A model and evidence on dysfunctional federalism: distributive politics and two-sided coattail effects

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Abstract

We study vote for president and governor in a model where discretionary fiscal policy allows the president to favor politically aligned districts and, when there is asymmetric information, engage in political budget cycles. Voters value a candidate's competence (selection motive) and political connections (alignment motive). Higher fiscal decentralization reduces the impact of distributive politics, making electoral accountability in federal countries depend more on the competence of each candidate. The model explains two-sided coattail effects through distributive politics, and implies a novel "drag" effect: more support for the president in other districts boosts the vote for an aligned governor and depresses it for an unaligned one. Data from elections in Argentina support these predictions, showing that good economic performance in the country hurts unaligned governors, while good economic performance in unaligned provinces hurts the president.

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1 Introduction

Democracies allow voters to hold governments accountable for their behavior. What voters reward depends, however, on the institutional design. We develop a model for federal countries where governors may not only be rewarded by voters for their performance on valence issues, like being more efficient in the provision of public goods, but also on positional issues, like getting more transfers from the national government.

National incumbents may skew the distribution of funds towards certain districts to gain political and electoral support, a phenomenon known as distributive politics (e.g., Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Dixit and Londregan, 1996; Ansolabehere and Snyder, 2006; Larcinese, Rizzo, and Testa, 2006; Arulampalam, Dasgupta, Dhillon, and Dutta, 2009; Berry, Burden, and Howell, 2010; Garofalo, 2019). A smaller literature looks at how the allocation of funds may be directed to political allies to help them electorally (e.g., Ferreira and Bugarin 2007; Garofalo, Lema, and Streb 2020). However, as far as we know, nobody has considered the effect of distributive politics on voting behavior in the context of simultaneous national and subnational elections.

To connect these two literatures, we develop a work-horse model that analyzes the relationship between votes for president and governor in a setup where national and subnational elections are concurrent (the logic for non-concurrent elections is similar). We mainly build on Ferreira and Bugarin (2007) and Garofalo, Lema, and Streb (2020). Ferreira and Bugarin (2007) show how partisan transfers change the incentive of voters in district elections. In their setting, the selection motive of choosing the most competent mayor can be dwarfed by the partisan (or alignment) motive of picking an incumbent aligned with the governor. Garofalo, Lema, and Streb (2020) extend the analysis to both concurrent and non-concurrent elections, but they treat presidential election results as exogenous. When gubernatorial elections are not concurrent with presidential elections, federal transfers tilt elections in favor of governors aligned with the incumbent president, as in Ferreira and Bugarin (2007). When

both elections are concurrent, aligned governors are favored at the polls if the presidential party is expected to continue in office, while unaligned governors are favored otherwise.

This paper extends the previous analyses by endogeneizing presidential elections. With two parties, the incumbent governor may be aligned with the president or with the presidential challenger. Under discretionary fiscal policy, the model has two main predictions for concurrent elections. First, incumbent governors aligned with the president have an electoral advantage if the president is popular, but a disadvantage if not, as in Garofalo, Lema, and Streb (2020). Second, an incumbent president has an electoral advantage in districts where an aligned governor is popular, but a disadvantage if not, while the opposite holds in districts with unaligned governors.

These two predictions on voter behavior connect the literature on distributive politics to the literature on straight-party voting (e.g., Calvert and Ferejohn, 1983; Garmendia-Madariaga and Ozen, 2015). The second prediction in our model can be rephrased as stating that the alignment motive can lead to reverse coattail effects. On the other hand, the first prediction entails coattail effects in each district (province or state), as well as a novel "drag" effect that occurs because voters not only take into consideration their own vote for president in the district, but also the vote for president in the rest of the country. In the model, the logic behind two-sided coattail and drag effects is always the same, that voters want to align national with subnational incumbents because that increases the chances of receiving larger federal transfers during the next governor's term.

Our model's predictions are contrasted with data from Argentine provinces for the 1983-2016 period. Argentina is a good laboratory for our study because almost all provinces have experienced concurrent and non-concurrent elections, providing the within-province variation needed for identification purposes. The empirical results match the model's predictions.

It is widely believed that fiscal decentralization makes it easier for voters to hold incumbents

accountable for their local performance (Lockwood, 2015). Substantive evidence to support this claim has been found (e.g., Lockwood, 2002; Barankay and Lockwood, 2005; Hindriks and Lockwood, 2009). Our paper is relevant to this literature on fiscal decentralization, and our evidence for Argentina backs that claim.

Our paper implies that under high centralization, highly discretionary federal transfer policies can decrease voter response to local performance, while formula-based federal transfer policies could increase it. The logic behind this is that voters in a highly centralized country with a formula-based federal transfer regime have no incentive to politically align subnational with national incumbents, because they do not expect larger federal transfers during the next government term. In a setting where federal resources are transferred without discretion, the alignment motive would be minimal even in highly centralized countries.

Our contribution is in line with the view Weingast (2009) has of fiscal federalism in Latin America. He points out that Argentina, Brazil and Mexico, de jure federal countries, are very centralized de facto, not only under-performing in relation to market-preserving federations, but also undermining democracy by giving voters the perverse incentive of trying to get more funds from the central government rather than trying to pick the most competent incumbent for their district.

The paper is structured as follows. Section 2 develops a model of strategic voting within a federal country that leads to two-sided coattail effects and drag effects. Section 3 describes the empirical specification, and econometric techniques employed. Section 4 describes the data set, Section 5 reports the empirical results. Section 6 concludes.

2 Modeling Strategy

We develop a work-horse model to analyze discretionary fiscal policy in federal countries. There are subnational policymakers, the governors, and a national policymaker, the pres-

ident. Discretionary fiscal policy can give rise to Political Budget Cycles (PBCs hereafter) and distributive politics.

In PBCs, office-motivated incumbents use expansionary fiscal policy to try to appear more competent and thus increase their chances of reelection. Shi and Svensson (2006) have a model of PBCs as the result of the credibility problems of discretionary fiscal policy before elections. In their model, PBCs do not affect election results.

In distributive politics, a president allocates federal funds to governors aligned with them. Garofalo, Lema, and Streb (2020) extend the Shi and Svensson model, adding a previous stage, a president who can make discretionary transfers to districts with aligned governors. Though neither national nor subnational PBCs affect gubernatorial election results, distributive politics does. This result comes about because PBCs only work if they surprise voters, something that does not happen in equilibrium in these rational PBC models. Distributive politics, on the other hand, works best when it is expected by voters. Hence, a president will try to make transfers as visible as possible in favored districts.

In this paper, we develop a model where PBCs and distributive politics are decoupled, so they can be analyzed separately. With regard to PBCs, the innovation in regard to earlier literature is simultaneously considering the behavior of both levels of government, and allowing for cycles not only in expenditure but also in taxes, something which captures better the patterns present in the data. However, our focus is on distributive politics and how it jointly affects vote for president and for governor in a setting of concurrent elections.

2.1 Agents

Voters

In each district i, where $i = 1, 2, ..., I$ stands for a province or state, personal consumption c_i equals personal income y_i, which is constant over time, minus local (π_i) and national (π_t)

tax payments. The time period is indicated by sub-index t:

$$c_{it} = y_i - (\pi_{it} + \pi_t). \tag{1}$$

The per-period utility u_i is linear in the consumption of the private good c_i, and concave in the consumption of the local and national public goods g_i and g. This is the opposite of Shi and Svensson (2006), where utility is linear in the public good. Each individual k in district i differs in an idiosyncratic political shock $\sigma_{ik} = \sigma_{ik}^G + \sigma_{ik}^P$, where the components capture the relative preferences for the opposition to the incumbent governor at the district and the national levels:

$$u_{ikt} = c_{it} + \alpha \ln g_{it} + \beta \ln g_t + \sigma_{ikt}^G + \sigma_{ikt}^P. \tag{2}$$

The shocks are uniformly distributed with density T around zero, $\sigma_{ik}^L \in \left[-\frac{1}{2T}, \frac{1}{2T}\right]$, for $L = G, P$. The median voter m is thus characterized by $\sigma_{im}^L = 0$.[1] The shocks σ_{ik}^G and σ_{ik}^P may be correlated, but they are identically and independently distributed over time. A voter's expected utility is given by the discounted sum $U_{ikt} = \mathbf{E}_t[\sum_{j=0}^{\infty} \delta^j u_{ik,t+j}]$.

Governors

In each district, the budget constraint in per-capita terms is that government expenditures γ_i equal tax revenues π_i plus federal transfers ϕ_i and the proceeds from public debt d_i, net of the repayment of principal and interest $(1 + r(d_i))d_i$ on the debt of the previous period:

$$\gamma_{it} = \pi_{it} + \phi_{it} + d_{it} - (1 + r(d_{i,t-1}))\, d_{i,t-1}. \tag{3}$$

As in Shi and Svensson (2006), the interest rate $r(d_i)$ increases at an increasing rate with

[1] If the shock to the median voter were non-zero, this would add ideological issues to competence issues in the elections.

debt: $r' > 0$, $r'' > 0$, and debt is not socially optimal since the extra utility from more private consumption in the present is smaller than the required sacrifice in the future: $1 \leq \delta\,(1 + r(0))$.

The per-period budget balance is given by the following above-the-line items:

$$bal_{it} \equiv \pi_{it} + \phi_{it} - (\gamma_{it} + r(d_{i,t-1})d_{i,t-1})\,. \tag{4}$$

Budget constraint (3) implies that, below the line, $bal_{it} = -(d_{it} - d_{i,t-1})$.

As in Streb and Torrens (2013), we distinguish between the budget process and the public goods production function. Tax revenues are not affected by the competence of the incumbents. However, expenditure γ_i times a competence shock θ_i determines the provision of public goods g_i:

$$g_{it} = \gamma_{it}\theta_{it}. \tag{5}$$

In Rogoff and Sibert (1988), competence is a moving average process of order 1. In our setup, we assume for simplicity a multiplicative process instead of additive shocks:

$$\theta_{it} = \theta(1 + \varepsilon_{it})(1 + \varepsilon_{i,t-1}). \tag{6}$$

The shocks $\ln(1 + \varepsilon_i) \in \left[-\frac{1}{2D_i}, \frac{1}{2D_i}\right]$ are identically and independently distributed around zero with uniform density D_i.

The per-period utility v_i of the incumbent governor depends, like any citizen, on private consumption, and the local and national public goods. There is an extra term $k_i > 0$ if in office (the indicator function $\mathrm{I}_i = 1$), zero if not ($\mathrm{I}_i = 0$). This introduces an electoral bias in the model:

$$v_{it} = c_{it} + \alpha \ln g_{it} + \beta \ln g_t + \mathrm{I}_{it}k_i. \tag{7}$$

The expected utility of the incumbent governor is given by $V_{it} = \mathbf{E}_t[\sum_{j=0}^{\infty} \delta^j v_{i,t+j}]$.

President

The national government budget constraint is:

$$\gamma_t = \pi_t - \sum_{i=1}^{I} s_i \phi_{it} + d_t - (1 + r(d_{t-1}))\, d_{t-1}. \tag{8}$$

As with district debt in (3), $r' > 0$,$r'' > 0$, and $1 \leq \delta\,(1 + r(0))$. The share of district i in total population, s_i, is constant.

Analogously to (4), the per-period budget balance is given by

$$bal_t \equiv \pi_t - \left(\gamma_t + \sum_{i=1}^{I} s_{it} \phi_{it} + r(d_{t-1}) d_{t-1} \right). \tag{9}$$

The provision of national public goods g is similar to local public goods in (5):

$$g_t = \gamma_t \theta_t. \tag{10}$$

As district governments in (6),

$$\theta_t = \theta(1 + \varepsilon_t)(1 + \varepsilon_{t-1}). \tag{11}$$

The utility of the incumbent president P is a function of private consumption, the local (in home district $i = P$) and national public goods. Besides the payoff k_P from being in office ($\mathrm{I}^P = 1$), we include an additional term, the utility k_L from having legislative support ($\mathrm{I}^L = 1$). While parameter k_P is linked to PBCs, parameter k_L is linked to distributive politics:

$$v_t = c_{Ht} + \alpha \ln g_{Ht} + \beta \ln g_t + \mathrm{I}_t^P \left(k_P + \mathrm{I}_t^L k_L \min\left(x_t, \chi\right)\right). \tag{12}$$

The expected utility of the incumbent president is given by $V_t = \mathbf{E}_t[\sum_{j=0}^{\infty} \delta^j v_{t+j}]$.

