data, Panel B in Table 1 shows descriptive statistics by city-year for the number of parties and party members in our final sample.

²⁰ FiliaWeb was launched in 2009 and, in 2010, it became an official electronic platform through which parties submit information about their members to the Superior Electoral Tribunal (TSE). Before 2009, parties used to submit digital files to TSE containing information about their affiliates. In 2010, TSE integrated the previous party digital files to the information about affiliates submitted by parties through FiliaWeb to construct a unified dataset containing historical data of all party members in the country. This is the dataset used in this paper.

We merged RAIS with the party affiliation data based on each person's name, year of employment and affiliation, and location (metropolitan area). The match quality highly benefits from the fact that Brazilians usually have several surnames, since a common family tradition is for children to keep all surnames of both father and mother. The matching procedure allowed us to identify the party affiliation (if any) of every public employee from all Brazilian municipalities.²¹ The largest share of matches, 80%, are 1 to 1 matches.²²

4.3 Public Finances

The "Finanças do Brasil - Dados Contábeis dos Municípios" (FINBRA) dataset is our primary source of information on Brazilian municipal finances. It is organized by the Brazilian National Treasury Secretariat (STN) and it is produced by each municipal government annually. FINBRA includes information such as revenues from municipal taxes (property and services taxes), transfers revenue from state (ICMS) and central (FPM, PAB, FUNDEF/FUNDEB) governments, and expenditures to personnel or investment. It also presents expenditures disaggregated by functions like administration, janitorial services, public education and public health. Panel C in Table 1 presents basic descriptives by city-year for government expenditure, share of government expenditure devoted to personnel, and population size of the cities in our final sample.

4.4 Elections

Electoral data were obtained from the Superior Electoral Tribunal (TSE), which oversees national and local elections in Brazil. TSE records information on characteristics of candidates, political affiliation, and electoral results for all political offices in Brazil. Our dataset contains information on all municipality elections for mayors in 1996, 2000, 2004, 2008, and 2012, comprising data on pre-election characteristics of all candidates (gender, education background, marital status, wealth, and occupation), their respective parties and electoral coalitions, and the number of votes that each candidate received. We dropped from our data politicians that had their

²¹ We conduct the match in five steps. In Step 1 observations are matched by exact full name. Step 2 matches use a "soundex" code of the surnames. Step 3 converts all middle names (not first and not last names) to middle initials. Step 4 all prepositions are eliminated (e.g. Da, De, Dos), and finally in Step 5 all prepositions are eliminated and middle names are converted to initials.

²² The rest are split into 1:m, m:1, and m:m matches – see online appendix for details. Robustness tests show that our main estimates are unaffected by using a subsample that only includes 1:1 matches. Those results are available upon request.

candidacy withdrawn or canceled. Table 2 presents basic descriptives by city-year for electoral years used in our final sample.

4.5 Final Data

Our final data combine information from all the aforementioned sources. Because our estimated model, described in equation (5), specifies the outcome variables by party, city and calendar-year, we structured our data set at party-city-year to estimate the parameters of interest (i.e., θ_τ and φ_τ). Table 3 presents summary statistics of the final sample that we use to implement our empirical strategy.

5. Results

5.1 Validity of the RD design

Two conceptual concerns may invalidate our RD application. The first is the possibility that coalition characteristics change at the threshold, including pre-treatment outcome variables. Figure 3 tests for discontinuous changes around the margin of victory threshold, by plotting averages for the following variables in the year of the election: number of parties in the coalition, number of public employees affiliated with the leading parties, and the share of public employees affiliated with leading and supporting parties. Even though coalitions that win (lose) with large margins are indeed politically more (less) powerful, coalitions that win or lose by small margins are very similar to each other, on average.

The second concern is related to political coalitions having different pre-trends. Figure 4 presents estimates for a version of equation 5 that includes a number of relative years prior to the election. The year of the election is omitted. These pre-trend estimates show very small differences in outcomes for winners and losers in the years leading up to an election. For example, the difference is less than a quarter of a percentage point in the year prior to the focal election, for both employment and wages. As we will see in the next section, such differences become at least ten times larger during post-election years 3 and 4.

5.2 Winning coalition dynamic treatment effects

Figure 5 plots the estimated dynamic patronage effects on the total number of employees affiliated with a party, along with 95% confidence intervals.²³ The effects are split into θ_τ for the

²³ A table with point estimates are available upon request.

party leading the winning coalition, and φ_τ for the other parties supporting it, as defined in equation (5). In the first year of the term, the winning party adds 11 additional affiliated public employees relative to the losing coalition. That estimate reaches a peak of 16 by the end of the first term, drops to 13 in relative year 5, and then stays relatively flat during the remaining years. Estimates for all winning supporting parties peak at 7 extra affiliated employees in years three and four, and never get below 6 even twelve years after an election. This stability or long-term effect happens because it is difficult for future governments to fire civil servant employees with tenure.

The next outcome we analyze is the share of affiliated public employees. This metric has several advantages over the number of affiliated workers such as minimizing the importance of the largest cities and adjusting the estimates for the changing number of total public workers (affiliated or not) in the city over the years. Figure 6 shows that the leading party's share of employees increases almost 0.7 percentage points in the first year of the mayoral term—a very large proportional increase given that both 1st and 2nd place candidates had a 5.7% share of public workers in the year of the election (see Figure 3). The gain increases to about 2 percentage points in relative years 3 and 4. At year 5, we observe the consequence of modelling the impact of other election cycles, as the relative benefits of winning an election drop to 1.2 percentage points – other parties are likely to win the next election and consequently reduce the share of employees from the winning party from the initial election.

Note that subsequent magnitudes from the patronage effect wane after that, but never go to zero, with the winning party still enjoying a 0.5 percentage point gain even twelve years after the election. Given Brazil's legal context, it is no surprise that a small fraction of the total effect of winning an election on the share of wages earned by affiliates of the party is due to differential attrition. As explained above, public workers—especially civil servants—have a number of labor law protections that prevent them from being fired.

In Figure 6 we also show the shares of employees for the other parties in the leading coalition. The supporting parties increase their shares in the public sector by just under a percentage point during the first term and then drop to half-percent in the long term.

Figure 7 shows that the importance of winning elections is even larger when considering the share of total wages devoted to party affiliates; not just the share of employees. While the dynamic patterns are relatively similar, the magnitudes of the effects for wages are twice as large in the first year of a mayoral term, and about 40% larger by relative year 4. After that period, both effects—for share of wages and employees—become almost identical, indicating that the winning party loses certain leadership positions that pay more but becomes entrenched in many other

sectors and occupations of the public administration. Overall, about 2/3 of the patronage effect during the first term is due to the leading party of the coalition, while 1/3 is due to the supporting parties. In the long run the split becomes 60/40.

Further, we also split the wage share point estimates into bureaucratic and service-oriented occupations. Figure 8 shows that bureaucratic wage share corresponds to about 2/3 of the total treatment effect on wage shares in relative year 1. Over time though, the share of the total effect due to bureaucrats declines as the winning party starts to fill up a disproportional number of service-oriented positions, such as teachers and doctors. That trend becomes more obvious in year 5, when the effect on the share of bureaucrats becomes quite small. The remaining differential wage share enjoyed by the winning party becomes entirely attributable to service-oriented by the year 12. The disproportional hiring of party members to service-oriented occupations is a practice that could lower the quality of services offered to the local population (Akhtari, Moreira, and Trucco, 2022).

The point estimates above hide some of the dynamics of occupation of the local public sector in Brazil by the winning coalitions. To understand the process through which winning parties occupy local governments, we decompose these dynamic effects in four dimensions: (i) new hires without an affiliation prior to the election (new employees affiliated after elections), (ii) old hires without an affiliation prior to the election (old employees affiliated after elections), (iii) new hires affiliated prior to the election (hiring old party members), and (iv) old hires affiliated prior to the election (old employees from the opposing party).²⁴ Panels A and B in Table 4 present the decomposition of the estimated effects in those four dimensions for the first four years after an election. The first year of the party occupation process starts with hiring old party members of winning coalitions (accounting for 51 percent) and lowering both employment and wage shares of old employees affiliated with losing coalitions (43 percent). Later on, party members affiliated after the election are recruited by local governments, and old public employees join the parties of the winning coalition. These new and old employees affiliated after elections account for only a small percentage of the first-year effect, while in the third year they account for 39 percent of the patronage.

5.3 Overall effects on the composition of public employees

²⁴ A tiny fraction of the total effect is due to affiliates switching parties after the election, so we do not consider them here.

To estimate the distortion caused by patronage on the composition of public employees, we first estimate the share of city employees with party affiliation in absence of patronage effects, and then we compare that with the estimated share of city employees with party affiliation predicted by our complete model, which contains political patronage (this prediction is very similar to the descriptives in Figure 1). The difference between these figures will reveal the consequences of government personnel decisions based on party affiliation.