Because utility is linear in private consumption, discretional federal transfers ϕ_i will have an on/off character, being either zero or positive. We put a cap on transfers, so there is always a corner solution. Transfers ϕ_i have two components. The first component, ϕ_{Hi}, represents home-district bias: for each i, per capita transfers $\phi_{Hi} \in \{0, \phi_H/s_i\}$, where $\phi_H > 0$ and s_i is district's i share in the country's population. The second component, ϕ_{Ai}, has to do with Riker's minimal winning coalition. Expected per capita federal transfers $\phi_{Ai} \in \{0, \phi_A\}$, where each district included in the minimal winning coalition receives $\phi_A > 0$, while the rest receives nothing.

Alignment is typically identified as being co-partisan: the governor and the majority of district legislators in congress belong to the party of the president. Partisan coalitions stem from intraparty cohesion and interparty conflict (Collie 1988: 865). Presidents may want to help legislators from their party because a larger number of co-partisans within Congress can help to enact a greater portion of the executive's legislative agenda (Coleman 1999, Howell and Lewis 2000). We assume something slightly different: aligned governors are those that support the presidential ticket.[2] We add the specific assumption that a minimal winning coalition is formed ranking co-partisan districts based on the share of presidential votes, from highest to lowest, followed by non co-partisan districts if necessary.[3] Building a minimal winning coalition implies that support in congress matters until the president has a legislative majority $\chi \geq 0.5$. We represent the president's legislative coalition by $x = \sum_{i=1}^{I} \omega_i \mathrm{I}_i^A$, where ω_i is the proportion of representatives in congress that district i

[2]Jones et al. (2012: 145) point out that, unlike partisanship in the United States, coalitional politics in Argentina crosses party lines.

[3]Without this specific assumption, the winning candidate would always build the cheapest minimal winning coalition with the most overrepresented districts. District and national elections would hence be decoupled and party lines would not matter at all.

contributes, and the indicator function $\mathrm{I}_i^A = 1$ if the district i is necessary to achieve $x \geq \chi$, otherwise $\mathrm{I}_i^A = 0$. Letting $i = 1, 2, \ldots, A$ denote the districts in the minimal winning coalition, the presidential coalition becomes $x = \sum_{i=1}^{A} \omega_i$.[4]

2.2 Equilibrium with credibility problems

The benchmark is when federal transfers ϕ_i are exogenously given. There are no issues of distributive politics. In this case, gubernatorial elections depend on local issues and presidential elections depend on national issues. Hence, the behavior at each level is similar to the Shi and Svensson (2006) model of PBCs under credibility problems, except that the model accommodates both electoral cycles in expenditures and taxes.

The timing is that policymakers move sequentially. The national government first determines γ, π, and d, without observing its current competence shock ε. The governors in each district then determine γ_i, π_i, and d_i, also before observing their current competence shock ε_i. Hence, policy is decided under uncertainty, making vote probabilistic from the point of view of policymakers. Voters in district i then observe exogenous federal transfers ϕ_i, taxes π and π_i, and the production of public goods g and g_i, but not current government debt d and d_i nor current expenditure γ and γ_i, and use that information to make inferences about the incumbents' capacity. There are elections every other period.

Districts

In a non-electoral period $t + 1$, the budget decisions do not affect electoral prospects, so it is not optimal to issue debt and the intertemporal problem reduces to maximizing current per-period utility in (2). The Appendix shows that optimal fiscal policy is given by:

[4]The ranking of districts by the presidential challenger is exactly the inverse of the ranking by the presidential incumbent, because the share of votes for the challenger is one minus the share of votes for the incumbent.

$$\pi^*_{i,t+1} = \alpha - \phi_{i,t+1} + (1 + r(d_{it}))\, d_{it}, \tag{13}$$

$$\gamma^*_{i,t+1} = \alpha. \tag{14}$$

In electoral period t, fiscal policy decisions affect citizen welfare in periods t and $t+1$, as well as the probability μ_i^G that the incumbent is reelected and thus continues in office in periods $t+1$ and $t+2$. With a uniform distribution and $\mathrm{E}[\ln(1+\varepsilon_{it})] = 0$, the results in the Appendix imply that the probability of reelection is given by:

$$\mu^G_{it} = D_i \left[\frac{1}{2D_i} - \ln\left(\frac{\hat{\gamma}_{it}}{\gamma_{it}}\right)\right] = \frac{1}{2} + D_i \left(\ln \frac{\gamma_{it}}{\hat{\gamma}_{it}}\right). \tag{15}$$

All districts here are swing because the median voter has no ideological preference for either party.[5] However, the most swing districts are those where density D_i is larger, because voters respond more to fiscal policy.

The maximum problem is formulated in the Appendix. Equilibrium district policy is given by:

$$\pi^*_{it} = \alpha - \phi_{it}, \tag{16}$$

$$\gamma^*_{it} = \alpha + d^*_{it}, \tag{17}$$

where the implicit function $d^*_{it} = h^{-1}\left(\left[\alpha + D_i(\delta + \delta^2)k_i\right]/\delta\right)$ is the inverse of $h(d_{it}) \equiv (1 + r(d_{it}) + r'(d_{it})d_{it})\,(\alpha + d_{it})$. Since $h' > 0$, $h^{-1'} > 0$. We assume that office-motivation (ego-rent) k_i is large enough for the credibility problem of fiscal policy in electoral periods

[5] Golden and Min (2013: 78–82) distinguish between the literature on swing voters and swing districts. We focus on swing districts. To distinguish between loyal, opposition and swing districts, we would have to add a positive or negative parameter that affects the preferences of the median district voter.

analyzed by Shi and Svensson (2006) to affect every district. In a setup with asymmetric information, the incentive to appear more competent in the eyes of voters leads incumbents to issue debt to increase expenditure and boost the provision of public goods. Since voters infer competence from the provision of public goods, the incumbent has an electoral incentive to use debt to spend more on public goods rather than to reduce taxes.

Nation

Equilibrium national policy is derived in the Appendix. In a non-electoral period, expenditure on the national public good is set at the socially optimal level:

$$\pi_{t+1}^{*} = \beta + \sum_{i=1}^{A} s_i \phi_{i,t+1} + (1 + r(d_t))\, d_t, \tag{18}$$

$$\gamma_{t+1}^{*} = \beta. \tag{19}$$

With a uniform distribution and $\mathrm{E}[\ln(1+\varepsilon_t)] = 0$, the president's probability of reelection is

$$\mu_t^P = D\left[\frac{1}{2D} - \ln\left(\frac{\hat{\gamma}_t}{\gamma_t}\right)\right] = \frac{1}{2} + D\left(\ln\frac{\gamma_t}{\hat{\gamma}_t}\right). \tag{20}$$

In electoral periods, national taxes are not manipulated, while expenditure is a function of debt issue:

$$\pi_t^{*} = \beta + \sum_{i=1}^{A} s_i \phi_{it}, \tag{21}$$

$$\gamma_t^{*} = \beta + d_{it}^{*}. \tag{22}$$

PBCs and vote

When federal transfers are exogenous, national policy decisions are independent of subnational ones. By Proposition 1, debt is used to expand expenditures to try to make the incumbent appear more competent, while taxes are raised afterward to repay debt.

Proposition 1 (PBCs) *In election years, incumbents issue debt to increase public expenditure. The increase in debt is larger in the most swing districts. In non-election years, taxes are raised to pay back debt. This leads to a PBC in expenditures and taxes.*

Proof. We start at the district level. Since k_i, for $i = 1, 2, \ldots, I$, is large enough for there to be an interior solution given by the first-order conditions (A10), in election years public debt is positive. In non-election years, the optimal policy is not to issue debt. Comparing (14) and (17), the extra funds obtained through the issuance of public debt in election years are used to increase public expenditure. Comparing equations (13) and (16), extra taxes are needed in non-election years to repay principal and interest on debt incurred in the previous electoral year. This implies that the budget balance worsens in election years and improves thereafter: $bal_{it} = -(d_{it} - d_{i,t-1}) = -d^*_{it} < 0$, $bal_{i,t+1} = -(d_{i,t+1} - d_{it}) = d^*_{it} > 0$. In the most swing districts, where density D_i is larger, $d^*_{it} = h^{-1}\left([\alpha + D_i(\delta + \delta^2)k_i]/\delta\right)$ is larger because $h^{-1'} > 0$. Mutatis mutandis, the same results hold at the national level ■

Though elections lead to PBCs, in equilibrium these rational PBCs do not increase the incumbent's reelection chances (Lohmann 1998; Shi and Svensson 2006). This irrelevance result no longer holds with the introduction of distributive politics.

Proposition 2 (Vote) *Budget deficits in election years do not increase the probability of reelection of the incumbent.*

Proof Because $\hat{\gamma}_{it} = \gamma_{it}$ in equilibrium, reelection chances $\mu^{G*}_{it} = \frac{1}{2}$ by (15). Likewise, since $\hat{\gamma}_t = \gamma_t$ in equilibrium, (22) implies that $\mu^{P*}_t = \frac{1}{2}$ ■

2.3 Equilibrium with distributive politics

The timing each period is as before, except that the national government determines ϕ_i, for $i = 1, 2..., I$, endogenously. This can be solved by backwards induction. The district problem is identical. In a non-electoral period, equilibrium policy is given by (13) and (14); in an electoral period, equilibrium policy is given by (16) and (17). We now turn to the problem of the national government.

Federal transfers

We assume that all federal transfers are observed by voters, to eliminate the incentive for the national government to make differential transfers to aligned districts in election years.[6] The president indeed wants transfers ϕ_{Ai} to be highly visible, since this is what turns out to build up voter support in favored districts. This assumption decouples distributive politics from PBCs. Hence, national taxes and public expenditures are still given by equations (18) and (19) in non-election years, and by equations (21) and (22) in election years.

We now look at the components of transfers ϕ_i identified before, ϕ_{Hi} and ϕ_{Ai}. The results are summarized in Proposition 3. The strategic analysis is greatly simplified because transfers follow the same logic every period: build a minimal winning coalition in the national legislature based on the districts that most voted for the incumbent president.

Proposition 3 (Minimal winning coalition and home district bias) *Every period, the president distributes discretional transfers among districts in its legislative coalition. The president's home district is favored as well.*

Proof Regarding the first component of transfers, ϕ_{Hi}, the president's utility from a trans-

[6] Garofalo, Lema, and Streb (2020) analyze a related model where an electoral incentive is present since there are both visible and non-visible federal transfers. While they find a strong effect of distributive politics on transfers in their dataset, the evidence on PBCs in transfers to aligned provinces are less robust. We hence abstract from PBCs in transfers here.

fer to its home district ($\phi_{HP} = \phi_H/s_P$) is larger than the disutitity ($-\phi_H$), so $\phi^*_{HP} > 0$. The president has no incentive to make transfers to districts $i \neq P$, because they only imply a disutility. This justifies calling this component the "home district bias". The second component of transfers, ϕ_{Ai}, has to do with distributive politics. We assume the following condition is satisfied, so the president always wants to build a minimal winning coalition: $k_L\chi > \sum_{i=1}^{A} s_i\phi_A - \mathrm{I}_t^H\phi_A$, where $k_L\chi$ is the utility of having a minimal winning coalition, $\sum_{i=1}^{A} s_i\phi_A$ is the disutility of higher taxes that lead to less private consumption, and ϕ_A is the utility of higher transfers if the president's home district is in the coalition ($\mathrm{I}^H = 1$). [7] Members of the presidential legislative coalition receive positive per capita transfers, $\phi^*_{Ai} = \phi_A$ for $i = 1, \ldots, A$, while nonmembers receive nothing, $\phi^*_{Ai} = 0$ for $i = A+1, \ldots I$.