To obtain our estimate of the share of city employees with party affiliation in the presence of patronage, we proceed as follows. First, we predict the estimated equation (5) for the share of public employees associated to each party. This procedure generates the share of city employees affiliated to every Brazilian in every city in all years of our sample. Next, we sum those shares across all parties for every year from 1995 to 2013 to obtain the share of city employees affiliated with a party for every city and year of our sample. To estimate the share of city employees with party affiliation in absence of patronage effects, we repeat the same procedure described above, but turn off the coefficients associated to the variables $b_{jc,t-\tau}^l$ and $b_{jc,t-\tau}^s$ (which indicate the leading and supporting parties of a winning candidate, respectively). This generates the time evolution of the predicted share of city employees in every city in our sample without a patronage effect.

Figure 9 plots the predicted share of city employees with party affiliation with and without patronage. The continuous line in the figure reveals that the predicted share of city employees with party affiliation in the presence of patronage spans from 20.73 percent in 1996, the year of first election in our sample, to 30.8 percent in 2013, the last year in our sample. The dashed line in Figure 9 shows the estimated share of city employees with party affiliation in the absence of patronage effects. Note that our model predicts an increase of the share of city employees with party affiliation during our period of analysis, disregarding any patronage effect. The share of city employees with party affiliation without patronage range from 20.73 percent in 1996 to 24.9 percent in 2013. Finally, the dashed-dotted line plots the difference between the share of city employees with party affiliation (predicted in our complete model) and the estimated share of city employees with party affiliation in the absence of patronage. This figure reveals that over the course of nearly two decades, patronage is responsible for an increase of 5.85 percent of share of city employees with party affiliation, corresponding to 56 percent of the increase of the share of city employees with party affiliation since 1996.

6. Mechanisms

6.1 Intergovernmental Transfers

A potential explanation for the high levels of patronage observed in Brazilian local governments relates to the local tax system, which is largely based on federal and state transfers.²⁵ However, empirically evaluating the causal effect of transfers on municipal employment of party members is not an easy task. An unbiased estimator of that effect would require a comparison of the employment of party members in two sets of municipalities with similar characteristics, where one set randomly receives more intergovernmental transfers than others. We use a research design that mimics this ideal design by exploiting discontinuous changes in federal transfers (FPM) to municipalities at given population thresholds. While municipalities belonging to a particular population bracket receive the same amount of federal and state transfers in a given year, municipalities slightly above (below) the upper (lower) bound of each bracket receive, on average, 20 percent more (less) revenues. Therefore, small variations in city population around pre-determined thresholds provide exogenous variation in transfers received by municipalities which allows us to identify casual effects of transfers on the amount of patronage.²⁶

To that end, we augment the econometric model described in equation (5) to account for the discontinuous changes in federal transfers (FPM) to municipalities at given population thresholds. In practice we estimate interaction effects with the winning coalitions, comparing patronage effects on both sides of a population threshold.²⁷ The results reported in Figure 10 reveal that more FPM transfers (for cities on the right side of each population threshold) generally increase the share of wages of winning coalition affiliates. Note the effect is only significantly different from zero for the cities around the first threshold with population close to 10,000, where the importance of transfers is much higher on a per capita basis.²⁸

Those findings are not only interesting per se, but also because they show how the design of local public finance based on transfers can deliver negative consequences to public expenditures related to personnel decisions. Local expenditures financed by local revenues may be a more appropriate way to bind politician's opportunistic behavior.

6.2 Accountability

²⁵ Federal transfers are the main source of funding for municipalities (85 percent), while local taxes (property and service taxes, building permits fees) represent only 6 percent of the budget, on average.

²⁶ Other examples of research using FPM transfers include Brollo, Nannicini, Perotti and Tabellini (2013), Litschig and Morrison (2013), Gadenne (2017), and Corbi, Papaioannou and Surico (2019).

²⁷ A detailed description of the methodology used in those estimations are in the Online Appendix. It also presents tests that guarantee the validity of regression discontinuity design.

²⁸ The complete set of standard errors for Figures 10, 11, and 12 are available upon request. We did not include them in those figures because they would make those figures difficult to read.

Many researchers report large discrepancies in the quality of governments across countries, with corruption and rent-seeking type behavior being more prevalent in the public sectors of less developed regions.²⁹ In Brazil, there is also a correlation between more patronage and proxies for less accountability and development, such as small city size and lack of local media.³⁰ But in order to causally estimate the impact of accountability, we make use of random federal audits.

Government audits of public resources in Brazil affect incumbents' electoral performance of corrupt politicians (Ferraz and Finan, 2008, 2011), and reduce corruption (Avis, Ferraz and Finan, 2018). Following Avis, Ferraz and Finan (2018), we investigate whether government audits of public resources can affect personnel hiring decisions in Brazilian local governments, considering that audits increase the perceived non-electoral costs of engaging in misuse of public funds.

The government audits of public resources in Brazil are part of the anti-corruption program targeted at municipal governments. It was launched in 2003 by CGU (Controladora Geral da União), Brazil's controller's office. The program, named Programa de Fiscalização por Sorteios Públicos (Monitoring Program with Public Lotteries), randomly audits municipalities' use of federal funds. Its initial audits were performed on 26 randomly selected municipalities across different states, and then the program grew towards auditing 60 municipalities per lottery. The lotteries are held publicly in conjunction with the national lottery in Brasília, and all municipalities with a population of up to 500,000 inhabitants are eligible for selection. As of February 2015, there have been 2,241 audits across 40 lotteries in 1,949 municipalities. Once a municipality is chosen, the CGU gathers information on all federal funds transferred to the municipal government during the previous three to four years and issues a random selection of inspection orders. Each one of these orders stipulates an audit task for a specific government project (e.g. school construction, purchase of medicine, etc.) within a specific sector. Once these inspection orders are determined, 10 to 15 auditors are sent to the municipality for one to two weeks to examine accounts and documents, inspect for the existence and quality of public work construction, and verify the delivery of public services. After the inspections are completed, a detailed report describing all identified irregularities is submitted to the central CGU office in Brasília. The central unit compiles all information and publishes a report on the internet.³¹

²⁹ See, for instance, Shleifer and Vishny (1993), Mauro (1995) and La Porta et al. (1999).

³⁰ Those results are available upon request.

³¹ These reports are also sent to the Federal Courts of Accounts (TCU), the Federal Prosecutors' Office (MPF), the local judiciary, the Federal Police, and to the municipal legislative branch. For more details about the CGU's government audits, see Ferraz and Finan (2008, 2011), Brollo, Nannicini, Perotti and Tabellini (2013), and Avis, Ferraz and Finan (2018).

We create an indicator for whether a city had an audit in the previous mayoral term, and also interact the indicator with the winning coalition terms. As a placebo test, we also estimate similar models that specifies if a city had an audit in the current term, or if the audit will happen in the next term. The results presented in Figure 11 show that having a future audit does not change the current behavior of all parties and of the winning coalitions. The same conclusion is reached for audits in the current term, as presumably the winning coalition did not have enough time to potentially react to the federal audits.

However, the last set of estimates shows the existence of audit in city in the term before an election significantly reduces allocation of public jobs to party members of the elected coalition. The wage share of individuals affiliated with the elected party is about 1 percent smaller during the 3rd and 4th years of a term, in municipalities that had an audit relative to those who did not. Those differences are also statistically significant. For example, focusing on year 3, cities without an audit have estimated patronage effects and standard errors of 2.9 (0.08) while cities with audits had a smaller 1.9 (0.16).³²

6.3 Party Ideology

Another potential explanation for the disproportional occupation of the public sector by winning coalitions is ideology. The political economy literature gives many examples of left-leaning parties with strong preferences for bigger and more redistributive governments (see Alesina, 1987; Alesina and Sachs, 1988; Hibbs, 1992). These parties may decide to even control lower levels of the bureaucracy with party members, in order to allegedly better carry out their mission. We test this assumption by first estimating a version of equation (5) that interacts the winning party terms with dummies for each of the 33 parties in Brazil. This model produces party-specific estimates of the wage share, all of them shown in Figure 12.A. It is noteworthy that three of the largest parties with respect to patronage as leading parties, PP (right leaning), PMDB (center leaning) and PT (left leaning), were also the parties engulfed in the corruption scandal of Petrobras, that ultimately led to the impeachment of former president Dilma Rousseff in 2016.

Next, we assign the ideology index from Power and Zucco (2009, 2012, 2021) to fifteen of those parties. This index varies from -2.5 to 2.5, with parties closer to -2.5 being more left leaning, while a score closer to 2.5 means right leaning. A score around 0 indicates a centrist party.

³² Gonzales (2021) investigates the relationship between audits and the hiring of public employees by also using data from the randomized audits to local governments in Brazil. She finds that execution of an audit leads to an increase in the number of public employees hired by the mayor. Although being an interesting analysis, Gonzales does not analyze how those hirings of public employees are associated with a political connection, affiliation or patronage, a key dimension that we investigate in this section of our paper.

We then interact the treatment dummies in equation (5) with party ideology – left, center, and right, following the 2017 ideology index constructed by Power and Zucco (2021). The results presented in Figure 12.B reveal little difference on dynamic treatment effects of winning an election by party ideology.

7. Conclusion

This paper shows that public sector personnel decisions and public finances can be heavily influenced by democratic election outcomes. Using a comprehensive data set of local elections, public employees, party affiliations, and public finances from almost all Brazilian cities, we find that winning political coalitions increase their shares of public employees by 3 percentage points after an election. They seize an even larger share of wages, 4 additional percentage points compared to pre-election means. These patronage effects can last longer than a decade, and correspond to more than 50 percent of the increase of the share of city employees with party affiliation since 1996.

This increase in political occupation of governmental jobs is not correlated with political ideology though. Instead, using two independent and credible research designs, we find that patronage is influenced by the level of federal transfers and by the lack of accountability in Brazilian cities. Those are important policy levers that the federal government can potentially use to minimize the influence of patronage on local governments.

References

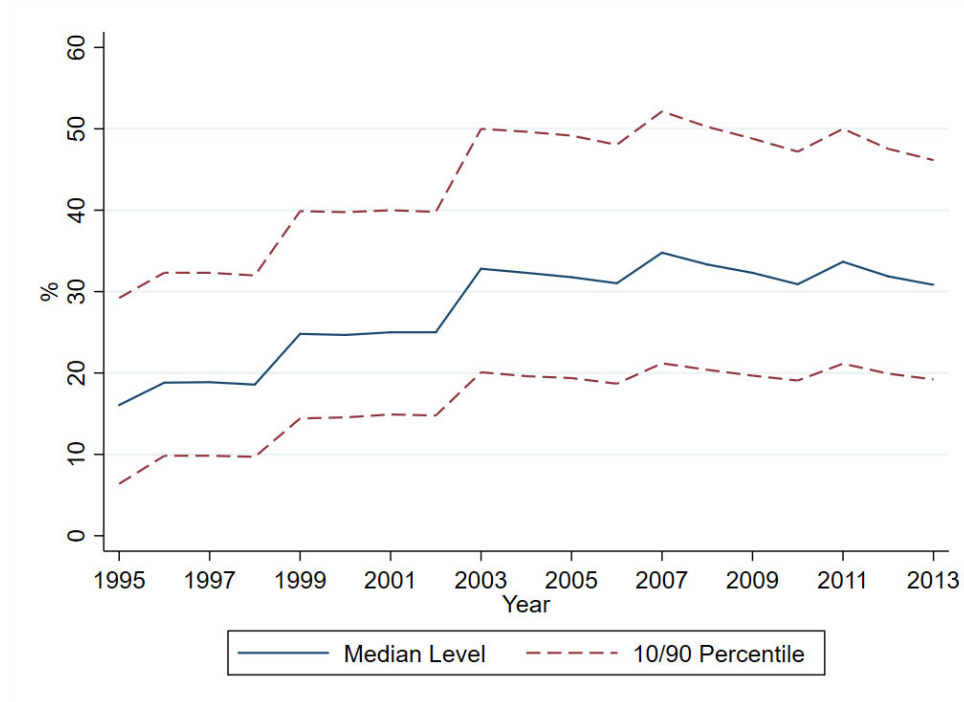
- Acemoglu, D., Naidy, S., Restrepo, P., and Robinson, J., 2015. "Democracy, Redistribution, and Inequality. " In *Handbook of Income Distribution*, v. 2, 1885-1996, edited by Atkinson, A. and Bourguignon, F.
- Aidt, T. and Jensen, P., 2013. "Democratization and the Size of Government: Evidence from the Long 19th Century. " *Public Choice*, 157(3-4), 511-542.
- Akhtari, M., Moreira, D., and Trucco, L., 2022. "Political Turnover, Bureaucratic Turnover, and the Quality of Public Services." *The American Economic Review*, 112 (2), 442-493.
- Alesina, A., 1987. "Macroeconomic Policy in a Two-Party System as a Repeated Game." *The Quarterly Journal of Economics*, 102 (3), 651–678.
- Alesina, A., 1988. "Credibility and Policy Convergence in a Two-Party System with Rational Voters." *The American Economic Review*, 78 (4), 796-805.
- Alesina, A., and Sachs, J., 1988. "Political Parties and the Business Cycle in the United States, 1948-1984." *Journal of Money, Credit and Banking*, 20 (1), 63–82.
- Anagol, S. and Fujiwara, T., 2016. "The Runner-Up Effect." *Journal of Political Economy*, 124(4), 927-991.
- Avis, E., Ferraz, C., Finan, F., 2018. " Do Government Audits Reduce Corruption? Estimating the Impacts of Exposing Corrupt Politicians." *Journal of Political Economy*, 126 (5), 1912-1964.
- Besley, T., and Case, A., 2003. "Political Institutions and Policy Choices: Evidence from the United States." *Journal of Economic Literature*, 41(1), 7-73.
- Besley, T., and Coate, S., 1997. "An Economic Model of Representative Democracy." *The Quarterly Journal of Economics*, 112 (1), 85-114.
- Boyne, George, Oliver James, Peter John, and Nicolai Petrovsky. 2010. "Does Political Change Affect Senior Management Turnover? An Empirical Analysis of Top-tier Local Authorities in England." *Public Administration*, 88(1), 136-153.
- Brassiolo, P., Estrada, R., and Fajardo, G., 2020. "My (running) mate, the mayor: Political ties and access to public sector jobs in Ecuador." *Journal of Public Economics*, 191, 104286.
- Brollo, F., Nannicini, T., Perotti, R., Tabellini, G., 2013. "The Political Resource Curse." *American Economic Review*, 103 (5), pp. 1759-96.
- Brollo, F., Forquesato, P., and Gozzi, J.C., 2017. "To the Victor Belongs the Spoils? Party Membership and Public Sector Employment in Brazil." Working Paper.
- Cameron, C.M., de Figueiredo, J.M. and Lewis, D.E. (2020), "Public-Sector Personnel Economics: Wages, Promotions, and the Competence-Control Trade-off", Tzabbar, D. and Cirillo, B. (Ed.) *Employee Inter- and Intra-Firm Mobility (Advances in Strategic Management, Vol. 41)*, Emerald Publishing Limited, Bingley, pp. 111-148.
- Cellini, S., Ferreira, F, and Rothstein, J., 2010 "The Value of School Facility Investments: Evidence from a Dynamic Regression Discontinuity Design." *The Quarterly Journal of Economics*, 125(1), 215-261.

- CGU, Controladoria Geral da União, 2015. "Relatório de Auditoria n. 201505051." CGU-Regional/PR. Secretaria Federal de Controle Interno. Presidência da República do Brasil. <https://auditoria.cgu.gov.br/download/12236.pdf>. (accessed February 16, 2021).
- Chu, J., Fisman, R., Tan, S., Wang, Y., 2021. "Hometown Ties and the Quality of Government Monitoring: Evidence from Rotation of Chinese Auditors." *American Economic Journal: Applied Economics*, 13(3), 2021.
- Coppedge, M., 1997. "A Classification of Latin American Political Parties." Helen Kellogg Institute for International Studies, Working paper #244.
- Colonnelli, E., Prem, M., and Teso, E., 2020. "Patronage and Selection in Public Sector Organizations." *The American Economic Review*, 110 (10), 3071-99.
- Corbi, R., Papaioannou, E., and Surico, P., 2019. "Regional Transfer Multipliers". *Review of Economic Studies*, 86 (5), 1901–1934.
- Dal Bó, E., Finan, F., Folke, O., Persson, T., and Rickne, J., 2017. "Who Becomes a Politician?" *The Quarterly Journal of Economics*, 132 (4), 1877–914.
- Dal Bó, E., Finan, F., and Rossi, M., 2013. "Strengthening State Capabilities: The Role of Financial Incentives in the Call to Public Service." *The Quarterly Journal of Economics*, 128 (3), 1169–218.
- Deserrano, E., 2019. "Financial incentives as signals: experimental evidence from the recruitment of village promoters in Uganda." *American Economic Journal: Applied Economics*, 11(1), 277-317.
- Dix-Carneiro, R., 2014. "Trade Liberalization and Labor Market Dynamics." *Econometrica*, 82, 825-885.
- Dix-Carneiro, R., and Kovak, B., 2017. "Trade Liberalization and Regional Dynamics." *American Economic Review*, 107 (10), 2908-2946.
- Downs, A., 1957. "An Economic Theory of Political Action in a Democracy." *Journal of Political Economy*, 65 (2), 135-150.
- Dull, Matthew, Patrick S. Roberts, Michael S. Keeney, and Sang Ok Choi. 2012. "Appointee Confirmation and Tenure: The Succession of Federal Agency Appointees, 1989-2009." *Public Administration Review*, 72(6), 902-913.
- Eggers, A., and Hainmueller, J., 2009. "MPs for Sale? Estimating Returns to Office in Post-war British Politics." *American Political Science Review*, 103(4). 513-33.
- Fang, H., Li, Z., Xu, N., and Yan, H., 2018. "In the Shadows of the Government: Relationship Building During Political Turnovers." Working Paper.
- Ferraz, C., and Finan, F., 2008. "Exposing Corrupt Politicians: The Effect of Brazil's Publicly Released Audits on Electoral Outcomes." *Quarterly Journal of Economics*, 123 (2), 703-745.
- Ferraz, C., and Finan, F., 2011. "Electoral Accountability and Corruption: Evidence from the Audits of Local Governments." *The American Economic Review*, 101(4), 1274-1311.
- Ferreira, F., and Gyourko, J., 2009. "Do Political Parties Matter? Evidence from U.S. Cities." *The Quarterly Journal of Economics*, 124(1), 349-397.
- Finan, F., Olken, B., and Pande, R., 2015. "The Personnel Economics of the State." In Duflo, E. and Banerjee, A., eds. *Handbook of Field Experiments*, Elsevier, North Holland.