Corollary (Local taxes) *Districts in the president's legislative coalition tax less than unaligned districts. The home district is able to charge less taxes too.*

Proof By (13) and (16), districts that receive larger federal transfers are able to charge less taxes■

The corollary is due to the quasi-linear utility function. In a more general setting where utility is concave in the private good, federal transfers would instead be split up between less taxes and more expenditure on the local public good.

Concurrent elections

We analyze concurrent elections here.[8] District voters must simultaneously decide vote for president and governor, whose terms last periods $t+1$ and $t+2$. Within each district, we concentrate on gubernatorial elections because the median district voter has an incentive to vote members of the governor's party as district representatives to the national congress,

[7] This is always satisfied if the president's home district is in the coalition, because $\phi_A > \sum_{i=1}^{A} s_i\phi_A$.

[8] Non-concurrent election follow a similar logic. We have some additional comments below.

either to support (if aligned) or to block (if not) the agenda of the president.[9]

The governor's probability of reelection, μ_{it}, depends on an extra term compared to (15): in addition to the selection motive, the median voter has an alignment motive given by the probability of reelection μ_t of the presidential candidate of the incumbent party and $1-\mu_t$ of the presidential candidate of the opposition party, times the respective transfer differentials (see Appendix):

$$\begin{aligned}\mu_{it}^{G} &= \frac{1}{2} + D_i\left(\ln\frac{\gamma_{it}}{\hat{\gamma}_{it}} + \mu_t^P\hat{\Delta}_{it}^P + (1-\mu_t^P)\hat{\Delta}_{it}^{\sim P}\right) \\ &= \frac{1}{2} + D_i\left(\ln\frac{\gamma_{it}}{\hat{\gamma}_{it}} + \left(s_i\mu_{it}^P + \sum_{j\neq i} s_j\mu_{jt}^P\right)\hat{\Delta}_i^P + \left(1-\left(s_i\mu_{it}^P + \sum_{j\neq i} s_j\mu_{jt}^P\right)\right)\hat{\Delta}_{it}^{\sim P}\right).\end{aligned} \tag{23}$$

where $\hat{\Delta}_{it}^P = \sum_{j=1}^2 \delta^j\hat{\phi}_{i,t+j}^{PG} - \sum_{j=1}^2 \delta^j\hat{\phi}_{i,t+j}^{P\sim G}$ is the expected transfer differential from the incumbent president P to the incumbent governor G compared to the challenger $\sim G$ in district i during their next term in office, while $\hat{\Delta}_{it}^{\sim P} = \sum_{j=1}^2 \delta^j\hat{\phi}_{i,t+j}^{\sim PG} - \sum_{j=1}^2 \delta^j\hat{\phi}_{i,t+j}^{\sim P\sim G}$ is the expected transfer differential from the presidential challenger $\sim P$.

Proposition 4 (Vote for governor with alignment motive) *With distributive politics, a popular president boosts vote for aligned governors and depresses it for unaligned ones. The alignment motive leads to coattail and "drag" effects.*

Proof In equilibrium, $\hat{\gamma}_i = \gamma_i$, so the probability of reelection of a governor in (23) is only affected by the probability of reelection of the incumbent president and the expected federal transfers differentials in the next two periods. The presidential candidates' home districts $i = P, \sim P$ will receive extra transfers $\phi_{Hi} = \phi_H/s_i$ irrespective of political alignment, so

[9] In the specific case of Argentina, Jones et al. (2012: 144) point out that national legislators respond to the governor, so the president needs to negotiate with governors to pass legislation in Congress.

these cancel out. Hence, expected transfers to the incumbent governor and to the challenger can be written as the probability of being in the respective minimal winning coalitions times a sure amount if in coalition: $\hat{\phi}_{Ai}^{PG} = \hat{p}_i^{PG}\phi_A$, $\hat{\phi}_{Ai}^{\sim PG} = \hat{p}_i^{\sim PG}\phi_A$, $\hat{\phi}_{Ai}^{P\sim G} = \hat{p}_i^{P\sim G}\phi_A$, and $\hat{\phi}_{Ai}^{\sim P\sim G} = \hat{p}_i^{\sim P\sim G}\phi_A$. The expected differential if the incumbent president wins is $\hat{\Delta}_{it}^{P} = \phi_A \left(\sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{PG} - \hat{p}_{i,t+j}^{P\sim G})\right)$ and the expected differential if the presidential challenger wins is $\hat{\Delta}_{it}^{\sim P} = \phi_A \left(\sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{\sim PG} - \hat{p}_{i,t+j}^{\sim P\sim G})\right)$. For aligned governors $\hat{p}_{i,t+j}^{PG} > \hat{p}_{i,t+j}^{P\sim G}$ and $\hat{p}_{i,t+j}^{\sim PG} < \hat{p}_{i,t+j}^{\sim P\sim G}$ because the president favors aligned districts in its legislative coalition, hence $\hat{\Delta}_{it}^{P} > 0$ and $\hat{\Delta}_{it}^{\sim P} < 0$, so a higher probability of presidential reelection μ_t^P boosts μ_{it}^G. For unaligned governors, $\hat{\Delta}_{it}^{P} < 0$ and $\hat{\Delta}_{it}^{\sim P} > 0$, so a higher probability μ_t^P reduces μ_{it}^G. By the second line of equation (23), vote for president can be broken down into vote for president in the district i, i.e., a coattail effect, and vote for president in the rest of the country, i.e., what we call a "drag" effect■

The probability of reelection of the president in each district depends on an extra term compared to (20), as shown in the Appendix:

$$\mu_{it}^P = \frac{1}{2} + D\left(\ln\frac{\gamma_t}{\hat{\gamma}_t} + \mu_{it}^G\hat{\Delta}_{it}^G + (1-\mu_{it}^G)\hat{\Delta}_{it}^{\sim G}\right), \tag{24}$$

where superscript P denotes incumbent president, $\sim P$, presidential challenger , G, incumbent governor, and $\sim G$, gubernatorial challenger. $\hat{\Delta}_{it}^{G} = \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{PG} - \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{\sim PG}$ is the differential G will receive if P rather than $\sim P$ is president in the next term, while $\hat{\Delta}_{it}^{\sim G} = \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{P\sim G} - \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{\sim P\sim G}$ is the differential for $\sim G$.

Proposition 5 (Vote for president with alignment motive) *A popular governor boosts district vote for the incumbent president if aligned and depresses it if not. Hence, there are reverse coattail effects. The home districts of the presidential candidates have a home bias that cancels out in the aggregate vote for president.*

Proof We look at the districts of presidential candidates second because home district bias introduces an extra term. In the rest of the districts, only distributive politics is at stake, so the expected differentials are $\hat{\Delta}_i^G = \phi_A \sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{PG} - \hat{p}_{i,t+j}^{\sim PG})$ for an incumbent governor and $\hat{\Delta}_i^{\sim G} = \phi_A \sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{P\sim G} - \hat{p}_{i,t+j}^{\sim P\sim G})$ for a challenger. Since the president favors aligned districts in its legislative coalition, in an aligned district $\hat{p}_i^{PG} > \hat{p}_i^{P\sim G}$ and $\hat{p}_i^{\sim PG} < \hat{p}_i^{\sim P\sim G}$, so $\hat{\Delta}_i^G > \hat{\Delta}_i^{\sim G}$. This implies that an incumbent president benefits from the popularity of an aligned governor, since a higher probability of reelection μ_{it}^G boosts μ_{it}^P by (24). For unaligned governors, $\hat{\Delta}_i^G < \hat{\Delta}_i^{\sim G}$ instead, so a higher probability of reelection μ_{it}^G reduces μ_{it}^P by (24), favoring the presidential challenger. Hence, there are reverse coattail effect of vote for governor on vote for president. The home districts of presidential candidates follow a slightly different logic, because home bias introduces an extra term, the differential transfers from ruling and opposition presidential candidates to their home districts $\hat{\Delta}_i^H$. This increases vote for incumbent president if $i = P$, since $\hat{\Delta}_P^H = \sum_{j=1}^{2} \delta^j \hat{\phi}_H / s_P > 0$, and decreases it if $i =\sim P$, since $\hat{\Delta}_{\sim P}^H = -\sum_{j=1}^{2} \delta^j \hat{\phi}_H / s_{\sim P} < 0$. Home-bias effects do not change overall vote for president because $s_P \hat{\Delta}_P^H = -s_{\sim P} \hat{\Delta}_{\sim P}^H$, so the terms cancel out when one calculates the overall probability the president will win, which is given by summation of vote in each district■

Equilibrium in simplified setting

We now abstract from other ex-ante factors by assuming a symmetry condition holds regarding the probability that each district joins the minimal winning coalition:

Symmetry condition: The probability a governor joins a presidential coalition is the same as the probability a challenger joins the opposing presidential coalition, i.e., $\hat{p}_i^{PG} = \hat{p}_i^{\sim P\sim G}$ and $\hat{p}_i^{\sim PG} = \hat{p}_i^{P\sim G}$.

There are three necessary conditions for the symmetry condition to hold. It requires that all

districts be swing, that all elections be concurrent and that there be no home-bias effects.

Our work-horse model assumes that all districts are swing. If a district were instead loyal to one party, something that could be captured by a parameter that shifts the median voter's relative preference for the incumbent party below or above zero, the district would have a higher probability of being in one party's coalition than in the other's.[10]

Second, for analytical simplicity the model focuses on concurrent elections. This implies that no district has any vested interest in favor of one party or another. Instead, with non-concurrent elections for president, the die is cast: a district would have an incumbent governor that with probability one would be co-partisan of one of the two presidential candidates. District voters would hence have a greater incentive to vote for a presidential candidates from that same party, so the symmetry condition would not be satisfied. A similar argument applies to non-concurrent elections for governor.

Third, home-bias leads voters to prefer a candidate from their home districts, which breaks the symmetry condition because that district will be more likely to be in one presidential coalition than another. Since Proposition 5 states that home-bias effects do not affect the overall vote for president in our model, we abstract from them here.

If those three conditions are satisfied, all districts are neutral regarding the two competing parties. Three results immediately follow from the symmetry condition. First, by Proposition 4, $\hat{\Delta}_{it}^{P} = \phi_A \sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{PG} - \hat{p}_{i,t+j}^{P\sim G})$ and $\hat{\Delta}_{it}^{\sim P} = \phi_A \sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{\sim PG} - \hat{p}_{i,t+j}^{\sim P\sim G})$. If the symmetry condition is satisfied, $\hat{\Delta}_{it}^{P} = -\hat{\Delta}_{it}^{\sim P}$. Second, by Proposition 5, $\hat{\Delta}_{it}^{G} = \phi_A \sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{PG} - \hat{p}_{i,t+j}^{\sim PG})$ and $\hat{\Delta}_{it}^{\sim G} = \phi_A \sum_{j=1}^{2} \delta^j (\hat{p}_{i,t+j}^{P\sim G} - \hat{p}_{i,t+j}^{\sim P\sim G})$. If the symmetry condition is satisfied, $\hat{\Delta}_{it}^{G} = -\hat{\Delta}_{it}^{\sim G}$. Third, results one and two imply that $\hat{\Delta}_{it}^{P} = \hat{\Delta}_{it}^{G}$. Using $\mathrm{I}_i^A = 1$ if district is aligned, $\mathrm{I}_i^A = 0$ if not, we can write $\hat{\Delta}_{it}^{P} = (-1)^{1-\mathrm{I}_i^A} \hat{\Delta}_i^A$, where $\hat{\Delta}_i^A > 0$ is the differential a district receives when aligned, $-\hat{\Delta}_i^A < 0$ when not.