- Fisman, R., and Gatti, R., 2002. "Decentralization and Corruption: Evidence from U.S. Federal Transfer Programs." *Journal of Public Economics*, 83, 325-345.
- Fisman, R., Schulz, F., Vig, V., 2014. "The Private Returns to Public Office." *Journal of Political Economy*, 122 (4), 806-862.
- Folke, O., Hirano, S., and Snyder, J.M, 2011. "Patronage and Elections in U.S. States." *American Political Science Review*, 105, 567-585.
- Fujiwara, T., 2015. "Voting Technology, Political Responsiveness, and Infant Health: Evidence from Brazil." *Econometrica*, 83(2), 423-464.
- Gadenne, L., 2017. "Tax Me, But Spend Wisely: Sources of Public Finance and Government Accountability." *American Economic Journal: Applied Economics*, 9, 274-314.
- Gagliarducci, S. and Manacorda, M. 2020. "Politics in the Family: Nepotism and the Hiring Decisions of Italian Firms." *American Economic Journal: Applied Economics*, 12 (2): 67-95.
- Glaeser, E., Ponzetto, G., and Shapiro, J. 2005. "Strategic Extremism: Why Republicans and Democrats Divide on Religious Values." *The Quarterly Journal of Economics*, 120 (4), 1283-1330.
- Gonzales, M., 2021. "Politics never end: Patronage Effects of Increased Transparency." *Working Paper*.
- Hibbs, D., 1992. "Partisan theory after fifteen years." *European Journal of Political Economy*, 8 (3), 361-373.
- Hotelling, H., 1929. "Stability in Competition." *Economic Journal*. 39, 41–57.
- Imbens, G. and Angrist, J., 1994. "Identification and Estimation of Local Average Treatment Effects." *Econometrica*, 62 (2), 467-475.
- Jiang, J., and Zhang, M., 2020. "Friends with benefits: Patronage networks and distributive politics in China." *Journal of Public Economics*, 184, 104-143.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R., 1999. "The Quality of Government." *Journal of Law, Economics and Organization*, 15 (1), 222–279.
- Lee, D. S., 2008. "Randomized Experiments from Non-random Selection in U.S. House Elections." *Journal of Econometrics*, 142 (2), 675-697
- Lee, D., Moretti, E., and Butler, M., 2004. "Do Voters Affect or Elect Policies? Evidence from the U. S. House." *The Quarterly Journal of Economics*, 119 (3), 807-859.
- Litschig, A., and Morrison, K., 2013. "The Impact of Intergovernmental Transfers on Education Outcomes and Poverty Reduction." *American Economic Journal: Applied Economics*, 5 (4), 206-240.
- Mauro, P., 1995. "Corruption and Growth." *The Quarterly Journal of Economics*, 110 (3), 681–712.
- Menezes-Filho, N.A, Muendler, M.-A., and Ramey, G., 2008. "The Structure of Worker Compensation in Brazil, with a Comparison to France and the United States." *The Review of Economics and Statistics*, 90, 323-346.
- Power, T. and Zucco Jr., C., 2009. "Estimating Ideology of Brazilian Legislative Parties, 1990-2005." *Latin American Research Review*, 44 (1), 218-246.

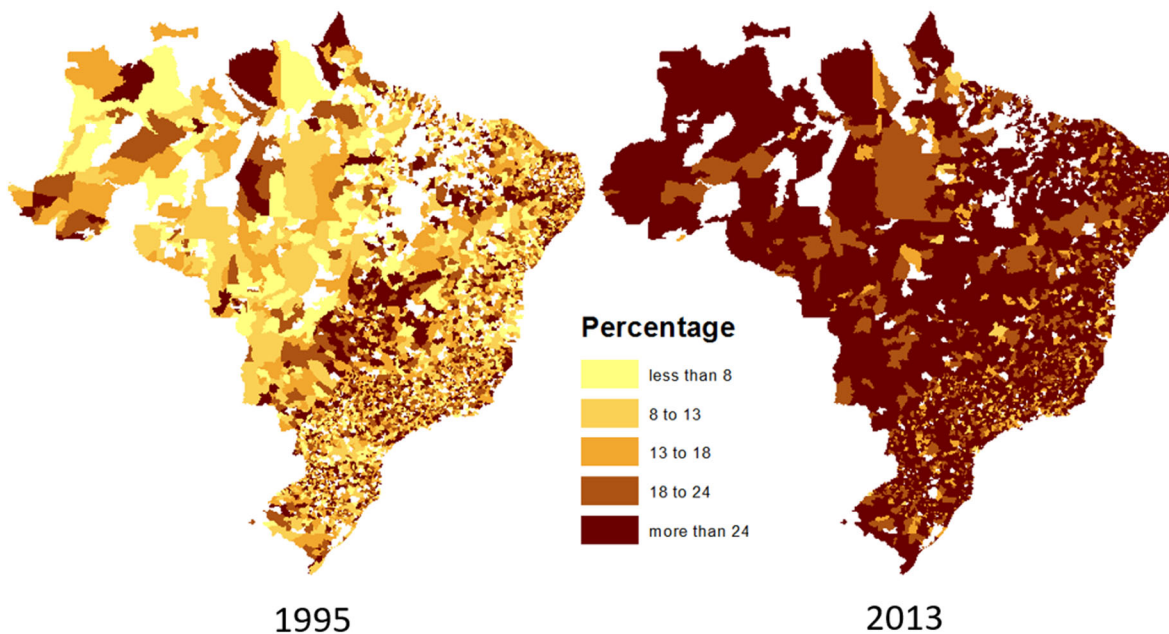
- Power, T. and Zucco Jr., C., 2012. "Elite Preferences in a Consolidating Democracy: The Brazilian Legislative Surveys, 1990-2009." *Latin American Politics and Society*, 54(4), 1-27.
- Power, T. and Zucco Jr., C., 2021. "Fragmentation Without Cleavages? Endogenous Fractionalization in the Brazilian Party System." *Comparative Politics*, 53 (3), 477-500.
- Querubin, P., and Snyder, J., 2009. "Returns to U.S. Congressional Seats in the Mid-19th Century." In *The Political Economy of Democracy*, edited by Enriqueta Aragonés, Carmen Bevia, Humberto Llavador, and Norman Schofield. Madrid: Fundacion BBVA.
- Shleifer, A. and Vishny, R., 1993. "Corruption." *The Quarterly Journal of Economics*, 108 (3), 599–617.
- Tiebout, C., 1956. "A Pure Theory of Local Expenditures." *The Journal of Political Economy*, 64 (5), 416-424.
- Xu, G., 2018. "The Costs of Patronage: Evidence from the British Empire." *American Economic Review*, 108(11), 3170-98.