When the symmetry condition holds, equation (23) can be simplified as shown in the first

[10] Leaning ideologically towards one party might not hurt the district: if many districts have a strong preference for that party, they will always rank high in the political coalition most likely to win elections.

line of equation (25). Furthermore, the probability of reelection of the president μ^P can be broken down into the probability of reelection in district i and in the rest of the districts:

$$\begin{aligned}\mu_{it}^G &= \frac{1}{2} + D_i \left(\ln \frac{\gamma_{it}}{\hat{\gamma}_{it}} + (2\mu_t^P - 1)(-1)^{1-\mathrm{I}_{it}^A} \hat{\Delta}_i^A \right) \\ &= \frac{1}{2} + D_i \left(\ln \frac{\gamma_{it}}{\hat{\gamma}_{it}} + \left(s_i(2\mu_{it}^P - 1) + \left(\sum_{j \neq i} s_j (2\mu_{jt}^P - 1) \right) \right) (-1)^{1-\mathrm{I}_{it}^A} \hat{\Delta}_i^A \right). \quad (25)\end{aligned}$$

Likewise, if the symmetry condition holds, equation (24) becomes:

$$\mu_{it}^P = \frac{1}{2} + D \left(\ln \frac{\gamma_t}{\hat{\gamma}_t} + (2\mu_{it}^G - 1)(-1)^{1-\mathrm{I}_{it}^A} \hat{\Delta}_i^A \right). \quad (26)$$

We now characterize the equilibrium. Nash equilibrium has a compatibility requirement that implies rational expectations regarding presidential vote in the whole country: the expectations that district voters have must be consistent with the aggregate expectation about which presidential candidate will actually win.

Proposition 6 (Equilibrium existence) *A fixed point of the model is for the probability of reelection of all governors to be $1/2$ and the probability of reelection of the president to be $1/2$. This fixed point is the unique equilibrium of the model.*

Proof In equilibrium, $\hat{\gamma}_t = \gamma_t$, and $\hat{\gamma}_{it} = \gamma_{it}$, for $i = 1, 2, ..., I$. By equation (26), if $\mu_i^G = 1/2$ in all districts, the probability of reelection of the president is $\mu^P = 1/2$. Plugging $\mu^P = 1/2$ in the first line of equation (25), $\mu_{it}^G = 1/2$ in all districts. This implies that this is a fixed point of the model. Furthermore, summing μ_{it}^P in equation (26) over all districts, replacing μ_{it}^G by the first line of equation (25) for $i = 1, 2, ..., I$,

$$\mu_t^P = \frac{1}{2} + D \left(\sum_{i=1}^{I} s_i \left(2 \left(\frac{1}{2} + D_i \left(2\mu_t^P - 1 \right) (-1)^{1-\mathrm{I}_{it}^A} \hat{\Delta}_i^A \right) \right) - 1 \right) (-1)^{1-\mathrm{I}_{it}^A} \hat{\Delta}_i^A$$

$$= \frac{1}{2} + 2D\left(\sum_{i=1}^{I} s_i D_i (2\mu_t^P - 1)(\hat{\Delta}_i^A)^2\right) = a + b\mu_t^P.$$

This is an affine function that crosses the identity function $\mu^P = \mu^P$ at most once■

Ex-ante, distributive politics does not affect the selection motive of elections, because by Proposition 6 $\mu_{it}^G = \frac{1}{2}$ cancels reverse coattail effects and $\mu_t^P = \frac{1}{2}$ cancels coattail and drag effects. The only difference between districts is in their density D_i: the ranking in presidential coalitions will be higher for districts with larger D_i because they have stronger reverse coattail effects. Ex-post, when voters observe competence shocks, things change: a governor with a positive competence shock has a higher share of votes, which affects the share of votes for the president in that district, and vice-versa.

3 Identification strategy

To estimate the behavior of vote for governor and president, we use equations (25) and (26) that assume the symmetry condition holds . The symmetry condition is an approximation to capture the pull of distributive politics on vote. In the econometric estimates, we control for incumbent bias when district elections do not coincide with national elections (where the continuation probability of an incumbent elected before the current elections and still not up for reelection is set at 1), and for partisan preferences towards one party (using previous district vote for governor and president).[11]

Equations (25) and (26) look at the expected vote before the competence shocks are revealed. Voters, however, can observe competence shocks, since the provision of public goods is increasing in competence by equations (5) and (10). Based on the extensive literature on the topic (see, e.g., Nordhaus 1988 or Healy, Persson and Snowberg 2016), we use macroeco-

[11]Home bias in the districts of presidential candidates can be controlled with dummy in presidential vote in home districts, but since it has no aggregate efffect we abstract from that.

nomic performance as a proxy of the presidents's competence shocks, and provincial growth as a proxy of the governor's competence shocks.

To identify the equations, we assume that $D_i = D$, so $\hat{\Delta}_i^A = \hat{\Delta}^A$ for all districts. Without loss of generality, we set $D = 1$ because it only rescales the regression results, not their sign nor significance. In a more general setting, the benefits of being aligned with the president extend beyond provinces receiving higher federal transfers $\hat{\Delta}^A$. For example, an aligned governor may benefit the presidential candidate by providing information about the best locations to campaign within the province, and a charismatic president may campaign with an aligned governor to help him or her get reelected. Therefore, we replace $\hat{\Delta}^A$ by $+1$ when both president and governor are aligned ($\mathrm{I}_{it}^A = 1$), and by -1 when not ($\mathrm{I}_{it}^A = 0$). From a linear regression standpoint, the constant $1/2$ will be absorbed by the constant regressor and fixed effects. We introduce the budget surplus bal, to control for the prediction that budget deficits do not affect election results because $\gamma_t = \hat{\gamma}_t$. To simplify the notation, we define $\sigma_{it}^G \equiv 2\mu_{it}^G - 1$. We separate the effects of the election of aligned, β^A, and non-aligned, $\beta^{\sim A}$, governors, to test the symmetry condition; if symmetry holds, we expect $\beta^A = (-1)\beta^{\sim A}$. With these assumptions, a preliminary estimable version of equation (26) is

$$\mu_{it}^P = \alpha + \lambda bal_{it} + \beta^A \sigma_{it}^G \mathrm{I}_{it}^A + \beta^{\sim A} \sigma_{it}^G (1 - \mathrm{I}_{it}^A).$$

We proxy the budget surplus using the lagged variable. To capture the alignment motive, we use the variable σ_{it}^G, an affine transformation of the vote for governor. This gives rise to an endogeneity issue due to the reverse causality acknowledged in equation (25), in which the vote for governor is explained by the vote for president. For this reason, we rely on a proxy, $\sigma_{i,t-term}^G$, the previous election results of the winning party (i.e., the current governor's party); for non-concurrent presidential elections, σ_{it}^G takes value 1 because the identity of the governor is given. We expect the effect to be positive in aligned provinces ($\beta_1^A > 0$) and negative in unaligned provinces ($\beta_1^{\sim A} < 0$). The initial support of the governor will be

affected by the economic performance of the governor's district, i.e., the growth of the gross geographical product of province i, $\triangle \ln(ggp_{i,t-1})$, which can be used by voters to update the governor's reputation. If province i experienced higher growth, voters are more likely to reelect the current governor, because this suggests higher competence of the provincial incumbent and therefore better economic performance in the future. We expect this to help the presidential incumbent in aligned provinces ($\beta_2^A > 0$), but to hurt in non-aligned provinces ($\beta_2^{\sim A} < 0$).

Presidential vote also depends on the selection motive of choosing the most competent incumbent. We use the lagged dependent variableμ_{t-term}^P, which refers to the share of votes of the winner (i.e., the current president's party) in the past elections, to control for the president's initial support in each district. To update the reputation of presidential competence, we include data on inflation and real GDP growth. The final equation to be estimated, including time-varying controls and fixed effects, is:

$$\mu_{it}^P = \alpha + \lambda bal_{i,t-1} + \kappa_1 \mu_{i,t-term}^P + \kappa_2 inflation_{t-1} + \kappa_3 \left(\triangle \ln gdp_{t-1}\right) + \beta_1^A \sigma_{i,t-term}^G \mathrm{I}_{it}^A + \beta_1^{\sim A} \sigma_{i,t-term}^G \left(1 - \mathrm{I}_{it}^A\right)$$

$$+ \beta_2^A \left(\triangle \ln ggp_{i,t-1}\right) \mathrm{I}_{it}^A + \beta_2^{\sim A} \left(\triangle \ln ggp_{i,t-1}\right) \left(1 - \mathrm{I}_{it}^A\right) + PROVINCE_i + \epsilon_{it}, \qquad (27)$$

where we expect $\lambda = 0$, due to rational expectations, $\kappa_2 < 0$ and $\kappa_3 > 0$, due to the selection motive by which a president's party is rewarded for good economic performances during the term in office and punished otherwise, $\beta_1^A > 0$, $\beta_1^{\sim A} < 0$, $\beta_2^A > 0$, and $\beta_2^{\sim A} < 0$, due to the reverse coattail effects, and $|\beta_1^A| \approx |\beta_1^{\sim A}|$ and $|\beta_2^A| \approx |\beta_2^{\sim A}|$, due to the symmetry condition. $PROVINCE_i$ is a province fixed effect.

To derive an empirically identifiable version of equation (25), we follow similar steps. Presidential election results in the first line of equation (25) raise endogeneity concerns because presidential vote in each district depends on vote for governor. By the second line of equa-

tion (25), we can break down presidential vote into vote in the district and in the rest of the country. Given the endogeneity of σ_{it}^{P}, we proxy it with an affine transformation of the president's party vote share in the previous presidential election in the district, $\sigma_{i,t-term}^{P}$. Regarding vote for president in the rest of the country, $\left(\sum_{j\neq i} s_j \sigma_{it}^{P}\right)$, we could not find a reliable proxy, so we use the variable unchanged, calling it "$\sigma_{\sim it}^{P}$ "for short.[12] The final equation to be estimated is:

$$\mu_{it}^{G} = a + lbal_{i,t-1} + k_1\mu_{i,t-1}^{G} + k_2(\triangle \ln ggp_{i,t-1}) + b_{1,tail}^{A}\sigma_{i,t-term}^{P}\mathrm{I}_{it}^{A} + b_{1,tail}^{\sim A}s_i\sigma_{i,t-term}^{P}\left(1-\mathrm{I}_{it}^{A}\right) + b_{1,drag}^{A}\sigma_{\sim it}^{P}\mathrm{I}_{it}^{A} + b_{1,drag}^{\sim A}\sigma_{\sim it}^{P}\left(1-\mathrm{I}_{it}^{A}\right) + b_2^{A}inflation_{t-1}\mathrm{I}_{it}^{A} + b_2^{\sim A}inflation_{t-1}\left(1-\mathrm{I}_{it}^{A}\right) + b_3^{A}(\triangle \ln gdp_{t-1})\mathrm{I}_{it}^{A} + b_3^{\sim A}(\triangle \ln gdp_{t-1})\left(1-\mathrm{I}_{it}^{A}\right) + PROVINCE_i + u_{it}, \quad (28)$$

where we expect $l = 0$, due to rational expectations, $k_2 > 0$, due to the selection motive, $b_{1,tail}^{A} > 0$ and $b_{1,tail}^{\sim A} < 0$, due to coattail effects, $b_{1,drag}^{A} < 0$ and $b_{1,drag}^{\sim A} > 0$, due to drag effects, $b_2^{A} < 0$, $b_2^{\sim A} > 0$, $b_3^{A} > 0$ and $b_3^{\sim A} < 0$, due to the political alignment motive in general, and $|b_{1,tail}^{A}| \approx |b_{1,tail}^{\sim A}|$, $|b_{1,drag}^{A}| \approx |b_{1,drag}^{\sim A}|$, $|b_2^{A}| \approx |b_2^{\sim A}|$, and $|b_3^{A}| \approx |b_3^{\sim A}|$, due to the symmetry assumption. $k_2 > 0$ is driven by competence considerations, that is, higher GGP growth increases the changes of reelecting the governor; this can be seen as information that allows voters to update the reputation of the governor. The proxies of national economic performance, $inflation_{t-1}$and $\triangle \ln gdp_{t-1}$, affect the current reelection changes of aligned and non-aligned governors with opposite signs because low inflation and high national GDP growth increase the president's chances of reelection, so voters tend to bias their vote towards gubernatorial candidates from the same party as the president.