Figure 1: Share of City Employees Affiliated with a Party



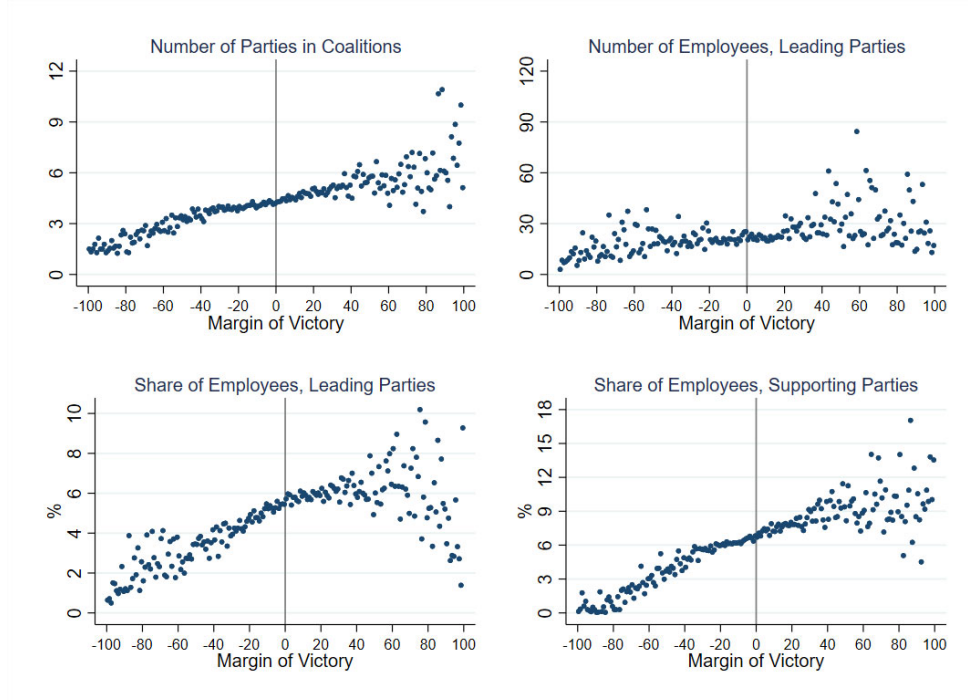
Notes: The figure plots the share of city employees with party affiliation for every year between 1995 and 2013. The share is created by combining public employment records from RAIS with party affiliation data using a matching on person's name. See Section 4.2 for a detailed description of the matching procedure.

Figure 2: Share of Public Employees Affiliated with a Party by City and by 1995 Quintile Thresholds



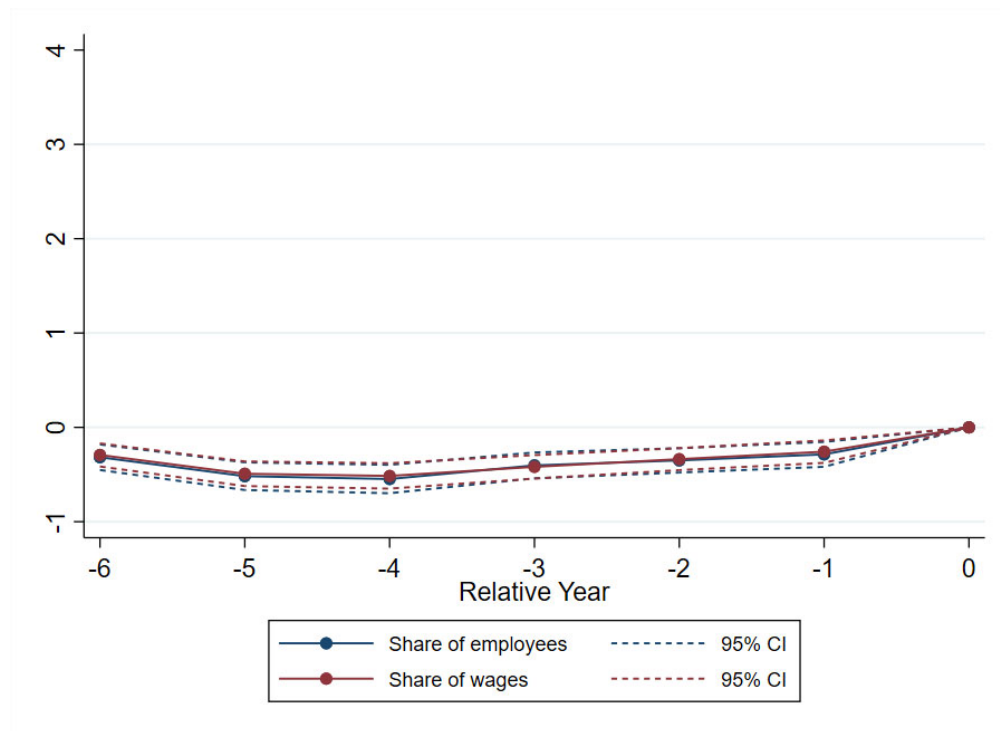
Notes: This figure presents a map of Brazil with the distribution of share of public employees with party affiliation in 1995 and 2013 by city. Color scheme for both maps are based on 1995 quintile thresholds of the share of public employees with party affiliation, holding constant the 1995-quintile thresholds for the shares in 2013. Cities without data as displayed in white.

Figure 3. Coalition Characteristics Around Margin of Victory Threshold



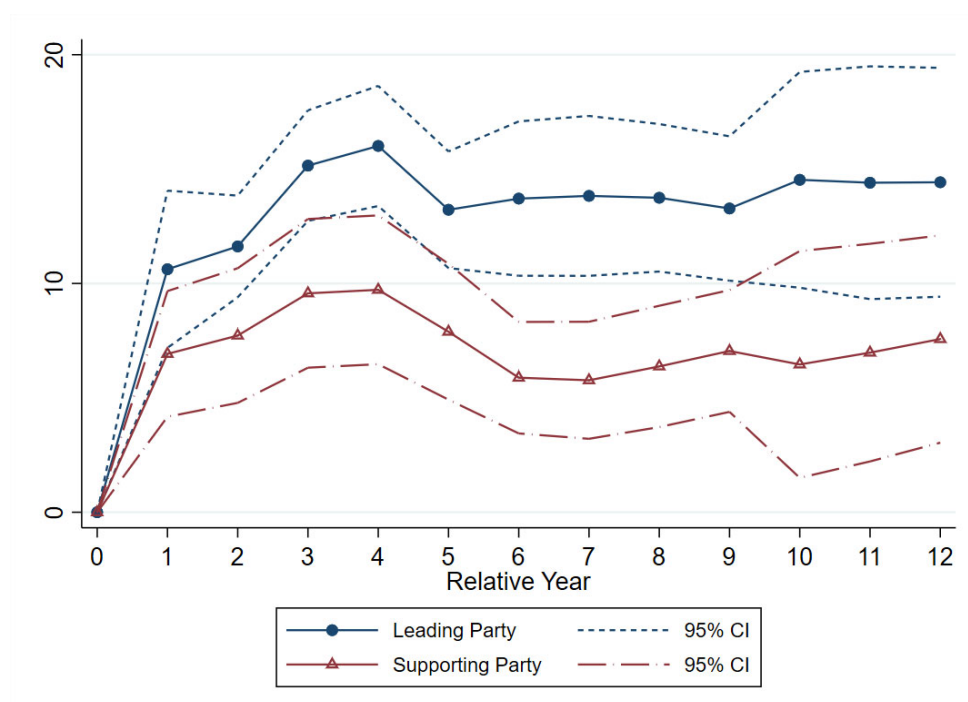
Notes: Each dot represents the average of the corresponding variable in the year of the election for each percentage point of margin of victory. Only the top two coalitions, in terms of vote shares in the first round of the election, are plotted.

Figure 4: Pre-Trends in Share of Public Employees and Wages of Leading Parties



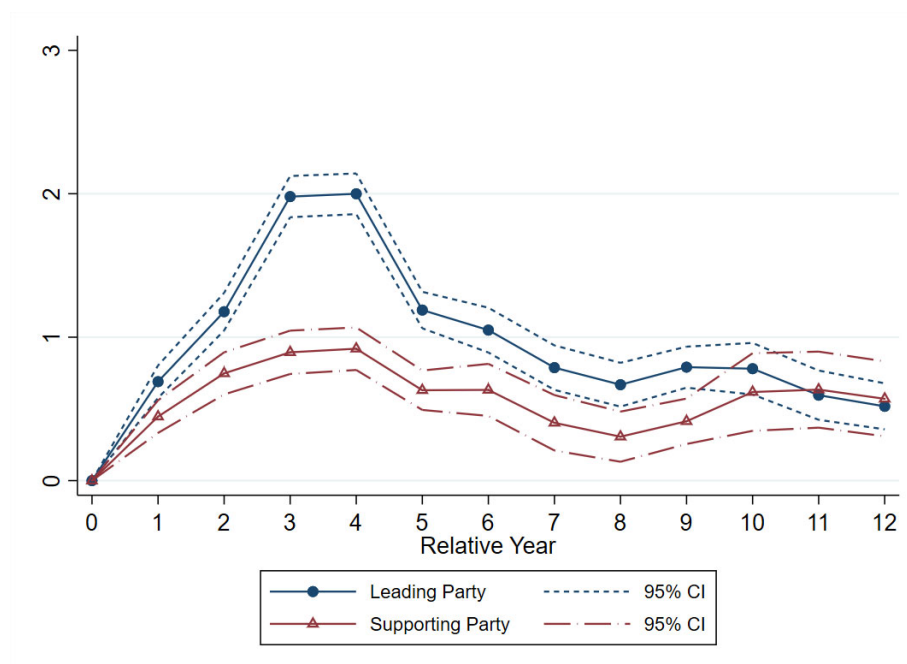
Notes: Figure plots the trend of corresponding variables for years before the election year. The relative year -6 combines the trends for observations that are more than 5 years prior to the election.