[12]We also attempted to instrument the weighted sum of presidential vote in all provinces excluding province i, $(\sum_{j\neq i} s_j\sigma_{it}^{P})$, with the weighted sum of the presidential winner in previous election in all provinces excluding province i, $(\sum_{j\neq i} s_j\sigma_{i,t-1}^{w,P})$. The first stage regression shows the presence of weak instruments.

4 Data description and analysis

To check the suitability of the Argentinean democracy for testing our hypotheses, we first conduct simple statistical and data analyses .

Table 1. Number and types of elections. 22 Provinces

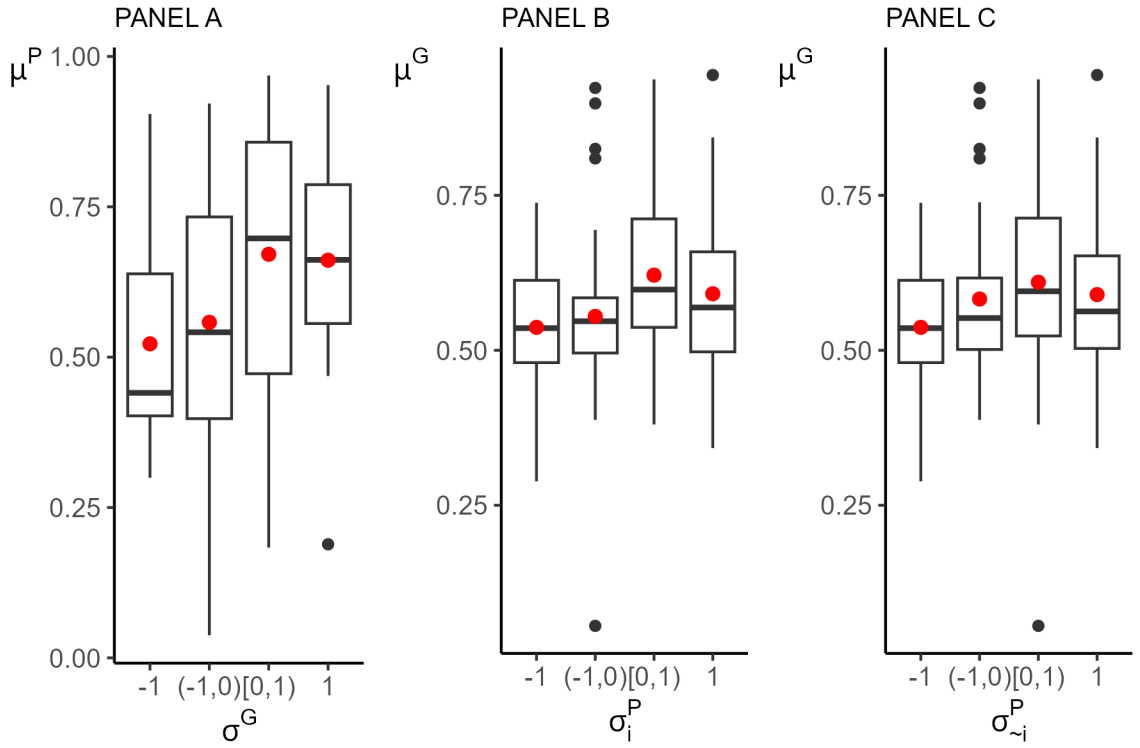
Province	Concurrent Elections	Presidential election only	Gubernatorial election only
Buenos Aires	5	2	3
Catamarca	5	2	4
Cordoba	5	2	3
Corrientes	0	7	7
Chaco	5	2	3
Chubut	5	2	3
Entre Rios	5	2	3
Formosa	5	2	3
Jujuy	5	2	3
La Pampa	5	2	3
La Rioja	6	1	2
Mendoza	5	2	3
Misiones	5	2	3
Neuquen	5	2	3
Rio Negro	5	2	3
Salta	5	2	3
San Juan	5	2	3
San Luis	6	1	2
Santa Cruz	5	2	3
Santa Fe	5	2	3
Santiago del Estero	2	5	6
Tucuman	5	2	3

Note: Period 1984-2016, leaving out initial elections in 1983. Two districts, Buenos Aires City and Tierra del Fuego, were excluded due to their different fiscal regimes.

Table 1 shows concurrent elections in column (1), and non-concurrent presidential and gubernatorial elections in columns (2) and (3), respectively. Concurrent and non-concurrent elections take place in all provinces except Corrientes, so the within-province variation between concurrent and non-concurrent elections is sufficiently rich to facilitate identification or, at the very least, to ameliorate biases. There were seven presidential elections

during the 1984-2016 period. The mode of concurrent elections is 5 (Column 1), with two provinces having 6 concurrent elections. The mode of gubernatorial elections is 8, with only one province having 7, and another 9, elections.

Figure 1. Vote in concurrent and non-concurrent elections. Boxplot representation



Notes: In Panel A, we group $\sigma_i^G = (2 \times \mu_i^G - 1)$ into four categories on the x-axis: $\sigma_i^G = -1$ represents a presidential election with a non-aligned governor in province i; $\sigma_i^G \in (-1, 0)$, a concurrent election when a non-aligned governor is likely to be re-elected; $\sigma_i^G \in [0, +1)$, a concurrent election when an aligned governor is likely to be reelected; and $\sigma_i^G = +1$, a presidential election with an aligned governor in province i. On the y-axis, each box contains the president's party vote share, μ_i^P, within the interquartile range (IQR), the difference between $Q3$ and $Q1$. The horizontal line within each box represents the median, while the red dot is the mean. The vertical lines extending above and below the box (whiskers) depict $abs(1.5 \times IQR)$, or the largest value, in absolute terms, if it lies within $abs(1.5 \times IQR)$. The black dots represents outliers, considered as data points beyond $abs(1.5 \times IQR)$. The boxplots in Panels B and C, with $\sigma_i^P = (2 \times \mu_i^P - 1)$ and $\sigma_{\sim i}^P = (2 \times \mu_{\sim i}^P - 1)$ on the x-axis and μ_i^G on the y-axis, can be interpreted similarly.

Figure 1 helps to gain an understanding of the distribution of vote in both concurrent and non-concurrent elections (boxplots in Panels A, B and C). According to our framework, they

should all follow a similar logic because of the alignment motive.

In Panel A, we represent the vote for governor using its affine transformation, $\sigma_i^G = 2 \times \mu_i^G - 1$, to be consistent with the to-be-estimated equation (27). We group the continuum $\sigma_i^G \in [-1, +1]$ into four categories on the x-axis: $\sigma_i^G = -1$ represents a non-concurrent presidential election with a non-aligned governor; $\sigma_i^G \in (-1, 0)$, concurrent elections when a non-aligned governor is likely to be reelected (using ex post electoral data as a proxy); $\sigma_i^G \in [0, +1)$, concurrent elections when an aligned governor is likely to be reelected (same comment); and $\sigma_i^G = +1$, a non-concurrent presidential election with an aligned governor. The y-axis represents the vote share of the president, generating one boxplot for each of the four σ_i^G categories displayed on the x-axis.

If we compare the boxplots for $\sigma_i^G = -1$ (presidential vote shares when there is a non-aligned governor) and $\sigma_i^G = +1$ (presidential vote shares when there is an aligned governor), the median vote share is substantially lower than 0.5 in the former category and considerably higher than 0.5 in the latter (see black horizontal lines inside each box). This suggests that voters tend to align their vote for the presidential candidate with a governor of the same party. Moreover, in the first category ($\sigma_i^G = -1$, non-aligned governors), the mean (red dot) is way higher than the median, indicating that the distribution is skewed to the right, and the majority of observations are concentrated mainly below 0.50 of vote shares. By contrast, in the last category, ($\sigma_i^G = +1$, aligned governor), the median and mean coincide, suggesting a symmetrical distribution of vote shares. Furthermore, the entire box is positioned above 0.5, indicating that in most cases provinces tend to re-elect the president's party, likely due to governor's party alignment. The middle categories of concurrent elections ($-1 < \sigma_i^G < 0$ and $0 \leq \sigma_i^G < 1$, representing whether non-aligned or aligned governors are more likely to be elected) depict the reverse coattail effects. They exhibit taller boxes compared to the extreme categories where only presidential elections take place. This clearly indicates greater uncertainty in presidential election outcomes when gubernatorial

elections are held concurrently. The increasing trend in means and medians across the four boxes, from left to right, visually manifests an "extended" reverse coattail effect that includes non-concurrent elections.

Panel B shows the affine transformation of district vote for president in the to-be-estimated equation (28'). Notably, the boxes in this plot are shorter than the ones in panel A, indicating considerably less dispersion in the data. Moreover, all four boxes lie almost entirely above the 0.5 vote share mark, suggesting a clear incumbency advantage for governors regardless of the presidential alignment category ($\sigma_i^P = -1, \sigma_i^P \in (-1, 0), \sigma_i^P \in [0, +1), \sigma_i^P = +1$). Though more weakly than in Panel A, the means and medians exhibit the expected upward trend, from left to right, indicating that governors (or their parties) have higher vote shares as the president of the same party become more likely to win the presidential elections, thus suggesting an "extended" coattail effect that includes non-concurrent elections.

Panel C repeats the results of Panel B in non-concurrent elections ($\sigma_{\sim i}^P = -1, \sigma_{\sim i}^P = +1$), and shows the novel drag effect in concurrent elections, i.e., how vote for president in all the other districts ($\sigma_{\sim i}^P \in (-1, 0), \sigma_{\sim i}^P \in [0, +1)$) affects vote for president in district i. Similar conclusions arise.

5 Empirical results

The definition of the empirical variables is detailed in Table A1 in the Appendix.

Table A2 in the Appendix shows the effect of political alignment on fiscal variables. What interests us here especially is that aligned provinces receive more federal funds over the whole term of the governor.

We also find effects of the electoral cycle on fiscal variables. The main result is that the budget balance falls in electoral years, and recovers in postelectoral years; both effect are significant in close elections, as predicted by the model. The electoral effects on other fiscal

variables are also in accordance with the predictions, except for the finding that all districts receive more funds in election years. However, this does not change the fact that aligned districts receive more funds than unaligned districts. This backs the main implication of the model, namely, that aligned districts receive more funds, whcih is the key motivation for voters to elect a governor aligned with the president, and vice-versa.

The results of using equation (27) to estimate the vote for the presidential candidate from the incumbent president's party are presented in Table 2. Our focus is on the alignment motive caused by distributive politics, which leads to reverse coattail effects. We control for the selection motive and PBCs.

The reverse coattail effect is proxied by two terms for the incumbent governor: vote for governor in the past election ($\sigma^G_{i,t-term}$), and growth of gross geographic product ($\triangle \ln ggp_{t-1}$), which provides updates on the initial reputation of competence. As expected, in column 1 the first component of the reverse coattail effect is positive when the governor is aligned with the president ($\hat{\beta}^A_1 = 0.06$), and negative when not ($\hat{\beta}^{\sim A}_1 = -0.11$). However, neither coefficient is significant. The test $\hat{\beta}^A_1 + \hat{\beta}^{\sim A}_1 = 0$ has a $p - value$ equal to 0.813, so the null hypothesis of symmetry cannot be rejected. In column 2 we merge the estimates in aligned and unaligned districts by employing $\sigma^G_{it}(-1)^{(1-\mathrm{I}^A_{it})}$, which becomes σ^G_{it} if president and governor are aligned ($\mathrm{I}^A_{it} = 1$), and $-\sigma^G_{it}$ if not ($\mathrm{I}^A_{it} = 0$), so the coefficient to be estimated will always have to be positive. Indeed, in column 2 the estimator $\hat{\beta}_1 = 0.08^{**}$, which is significant at 5%. Column 1 also explores how the district economic performance affects the vote for president when the governor is aligned ($\beta^A_2 = 0.44$) or not ($\beta^{\sim A}_2 = -0.26$); both regressors, though insignificant, have the right signs. The symmetry condition holds, since $\hat{\beta}^A_2 + \hat{\beta}^{\sim A}_2 = 0$ cannot be rejected ($p - value = 0.654$). Therefore, we use the variable $(\triangle \ln ggp_{i,t-1})(-1)^{(1-\mathrm{I}^A_{it})}$. In column 2, the coefficient $\hat{\beta}_2 = 0.33^{**}$ has the expected sign and is now significant at 5%. Columns 3 and 4, where the budget balance is not used as a control, yield very similar results.

As to the controls for the selection motive, they are not the least bit significant in columns 1 and 2, where the budget balance is included. Unexpectedly, the budget balance, instead of being insignificant as predicted by the rational PBC model, has a significantly positive sign. This seems to point to the expansionary effect of fiscal consolidations discussed in the literature, in a country that has gone through periods of extremely large deficits with economic recessions and runaway inflation. Indeed, when budget balance is removed in column 3, the regressors of the variables $inflation_{t-1}$ ($\hat{\kappa}_2 = -0.26^{**}$) and $\triangle \ln gdp_{t-1}$($\hat{\kappa}_3 = 0.64^{**}$) show the expected signs: when inflation is higher, voters tend to vote for the presidential challenger, while when the GDP grows faster, voters tend to vote for the president's party. Similar results are found in column 4, when the symmetry condition is imposed; although inflation is no longer significant, it has the right sign.

Table 2. District vote for president

Independent variable [*estimator*]	(1)	(2)	(3)	(4)
$balance_{t-1}$ $[\hat{\lambda}]$	0.07***	0.07***		
	[0.01]	[0.01]		
$inflation_{t-1}$ $[\hat{\kappa}_2]$	-0.00	-0.04	-0.26**	-0.15
	[0.14]	[0.08]	[0.13]	[0.09]
$\Delta \ln gdp_{t-1}$ $[\hat{\kappa}_3]$	-0.18	-0.05	0.64**	0.57***
	[0.33]	[0.17]	[0.32]	[0.18]
$\sigma^G_{i,t-term}\mathrm{I}^A$ $[\hat{\beta_1}^A]$	0.06		0.22**	
	[0.10]		[0.09]	
$\sigma^G_{i,t-term}(1-\mathrm{I}^A)[\hat{\beta}^{\sim A}_1]$	-0.11		-0.01	
	[0.11]		[0.10]	
$\sigma^G_{i,t-term}(-1)^{(1-\mathrm{I}^A)}$ $[\hat{\beta}_1]$		0.08**		0.12***
		[0.03]		[0.03]
$(\Delta \ln ggp_{i,t-1})\mathrm{I}^A$ $[\hat{\beta}^A_2]$	0.44		0.52	
	[0.29]		[0.36]	
$(\Delta \ln ggp_{i,t-1})(1-\mathrm{I}^A)$ $[\hat{\beta}^{\sim A}_2]$	-0.26		-0.35	
	[0.21]		[0.23]	
$(\Delta \ln ggp_{i,t-1})(-1)^{(1-\mathrm{I}^A)}$ $[\hat{\beta}_2]$		0.33**		0.45***
		[0.13]		[0.15]
Observations	154	154	154	154
R-squared	0.486	0.485	0.301	0.288
Symmetry tests (p-value)				
$\hat{\beta_1}^A + \hat{\beta_1}^{\sim A} = 0$	(0.813)		(0.213)	
$\hat{\beta}^A_2 + \hat{\beta}^{\sim A}_2 = 0$	(0.654)		(0.746)	

Note: Estimated under OLS methods. First column contains independent variables from equation (27), while estimator symbols are in brackets. In columns (1) to (4), robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

The results of estimating the vote for governor in equation (28) are shown in Table 3. Again, our focus is on the alignment motive, controlling for the selection motive and PBCs.

Regarding the alignment motive, we distinguish the impact of vote for president from that of national economic performance. We break presidential vote down into vote in the district, which captures coattail effects, and vote in the rest of the country, which captures drag effects. In column 1, both coattail and drag effects have the expected signs, but only the coefficient for drag effects in aligned districts is significant: the estimators for district vote for president (proxied by past vote $\sigma^P_{i,t-term}$) are $\hat{b}^A_{1,tail} = 0.05$ and $\hat{b}^{\sim A}_{1,tail} = -0.07$ in aligned and unaligned provinces, while the estimators for vote for president in the rest of the country (using the contemporaneous variable $\sigma^P_{\sim i,t}$) are $\hat{b}^A_{1,drag} = 0.08^*$ and $\hat{b}^{\sim A}_{1,drag} = -0.01$. The symmetry tests $\hat{b}^A_{1,tail} + \hat{b}^{\sim A}_{1,tail} = 0$ and $\hat{b}^A_{1,drag} + \hat{b}^{\sim A}_{1,drag} = 0$ are not rejected (the $p - values$ are 0.847 and 0.247). Hence, column 2 shows the regressors $\hat{b}_{1,tail} = 0.08^*$ of the vari-

able $\sigma_{it}^{P}(-1)^{(1-\mathrm{I}_{it}^{A})}$ that merges the district vote for president in aligned and nonaligned provinces, and $\hat{b}_{1,drag} = 0.05$ of the combined variable $\sigma_{\sim i,t}^{P}(-1)^{(1-\mathrm{I}_{it}^{A})}$ in the rest of the country. For robustness, columns 3 and 4 isolate coattail effects, while columns 5 and 6 isolate drag effects. Results are quite similar, though drag effects are much more significant in columns 5 and 6.

Since drag effects are estimated with contemporaneous vote for president in the rest of the country, there may be overlap with the effects of macroeconomic performance as measured by inflation and growth, which cannot be broken down into district and rest of the country effects. Inflation is proxied by lagged inflation: the regressors $\hat{b}_2^A = -0.18^{**}$ and $\hat{b}_2^{\sim A} = 0.20^{**}$ for the variables $inflation_{t-1}^{A}$ and $inflation_{t-1}^{\sim A}$ are significant at 5%, so voters punish the governor's party for high inflation in aligned provinces, while the opposite happens in unaligned provinces. Growth is proxied by lagged growth: while the regressors $\hat{b}_3^A = 0.17$ and $\hat{b}_3^{\sim A} = -0.25$ of the GDP growth rate in aligned and non-aligned provinces, represented in Table 3 by $\triangle \ln(gdp_{-1}^{A})$ and $\triangle \ln(gdp_{-1}^{\sim A})$, are not significant, both have the correct sign. Hence, an aligned governor's party tends to benefit from a higher GDP growth rate, and the opposite holds in an unaligned province. Since the symmetry conditions holds (the tests $\hat{b}_2^A + \hat{b}_2^{\sim A} = 0$ and $\hat{b}_3^A + \hat{b}_3^{\sim A} = 0$ have $p - values$ of 0.913 and 0.776), column 2 merges the aligned and unaligned variables. This leads to sharper results: both the inflation and GDP growth regressors preserve the predicted sign and are significant: $\hat{b}_2 = -0.18^{***}$ for the merged variable $inflation_{-1}$, and $\hat{b}_3 = 0.20^{*}$ for the merged variable $\triangle \ln(gdp_{-1})$.

PBCs do not seem to affect vote for governor, since the coefficient for the budget balance is never significant. Regarding the selection motive, the coefficient k_2 of gross geographical product growth, $\triangle \ln(ggp_{i,t-1})$, is significantly positive at 1% in column 1 and at 5% in column 2, i.e., $\hat{k}_2 = 0.26^{***}$ and $\hat{k}_2 = 0.21^{**}$. Similar results hold in the other columns.

Table 3. District vote for governor

Independent variable [*estimator*]	(1)	(2)	(3)	(4)	(5)	(6)
$balance_{i,t-1}$ $[\hat{\lambda}]$	-0.49	-0.52	-0.42	-0.46	-0.40	-0.42
	[0.38]	[0.37]	[0.38]	[0.37]	[0.36]	[0.36]
$\Delta \ln ggp_{i,t-1}$ $[\hat{k}_2]$	0.26***	0.21**	0.26**	0.21**	0.24**	0.21**
	[0.10]	[0.08]	[0.10]	[0.08]	[0.10]	[0.09]
$\sigma^P_{i,t-term}\mathrm{I}^A$ $[\hat{b}^A_{1,tail}]$	0.05		0.07*			
	[0.04]		[0.04]			
$\sigma^P_{i,t-term}(1-\mathrm{I}^A)[\hat{b}^{\sim A}_{1,tail}]$	-0.07		-0.09*			
	[0.06]		[0.05]			
$\sigma^P_{i,t-term}(-1)^{(1-\mathrm{I}^A)}$ $[\hat{b}_{1,tail}]$		0.06*		0.07***		
		[0.03]		[0.03]		
$\sigma^P_{\sim i,t}\mathrm{I}^A$ $[\hat{b}^A_{1,drag}]$	0.08*				0.10**	
	[0.04]				[0.04]	
$\sigma^P_{\sim i,t}(1-\mathrm{I}^A)$ $[\hat{b}^{\sim A}_{1,drag}]$	-0.01				-0.05	
	[0.05]				[0.04]	
$\sigma^P_{\sim i,t}(-1)^{(1-\mathrm{I}^A)}$ $[\hat{b}_{1,drag}]$		0.05				0.07**
		[0.03]				[0.03]
$inflation_{t-1}\mathrm{I}^A$ $[\hat{b}^A_2]$	-0.18**		-0.12*		-0.13*	
	[0.08]		[0.06]		[0.07]	
$inflation_{t-1}(1-\mathrm{I}^A)$ $[\hat{b}^{\sim A}_2]$	0.20**		0.19**		0.13*	
	[0.09]		[0.09]		[0.08]	
$inflation_{t-1}(-1)^{(1-\mathrm{I}^A)}$ $[\hat{b}_2]$		-0.18***		-0.14**		-0.13**
		[0.06]		[0.05]		[0.05]
$(\Delta \ln gdp_{t-1})\mathrm{I}^A$ $[\hat{b}^A_3]$	0.17		0.09		0.17	
	[0.19]		[0.20]		[0.19]	
$(\Delta \ln gdp_{t-1})(1-\mathrm{I}^A)$ $[\hat{b}^{\sim A}_3]$	-0.25		-0.26		-0.18	
	[0.17]		[0.17]		[0.16]	
$(\Delta \ln gdp_{t-1})(-1)^{(1-\mathrm{I}^A)}$ $[\hat{b}_3]$		0.20*		0.17		0.17
		[0.12]		[0.12]		[0.11]
Observations	176	176	176	176	176	176
R-squared	0.342	0.336	0.326	0.326	0.323	0.319
Symmetry tests (p-value)						
$\hat{b}^A_{1,tail}+\hat{b}^{\sim A}_{1,tail}=0$	(0.775)		(0.809)			
$\hat{b}^A_{1,drag}+\hat{b}^{\sim A}_{1,drag}=0$	(0.247)				(0.436)	
$\hat{b}^A_2+\hat{b}^{\sim A}_2=0$	(0.913)		(0.509)		(0.949)	
$\hat{b}^A_3+\hat{b}^{\sim A}_3=0$	(0.776)		(0.557)		(0.963)	

Note: Estimated under OLS methods. First column contains independent variables from equation (28), while estimator symbols are in brackets. In columns (1) to (6), robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

6 Conclusions

We develop a work-horse model to analyze the relationship between national and subnational vote in federal countries. The model abstracts from signaling issues to concentrate on the moral hazard problems introduced by fiscal discretion: PBCs and distributive politics. While PBCs rely on asymmetric information, our main focus is on distributive politics,

which is effective even without asymmetric information.