Figure 5: Dynamic RD Patronage Effects on the Total Number of Public Employees Affiliated with Winning Coalitions



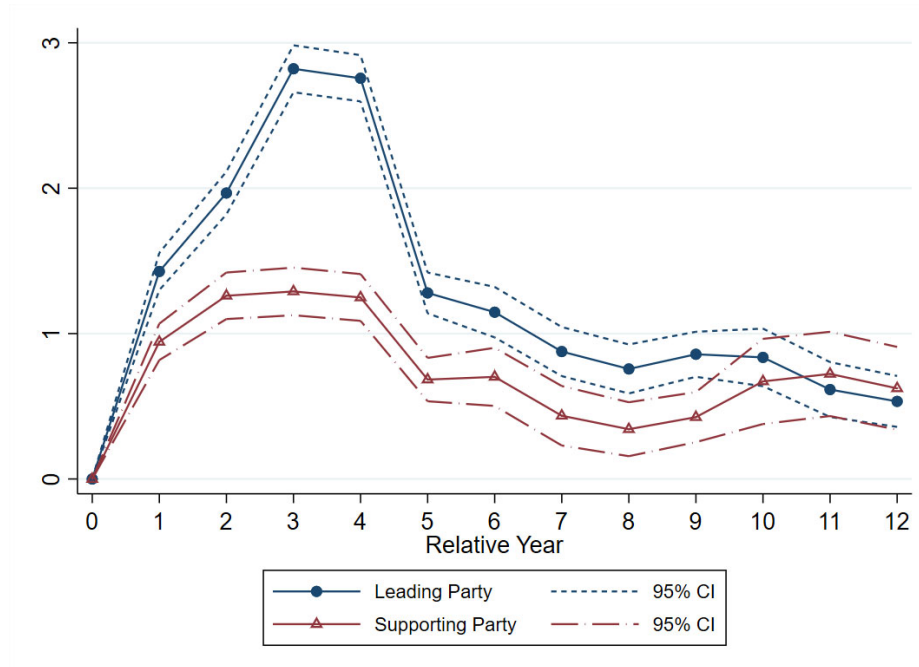
Notes: Figure plots the estimated patronage coefficients and 95 percent confidence intervals based on the model described in Equation 5. The coefficients for supporting parties are multiplied by 3.301, which is the average number of supporting parties with marginal victory/loss < 5%. Standard errors are clustered at city level.

Figure 6: Dynamic RD Patronage Effects on the Share of Public Employees Affiliated with Winning Coalition Parties



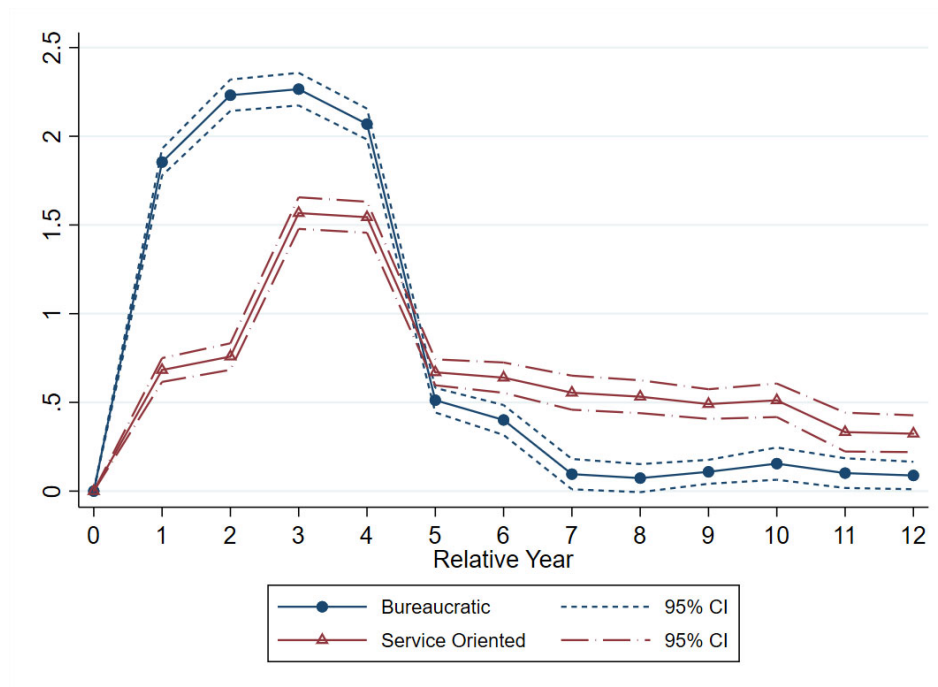
Notes: Figure plots the estimated patronage coefficients and 95 percent confidence intervals based on the model described in Equation 5. The coefficients for supporting parties are multiplied by 3.301, which is the average number of supporting parties with marginal victory/loss < 5%. Standard errors are clustered at city level.

Figure 7: Dynamic RD Patronage Effects on the Share of Total Wages of Public Employees Affiliated with Winning Coalition Parties



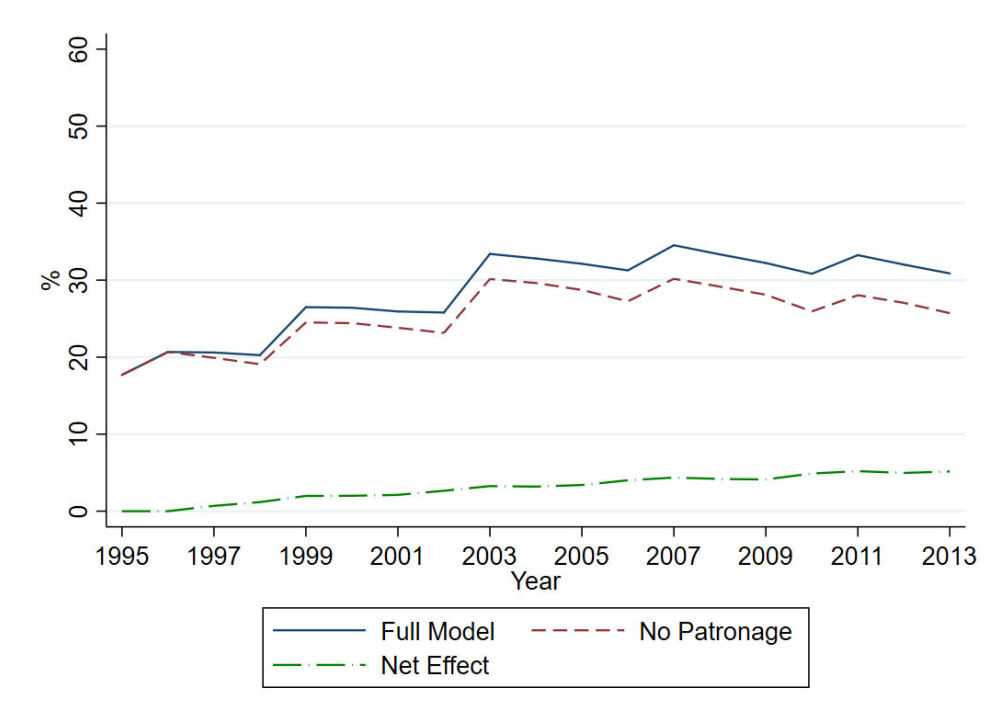
Notes: Figure plots the estimated patronage coefficients and 95 percent confidence intervals based on the model described in Equation 5. The coefficients for supporting parties are multiplied by 3.301, which is the average number of supporting parties with marginal victory/loss < 5%. Standard errors are clustered at city level.