In our model, voters care not only about the competence of the incumbent (the selection motive), but also about transfers from the national government (the alignment motive). Even in the best-case scenario where the alignment motive does not create an ex-ante bias towards any of the two national coalitions, the influence of distributive politics is still felt ex-post, making electoral accountability depend not only on the candidate's competence but also on their political connections.[13] Our model has two main predictions. First, in presidential elections, the president enjoys an electoral advantage in districts ruled by aligned governors if the governor is popular, but a disadvantage if not; the opposite holds in districts ruled by unaligned governors. The model thus predicts reverse coattail effects that are explained by distributive politics (aligned districts receive more federal transfers). Second, in gubernatorial elections, aligned governors enjoy an electoral advantage if the president is likely to be reelected, but a disadvantage if not; the opposite holds for unaligned governors. The president's popularity can be broken down into two components, the coattail effect (district vote for the president boosts the vote for governor) and a novel drag effect, which occurs when voters in a district take into account the vote for president in the rest of the country when voting for governor.

Our model's predictions are contrasted with the data from Argentine provinces for the period 1983-2016. We control for PBCs, as well as for deviations from the symmmetry condition due to non-concurrent elections and district partisan bias. The empirical results broadly match the model's predictions. The most striking results have to do with the alignment motive, by which high inflation and low growth have opposite effects on vote for governor, hurting aligned districts and helping unaligned ones, while good provincial economic performance props up vote for the president in aligned districts and depresses it in unaligned ones.

[13] If a symmetry condition holds (i.e., all elections are concurrent, all districts are swing, and there is no presidential home-bias effect), the ex-ante probability of reelection of incumbents is $1/2$.

Besides the literature on distributive politics and two-sided coattail effects, our paper contributes to the literature on fiscal decentralization. It is widely believed that fiscal decentralization makes it easier for voters to hold local incumbents accountable for their performance. Our paper predicts that in a highly centralized country like Argentina, highly discretionary federal transfer policies indeed can make government accountability depend on the wrong incentives because voters will want to reward governors that can get more federal transfers for their districts, while formula-based federal transfer policies could alleviate it.

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A Appendix

A.1 Equilibrium with automatic federal transfers

District policy in non-electoral periods (equations 13 and 14)

In a non-electoral period $t+1$, the district incumbent's problem is to maximize the per-period utility in (7),

$$\max \mathrm{E}_{t+1}\left[v_{i,t+1}\right] = \mathrm{E}_{t+1}\left[c_{i,t+1} + \alpha \ln(g_{i,t+1}) + \beta \ln g_{t+1} + k_i\right], \tag{A1}$$

with respect to $\gamma_{i,t+1}$ and $\pi_{i,t+1}$, since optimal debt $d^*_{i,t+1}$ is zero by the assumption that $1 \leq \delta(1 + r(0))$. Replacing restrictions (1), (3) and (6) in (A1), the problem becomes a function of $\gamma_{i,t+1}$:

$$\max \mathrm{E}_{t+1}\left[(y_i - \pi_{t+1} - \gamma_{i,t+1} + \phi_{i,t+1} - (1 + r(d_{it}))\, d_{it} + \alpha \ln(\gamma_{i,t+1}\theta_{i,t+1}) + \beta \ln g_{t+1} + k_i\right]. \tag{A2}$$

The first-order condition for a maximum is given by:

$$\mathrm{E}_{t+1}\left[-1 + \alpha \frac{1}{\gamma_{i,t+1}}\right] = 0, \tag{A3}$$

the second-order condition is satisfied (the second-order derivative is negative). Optimal fiscal policy is given by (13) and (14) in the main text.

Governors probability of reelection (equation 15)

In an electoral period t, the median voter m in district i must decide whether to vote for the incumbent or the opposition party in that district. The median prefers the incumbent if

the utility expected in the future, given the estimated current competence shock $\hat{\varepsilon}_{it}$ of the incumbent, is larger than or equal to the unconditional expected utility with the opposition party:

$$\mathrm{E}_t\left[c_{i,t+1} + \alpha \ln(g_{i,t+1}) + \beta \ln g_{t+1} | \hat{\varepsilon}_{it}\right] \geq \mathrm{E}_t\left[c_{i,t+1} + \alpha \ln(g_{i,t+1}) + \beta \ln g_{t+1}\right]. \tag{A4}$$

Using (1), (5), (6), (13), (14) and $\ln(1+\hat{\varepsilon}_{it}) = \mathrm{E}_t\left[\ln(1+\varepsilon_{it})|\hat{\varepsilon}_{it}\right]$, this becomes

$$\ln(1+\hat{\varepsilon}_{it}) \geq \mathrm{E}\left[\ln(1+\varepsilon_{it})\right]. \tag{A5}$$

Given that $g_{it} = \hat{\gamma_{it}}\theta(1+\hat{\varepsilon}_{it})(1+\varepsilon_{i,t-1})$, so $\hat{\gamma_{it}}(1+\hat{\varepsilon}_{it}) = \gamma_{it+1}(1+\varepsilon_{it})$ by (5) and (6), the probability of reelection can be expressed as follows:

$$\mu_{it} = \Pr\left(\ln(1+\hat{\varepsilon}_{it}) \geq \mathrm{E}\left[\ln(1+\varepsilon_{it})\right]\right) = \Pr\left(\ln(1+\varepsilon_{it}) \geq \ln\left(\frac{\hat{\gamma}_{it}}{\gamma_{it}}\right) + \mathrm{E}\left[\ln(1+\varepsilon_{\mathrm{it}})\right]\right). \tag{A6}$$

With a uniform distribution, and using the assumption that $\mathrm{E}\left[\ln(1+\varepsilon_{it})\right] = 0$, leads to (15) in the main text. Since no single voter is decisive, it would also be a Nash equilibrium to vote the other way.

District policy in electoral periods (equations 16 and 17)

By the argument in the text, the district incumbent's problem of maximizing its expected utility in electoral periods can be reduced to maximizing expected utility in the current and next two periods:

$$\max \mathrm{E}_t\left[v_{it} + \delta v_{i,t+1} + \delta^2 v_{i,t+2}\right]. \tag{A7}$$

Using per-period utility (7), taking into account that private and public consumption in $t+2$

are not affected by policy decisions in t, and that the expected value of I_i in $t+1$ and $t+2$ is the probability μ_i of reelection in t, this reduces to

$$\max \mathrm{E}_t \left[c_{it} + \alpha \ln(g_{it}) + \beta \ln g_t + \delta \left(c_{i,t+1} + \alpha \ln(g_{i,t+1}) + \beta \ln g_{t+1}\right)\right] + \left(1 + \mu_{it}(\delta + \delta^2)\right) k_i. \tag{A8}$$

The maximum problem (A8) is subject to restrictions (1), (3) and (5), optimal fiscal responses (13) and (14) after elections, as well as $d^*_{it+1} = 0$, and reelection function (15). Replacing in (A8), this problem becomes a function of π_{it} and d_{it}:

$$\begin{aligned} &\max \mathrm{E}_t \left[(y_i - \pi_t - \pi_{it}) + \alpha \ln\left(\theta_{it}(\pi_{it} + d_{it} + \phi_{it})\right) + \beta \ln g_t\right] + \\ &\delta \mathrm{E}_t \left[y_i - \pi_{t+1} - \alpha + \phi_{i,t+1} - \left(1 + r(d_{it})\right) d_{it} + \alpha \ln\left(\theta_{i,t+1}\alpha\right) + \beta \ln g_{t+1}\right] + \\ &\left[1 + \left(\frac{1}{2} - D_i \ln \frac{\pi_{it} + \hat{d}_{it} + \phi_{it}}{\pi_{it} + d_{it} + \phi_{it}}\right)(\delta + \delta^2)\right] k_i. \end{aligned} \tag{A9}$$

While debt could be used to reduce taxes π_{it}, there is no electoral incentive to do so because that does not indicate high competence; debt is used instead to spend more on local public goods.[14] Hence, taxes are determined by the standard optimality condition: $\pi^*_{it} = \alpha - \phi_{it}$, equation (16) in main text.

The first-order condition for an interior solution in relation to d_{it} is:

$$\mathrm{E}_t \left[\frac{\alpha}{\pi_{it} + d_{it} + \phi_{it}} - \delta \left(1 + r(d_{it}) + r'(d_{it}) d_{it}\right)\right] + D_i \frac{(\delta + \delta^2) k_i}{\pi_{it} + d_{it} + \phi_{it}} = 0. \tag{A10}$$

The second-order condition is satisfied. In equation (A10), $\pi^*_{it} + \phi_{it} + d_{it} = \alpha + d_{it}$ by result (16). Let $h(d_{it}) \equiv \left(1 + r(d_{it}) + r'(d_{it}) d_{it}\right)(\alpha + d_{it})$. This function of d_{it} is invertible because $r' > 0$, $r'' > 0$, so $h' > 0$, leading to implicit function d^*_{it} that determines equilibrium γ^*_{it} by

[14] If taxes were decreasing in competence θ_{it}, as in Streb and Torrens (2013), they would instead be reduced in electoral years to feign more competence.

equation (17) in the main text.

National policy in non-electoral periods (equations 18 and 19)

Federal transfers are exogenous, so we abstract from the utility of minimal winning coalition. In a non-electoral period $t+1$, the president's problem is to maximize the expected per-period utility (12):

$$\max \mathrm{E}_{t+1}\left[v_{t+1}\right] = \mathrm{E}_{t+1}\left[c_{Ht+1} + \alpha \ln g_{Ht+1} + \beta \ln g_{t+1} + k_P\right]. \tag{A11}$$

We introduce in (A11) restriction (1), to replace private consumption, (8), to replace national taxes, (5) and (10), to replace local and national public goods, and then proceed by backwards induction, where the optimal policies of the governor in the president's home district, $\pi^*_{H,t+1}$, $\gamma^*_{H,t+1}$, are determined by (13) and (14), where previous debt $d^*_{Ht} > 0$:

$$\max \mathrm{E}_{t+1}[y_H - (\alpha - \phi_{H,t+1} + (1 + r(d_{Ht}))d_{Ht}) - (\gamma_{t+1} + \sum_{i=1}^{I} s_i\phi_{i,t+1} + (1 + r(d_t))d_t) +$$

$$\alpha \ln(\gamma^*_{H,t+1}\theta_{H,t+1}) + \beta \ln(\gamma_{t+1}\theta_{t+1}) + k_P]. \tag{A12}$$

Optimal debt d^*_{t+1} is zero by the assumption that $1 \leq \delta(1+r(0))$. Hence, the president must maximize (A12) with respect to γ_{t+1}:

$$E_{t+1}\left[-1 + \beta\frac{1}{\gamma_{t+1}}\right] = 0. \tag{A13}$$

The second-order condition is satisfied (the second-order derivative is negative). Equilibrium policy is spelled out in equations (18) and (19) of the main text.

National policy in electoral periods (equations 21 and 22)

The national government will want to use fiscal policy in period t to maximize its objective function V_t. Current policy actions only affect the current and the next two future periods, so this problem is equivalent to

$$\max \mathrm{E}_t \left[v_t + \delta v_{t+1} + \delta^2 v_{t+2} \right]. \tag{A14}$$

Using per-period utility (12), taking into account that fiscal policy in t does not affect private and public consumption in $t+2$, and the expected value of I in $t+1$ and $t+2$ is the probability μ of reelection in t, allows simplifying (A14) as follows:

$$\max \mathrm{E}_t[c_{Ht}+\alpha \ln g_{Ht}+\beta \ln g_t+\delta(c_{H,t+1}+\alpha \ln g_{H,t+1}+\beta \ln g_{t+1})]+(1+\mu_t(\delta+\delta^2))k_P \tag{A15}$$

We use equation (1) to replace private consumption in t and $t+1$, equations (5) and (10) to replace local and national public goods in t and $t+1$. We then use equation (8) to eliminate national expenditure in t and, by backwards induction, plug in equilibrium fiscal policies (16) and (17) in period t and (13) and (14) in period $t+1$ in the president's home district P, and equilibrium national expenditure (19) in period $t+1$. Hence,

$$\begin{aligned}\max \mathrm{E}_t[(y_P - \pi^*_{Pt} - \pi_t) + \alpha \ln(\gamma^*_{Pt}\theta_{Pt}) + \beta \ln(\gamma_t\theta_t)\gamma_{t+1} + \delta((y_P - \pi^*_{P,t+1} - \pi^*_{t+1}) + \\ \alpha \ln(\gamma^*_{P,t+1}\theta_{P,t+1}) + \beta \ln(\gamma^*_{t+1}\theta_{t+1}))] + (1 + \mu_t(\delta + \delta^2))k_P = \mathrm{E}_t[(y_P - (\alpha - \phi_{Pt}) - \pi_t) + \\ \alpha \ln((\alpha+d^*_{Pt})\theta_{Pt})+\beta \ln((\pi_t-\textstyle\sum_{i=1}^{I} s_i\phi_{it}+d_t)\theta_t)+\delta((y_P-(\alpha-\phi_{P,t+1}+(1+r(d_{Pt}))d_{Pt})- \\ (\beta + \textstyle\sum_{i=1}^{I} s_i\phi_{i,t+1} + (1 + r(d_t))d_t)) + \alpha \ln(\alpha\theta_{P,t+1}) + \beta \ln(\beta\theta_{t+1}))] + (1 + \mu_t(\delta + \delta^2))k_P.\end{aligned} \tag{A16}$$

The first order condition for d_t is:

$$\mathrm{E}_t\left[\frac{\beta}{\pi_t - \sum_{i=1}^{I} s_i\phi_{it} + d_t} - \delta\left(1 + r(d_t) + r'(d_t)d_t\right)\right] + D_i\frac{(\delta+\delta^2)k_P}{\pi_t - \sum_{i=1}^{I} s_i\phi_{it} + d_t} = 0. \tag{A17}$$

Since national taxes π do not depend on the incumbent's competence, they are not manipulated in electoral years (equation 21 in main text). Given that $\pi_t^* = \beta + \sum_1^I s_{it}\phi_{it}$, then $\pi_t^* - \sum_{i=1}^{I} s_{it}\phi_{it} + d_t = \beta + d_t$. As in equation (A10), we can introduce a function $h(d_t)$ in equation (A17) and solve for the inverse function h^{-1} to determine d_t^* (equation 22).

A.2 Equilibrium with discretional federal transfers

Gubernatorial reelection probability (equation 23)

Let the identity of the incumbent president be denoted by P. The median voter in district i prefers the current incumbent G for governor to the opposition candidate $\sim G$ if

$$\mathrm{E}_t\left[c_{i,t+1} + \alpha\ln g_{i,t+1} + \beta\ln g_{t+1} + \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{PG}|\hat{\varepsilon}_{it}\right] \geq \mathrm{E}_t\left[c_{i,t+1} + \alpha\ln g_{i,t+1} + \beta\ln g_{t+1} + \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{P\sim G}\right], \tag{A18}$$

where $\hat{\phi}_i^{PG}$ and $\hat{\phi}_i^{P\sim G}$ denote expected federal transfers under incumbent president when either current incumbent or opposition challenger are governors in future.

Repeating the substitutions used to go from (A4) to (A5), (A18) is equivalent to

$$\ln(1+\hat{\varepsilon}_{it}) + \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{PG} \geq \mathrm{E}[\ln(1+\varepsilon_{it})] + \sum_{j=1}^{2}\delta^j\hat{\phi}_{i,t+j}^{P\sim G}. \tag{A19}$$

When the opposition candidate to the presidency, $\sim P$, is expected to step into office, the condition that must be satisfied for the median voter to vote for the incumbent governor is instead:

$$\ln(1+\hat{\varepsilon}_{it}) + \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim PG} \geq \mathrm{E}[\ln(1+\varepsilon_{it})] + \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim P \sim G}. \tag{A20}$$

The expected vote for the incumbent governor is conditional on what presidential candidate is expected to win.[15] From inequalities (A19) and (A20), repeating the steps in (A6), we can derive the following equation, where μ_t is the probability a presidential candidate from the incumbent party is reelected, and $1-\mu_t$ the probability a presidential candidate from the opposition party wins:

$$\begin{aligned} \mu_{it} = \Pr\big(&\ln(1+\varepsilon_{it}) \geq \\ &\ln\left(\tfrac{\hat{\gamma}_{it}}{\gamma_{it}}\right) + \mathrm{E}[\ln(1+\varepsilon_{it})] - \mu_t\left(\textstyle\sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{PG} - \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{P\sim G}\right) \\ &-(1-\mu_t)\left(\textstyle\sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim PG} - \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim P\sim G}\right)\Big). \end{aligned} \tag{A21}$$

One can use the assumption that $\ln(1+\varepsilon_{it})$ is uniformly distributed, with $\mathrm{E}\left[\ln(1+\varepsilon_{it})\right] = 0$, to derive the probability of reelection (23) in the main text.

Presidential reelection probability (equation 24)

The inequalities that have to be satisfied in each district i for the incumbent president to be preferred to the challenger by the median voter depend on who the expected gubernatorial incumbent is. Following the same logic as in derivation of (A5), but incorporating the endogenous nature of future federal transfers, the district median voter prefers the incumbent president P to the presidential challenger $\sim P$ if either governor G is expected to be in office in district i in the future and

[15] While each district can take as given the expectation of what presidential candidate will win, in equilibrium it must be consistent with voting intentions of the aggregate of districts.

$$\ln(1+\hat{\varepsilon}_{it}) + \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{PG} \geq \mathrm{E}[\ln(1+\varepsilon_{it})] + \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim PG}. \tag{A22}$$

or the district challenger $\sim G$ is expected to be office in the future and

$$\ln(1+\hat{\varepsilon}_{t}) + \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{P\sim G} \geq \mathrm{E}[\ln(1+\varepsilon_{t})] + \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim P\sim G}. \tag{A23}$$

Applying the same logic as in the derivation of (A6), noting that with concurrent elections (A22) has probability $\mu_i \in [0,1]$ and (A23) has probability $1-\mu_i$, leads to (A24):

$$\begin{aligned} \mu_{it}^{P} = \Pr\left(\ln(1+\varepsilon_t) \geq \right. \\ \ln\left(\tfrac{\hat{\gamma}_t}{\gamma_t}\right) + \mathrm{E}[\ln(1+\varepsilon_t)] + \mu_{it}\left(\textstyle\sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim PG} - \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{PG}\right) \\ \left. +(1-\mu_{it})\left(\textstyle\sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim P\sim G} - \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{P\sim G}\right)\right). \end{aligned} \tag{A24}$$

This leads to equation (24) in main text. Taking into account that the president is voted in I districts, summing (A24) over all districts, the probability of presidential reelection is

$$\begin{aligned} \mu_{t} = \textstyle\sum_{i=1}^{I} s_i \Pr\left(\ln(1+\varepsilon_t) \geq \right. \\ \ln\left(\tfrac{\hat{\gamma}_t}{\gamma_t}\right) + \mathrm{E}[\ln(1+\varepsilon_t)] + \mu_{it}\left(\textstyle\sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim PG} - \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{PG}\right) \\ \left. +(1-\mu_{it})\left(\textstyle\sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{\sim P\sim G} - \sum_{j=1}^{2} \delta^j \hat{\phi}_{i,t+j}^{P\sim G}\right)\right). \end{aligned} \tag{A25}$$

Our argument resembles the conditional sincerity condition in Alesina and Rosenthal (1995: 50), where, for a given vote in legislative elections, no voter would like to see a decrease in vote for the party he has voted for in executive elections, and vice-versa. The same happens here with a voter's choices in district and national elections: the voter does not play weakly dominated strategies in either case.

Table A1. Description and source of empirical variables

Name of Variables	Decription	Source
Bal	Province's budget balance divided potential GGP (Gross Geographic Product)	MECON, Porto et al. (2004), INDEC, and CEP
exp	Province expenditure divided potential GGP	MECON, Porto et al. (2004), INDEC, and CEP
total income	Total province revenue divided potential GGP	MECON, Porto et al. (2004), Gallerano, Rumi, and Ti¿œmola (2004), INDEC, and CEP
local income	Revenues from province divided potential GGP	MECON, Porto et al. (2004), Gallerano, Rumi, and Ti¿œmola (2004), INDEC, and CEP
transfers	Federal transfers to province divided potential GGP	MECON, Porto et al. (2004), INDEC, and CEP
growth fed	Real Gross Domestic Product growth	AU based on MECON, Porto et al. (2004), INDEC, and CEP
growth	Real Gross Geographic Product growth	MECON, Porto et al. (2004), INDEC, and CEP
inflation	CPI inflation rate	INDEC and *Inflacion Verdadera*
Pres.vote	Vote share differential for president's party in province i	AU based on *Guï¿œa electoral*
Gov.vote	Vote share differential for governor's party in province i	AU based on *Guï¿œa electoral*
ele	Indicator for gubernatorial election	AU based on *Guï¿œa electoral*
close	Indicator for electoral margin in gubernatorial elections that is less than 3 pp.	AU based on *Guï¿œa electoral*
aligned	Indicator when president and governor are aligned.	AU based on *Guï¿œa electoral*

Note: Revenues from national government comprise federal tax-sharing revenues (Coparticipacion Federal de Impuestos) plus other transfers such as Aportes del Tesoro Nacional. The original fiscal variables are deflated by the combined consumer-wholesale price index of the INDEC, or by Inflacion Verdadera, before dividing them by GGP at constant prices, as in Porto et al. (2004). MECON: Ministry of Economy (Direccion Nacional de Coordinacion Fiscal con las Provincias, Secretaria de Hacienda, Ministerio de Economia). CEP: Centro de Estudios para la Produccion, Ministerio de Industria de la Nacion. Inflacion Verdadera: www.inflacionverdadera.com. AU: authors.

Table A2. Influence of political alignment and electoral cycle on fiscal variables

	(1)	(2)	(3)	(4)	(5)
$Indep.Var$ $Dep.Var$	bal_i	exp_i	$totalincome$	$localincome$	$transfers$
$aligned$	0.077	0.833**	1.578***	2.940***	1.599***
	[0.053]	[0.359]	[0.265]	[0.530]	[0.220]
ele	−0.257	0.840	0.465	−6.084**	5.222***
	[0.166]	[1.371]	[0.967]	[2.548]	[0.651]
$ele(+1)$	0.391	1.983	1.962	9.516***	−2.741***
	[0.253]	[1.649]	[1.210]	[3.339]	[1.001]
$ele \times close$	−0.698***	0.608	−1.209**	−4.373***	0.848
	[0.187]	[0.976]	[0.589]	[1.328]	[0.517]
$ele(+1) \times close$	0.854***	0.833	4.066***	4.928***	1.477***
	[0.184]	[0.934]	[0.586]	[1.322]	[0.515]
Observations	660	660	660	660	660
Provinces	22	22	22	22	22
Chi-2	214.8	312.1	195.3	114.2	227.2

Note: We report estimations of Equation (X). We use feasible GLS estimation method allowing for province heteroscedasticity, autocorrelation of order 1, and cross-sectional correlation, leading to 253 and 1 estimated covariances and autocorrelation coefficient, respectively. We report the Chi-2 test for the model significance (critical value for 11 df at 99% confidence interval 24.72, so we accept the alternative hypothesis of the model statistically significant at 1%). Control variables included, but not reported listed under Equation (X): 1-year lag GGP growth and a vector of deterministic time trend of order 4. Standard errors are reported in brackets. *, **, and *** denote 10%, 5%, and 1% level of significance, respectively.