Figure 8: Dynamic RD Patronage Effects on Wage Shares by Type of Occupation



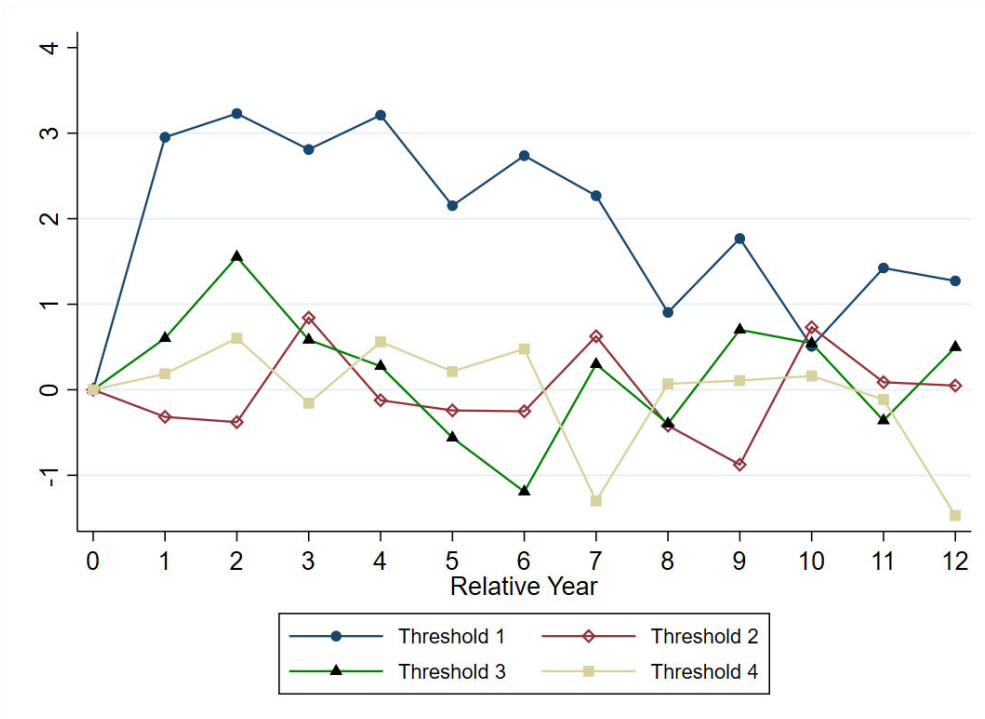
Notes: Figure plots the estimated patronage coefficients and 95 percent confidence intervals based on the model described in Equation 5. The coefficients for supporting parties are multiplied by 3.301, which is the average number of supporting parties with marginal victory/loss < 5%. Standard errors are clustered at city level.

Figure 9: Predicted Share of Public Employees with Party Affiliation - Prediction With and Without Patronage Variables



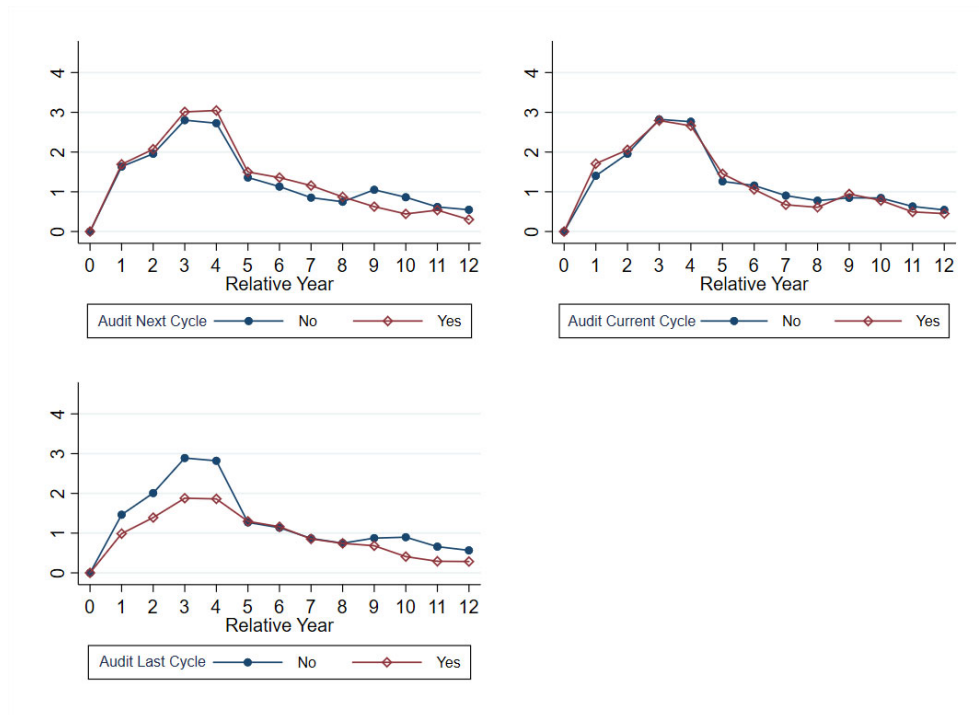
Notes: The full model refers to prediction of the estimates presented in Figure 6. No patronage refers to the prediction of the same regression but removing all patronage effect (relative year dummies). The net effect is the difference between the two predictions.

Figure 10: Federal Transfers Channel: Pop. Threshold Effects on Patronage Share of Total Wages



Notes: Figure plots the estimated coefficients for leading parties of the winning coalitions in cities with population within 2% around 10,188 (threshold 1), 13,584 (threshold 2), 16,980 (threshold 3), and 23,772 (threshold 4) inhabitants, comparing cities that receive more or less transfers.

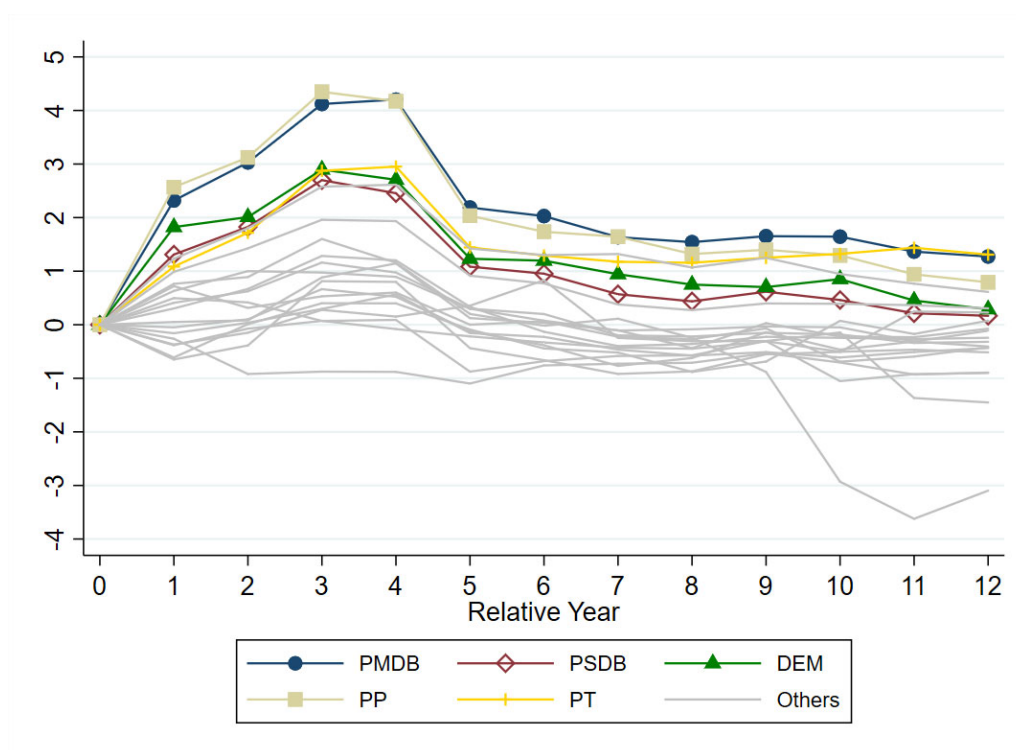
Figure 11: Accountability Channel: Audit Effects on Patronage Share of Total Wages



Notes: Figure plots the estimated coefficients for leading parties of the winning coalitions in cities with or without an audit in the next, current or last election cycle. Each election cycle begins with the year after an election and ends with the year of another election. If an audit happens in any year in an election cycle for a given city, then the currently (previously/next) elected party experiences an audit in current (last/next) cycle.

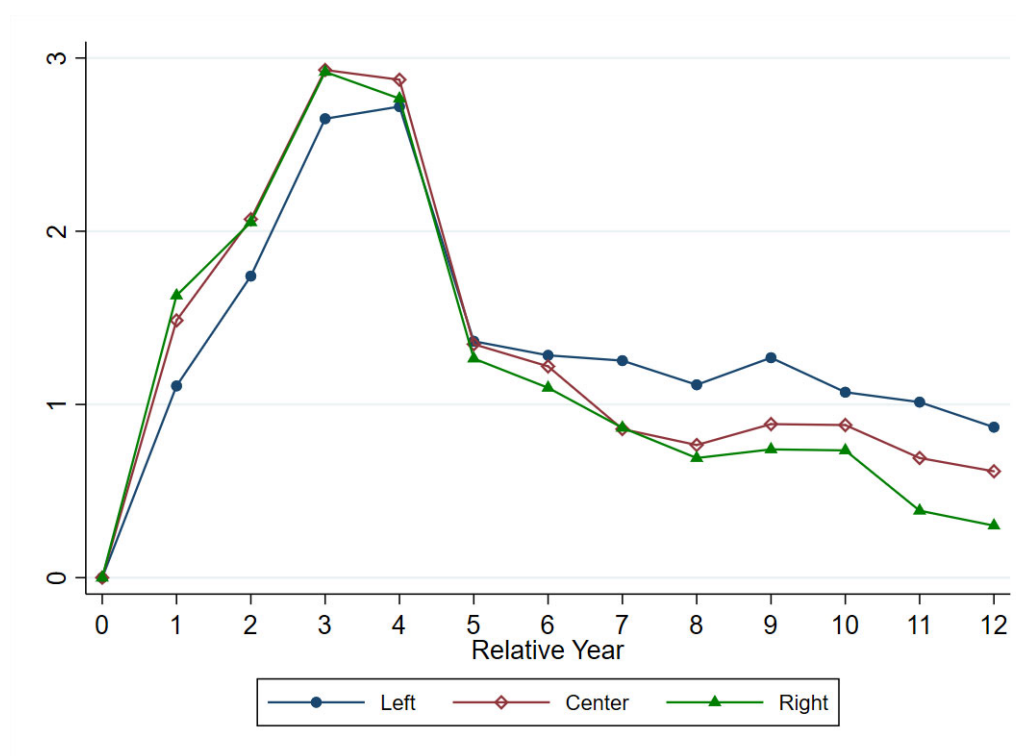
Figure 12: Political Economy Channel: Ideology Effects on Patronage Share of Total Wages

A. Party Interactions



Notes: Figure plots the estimated coefficients for different parties being the leading in winning coalitions.

B. Ideology Interactions



Notes: Figure plots the estimated coefficients for parties with different type of ideology that leads the winning coalitions. The ideology is based on Power and Zucco (2009, 2012, 2021) and remain constant 1995 and 2013.

Table 1: Summary Statistics by City-Year

	Mean	SD	Min.	Median	Max.	No.
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A - RAIS Employer-Employee</i>						
Number of Public Employees	620.9	2,378.8	1.0	271.0	151,987	99,928
Number of Public Employees with Party	150.0	493.5	0.0	81.0	34,391	99,928
Share of Public Employees with Party (%)	29.1	12.4	0.0	27.8	100	99,928
Share of Wages to Public Employees with Party (%)	30.9	12.8	0.0	29.8	100	99,921
Share that are Bureaucratic (%)	38.2	19.8	0.0	36.2	100	99,928
Share that are Bureaucrats with Party (%)	11.6	8.5	0.0	9.8	100	99,928
Share that are Service Oriented (%)	55.5	19.3	0.0	56.7	100	99,928
Share that are Service Oriented with Party (%)	15.7	9.2	0.0	14.6	100	99,928
Share that are Public Teachers (%)	25.3	14.0	0.0	24.7	100	99,928
Share that are Teachers with Party (%)	5.8	4.9	0.0	4.9	100	99,928
Share that are Public Doctors (%)	0.8	1.6	0.0	0.2	100	99,928
Share that are Doctors with Party (%)	0.1	0.3	0.0	0.0	20	99,928
<i>Panel B - Party Affiliation</i>						
Number of Parties	11.95	5.94	0.0	11.00	32.00	99,928
Number of Party Members	2,045.68	8,497.77	0	891	544,651	99,928
<i>Panel C - City Characteristics</i>						
Total Population	32795	195347	696	10875	11821873	99,901
Total Expenditures	1471	1822	1	1248	287100	89,799
Share Devoted to Personnel (%)	43	10	0	43	100	89,799

Notes: This table presents descriptive statistics for the Brazilian municipalities regarding their public employees, individuals party affiliation, population size and their public finances. Observations are collapsed to the city-year level and ranges from 1995 to 2013. *Total Expenditure*, and *Share Devoted to Personnel* in Panel C are based on the 2012 BRL, which are missing for 2013. Column (6) shows the number of city-year units used in the calculation.

Table 2: Summary Statistics of the Elections Data

	Mean	SD	Min.	Median	Max.	No.
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Candidates	2.83	1.17	1	3	16	26,058
Average Number of Parties in Each Coalition	3.27	2.66	1	2	23	73,811
Vote Share of the First Coalition (%)	55.40	12.61	22.72	53.62	100	26,058
Vote Share of the Second Coalition (%)	38.85	8.47	0.02	40.67	50	25,233
Vote Share of the Third Coalition (%)	12.11	9.13	0.01	10.50	33	12,401
Mayor Re-elected (%)	31.10	46.29	0	0	100	20,433
Leading Party Re-elected (%)	32.85	46.97	0	0	100	20,433

Notes: This table presents descriptive statistics by city-year for all electoral years, with the exception of the variable *Average Number of Parties in Each Coalition*, shown at city-year-coalition level. Coalition information is not available in 1996. All parties that participated in the 1996 election were classified as a coalition with only one party. "Vote Share" is defined as (Each candidate's 1st round vote count / Sum of any available 1st round vote count)*100. Candidates are defined to be a "mayor-elected" if their final election status is elected. The 1996 data is not used in calculating re-elections variables because we don't have 1992 election data.

Table 3: Summary Statistics for Estimation Sample, Party-City-Year Level Data

	Mean	SD	Min.	Median	Max.	No.
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A - RAIS Employer-Employee</i>						
Public Employees with Party Affiliation	4.51	31.87	0.00	0.00	7886.00	3297624
Share of Public Employees with Party (%)	0.88	2.47	0.00	0.00	100.00	3297624
Share Wages of Public Employees with Party (%)	0.93	2.71	0.00	0.00	100.00	3297624
Share that are Bureaucratic (%)	0.35	1.25	0.00	0.00	100.00	3297624
Share that are Service Oriented (%)	0.48	1.45	0.00	0.00	100.00	3297624
Share that are teachers (%)	0.18	0.64	0.00	0.00	100.00	3297624
Share that are doctors (%)	0.00	0.05	0.00	0.00	16.67	3297624
<i>Panel B - Party Affiliation</i>						
Number of Party Affiliates	61.64	550.66	0.00	0.00	129697.00	3297624
Share of Party Affiliates (%)	3.03	6.50	0.00	0.00	100.00	3297624

Notes: This table presents descriptive statistics by party-city-year for the estimation sample. The denominator of the variable *Share of Party Affiliates* is anyone with a party affiliation within the city for a given year.

Table 4: Decomposition of Patronage Effects by Type of Employee

	Decomposition			
	(1)	(2)	(3)	(4)
Employee status in previous year:	No party, no employment	No party, employed	Party, no employment	Party, employed
<i>Panel A. Patronage Share, Employees</i>				
Leading party rel. year: 1	0.039	0.018	0.508	0.433
Leading party rel. year: 2	0.09	0.064	0.568	0.276
Leading party rel. year: 3	0.171	0.126	0.386	0.315
Leading party rel. year: 4	0.233	0.139	0.398	0.228
Support party rel. year: 1	0.015	0.014	0.399	0.571
Support party rel. year: 2	0.062	0.054	0.516	0.366
Support party rel. year: 3	0.117	0.115	0.329	0.436
Support party rel. year: 4	0.176	0.183	0.392	0.247
<i>Panel B. Patronage Share, Wages</i>				
Leading party rel. year: 1	0.063	0.045	0.591	0.301
Leading party rel. year: 2	0.161	0.091	0.747	0.000
Leading party rel. year: 3	0.229	0.163	0.379	0.227
Leading party rel. year: 4	0.33	0.168	0.406	0.094
Support party rel. year: 1	0.031	0.029	0.402	0.537
Support party rel. year: 2	0.108	0.089	0.675	0.127
Support party rel. year: 3	0.136	0.083	0.331	0.448
Support party rel. year: 4	0.274	0.176	0.462	0.086

Notes: (1) refers to "Employees had no party affiliation and no public employment in the previous year in each city", (2) refers to "Employees had no party affiliation but had public employment in the previous year in each city", (3) refers to "Employees had some party affiliation, but no public employment in the previous year in each city", and (4) refers to "Employees had some party affiliation and had public employment in the previous year in each city".